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Philippines, Climate Volatility

“Philippines: Strategies for mitigating the implications of climate volatility on food security”

INTRODUCTION

In 1996 the World Food Summit defined that food security is when “at all times, [people] have physical, social and economic access to sufficient, safe and nutritious food” (World Food Summit; 1996). Humanity has the right to be food secure -- that regardless of the shocks or circumstances their access and availability to food is stable at all times. Climate volatility, however, is a threat to that stability, thus this is an issue that nations around the world will have to face with urgency especially nations like the Philippines due to the implications that it has on its community. The purpose of this paper is to: a) give an overview of the Philippines; b) provide insight regarding the implications of climate volatility in the Philippines’ food security; c) to analyze existing solutions and share the improvements that could be made, as well as to lay out new sustainable solutions that can secure the nation’s food security against climate volatility

INFORMATION ABOUT THE COUNTRY

The Philippines is an archipelagic nation that comprises 7,640 islands that is separated into 18 political regions and 81 provinces (Stuecker et al. 2). The country has a land area of 298,170 sq km with over 110 million people residing in the country 47.7% of which are living in urban areas and 52.3% of which are living in rural areas (Central Intelligence Agency). The form of governance currently in place is a presidential republic wherein the people have the right to vote on their leadership; additionally, the powers of the government are separated into three branches: executive, legislative, and judicial (Central Intelligence Agency).

Concerning the economy, the agricultural sector makes up a significant portion of the Philippine economy accounting for 20 percent of the country’s GDP and 40 percent of the Filipino workforce (Food and Agriculture Organization of the United Nations); in order to keep up with this amount 41% of the Philippines’ land is designated as agricultural land with each family having an average farm size of 1.04 hectares this size is comparable to the size of two and a half football fields. In the Philippines, there are only two seasons which are the dry rainy and dry season; the rainy season occurs from June to early October, and the dry season occurs from late October to May. Due to the fact that the crop selection process in the Philippines is determined by the conditions of the climate there is a diverse selection of produce being planted and harvested. According to FAO the major crops produced by the agricultural sector are rice, coconuts, corn, sugarcane, bananas, pineapples, and mangoes (Food and Agriculture Organization of the United Nations).

INFORMATION ABOUT THE TYPICAL FAMILY

Unlike families in a magnitude of western nations, the typical filipino family is multigenerational, and there are some families that also have extended family members in their household (Ronald). It is common for a typical Filipino household to include some, if not all of the following, living under the same roof: grandparents, uncles, aunts, nieces, and nephews. Pertaining to food, the diet of a typical family in the Philippines consists of rice or noodles paired with vegetables and pork, seafood, or chicken (Hays). A family in the Philippines usually gets this through a variety of options. Filipino families may go to a local *palengke* (wet market) which is a building composed of several stalls that sells products such as

poultry, fish, produce, and other goods (Ronald). Supermarkets are another avenue for Filipino families to buy food, however, the problem with this option is that the price of food there is significantly higher compared to a *palengke* and that there is a lack of supermarkets in rural provinces. This lack of access to a supermarket along with the increasing prices of food poses a barrier for typical families' access to nutritious food. According to ASEAN Business News the minimum wage in the Philippines typically varies per region which ranges from ₱316 (US\$6.57) to ₱537 (US\$11.17) per day (Ayman) -- this is important to remember when discussing the impact of climate volatility on food security in the next section of the paper.

RAMIFICATIONS OF CLIMATE VOLATILITY ON FOOD SECURITY

The Philippines like many other tropical countries face adverse implications resulting from climate volatility. There are three reasons on why climate volatility poses a major threat to the country's food security: a) crop production patterns in the Philippines is determined by climatic conditions and the substantial temperature fluctuation climate volatility brings is a threat to the agricultural sector ; b) climate volatility causes uncertainties in the agricultural production in the nation; c) climate volatility increases the intensity, frequency, and uncertainty of natural disasters such as typhoons, droughts, and flood.

An increase in the frequency and intensity of natural calamities such as typhoons, droughts, and floods causes a drastic disruption in the agricultural sector. These calamities have a high potential to damage infrastructure essential to the production and distribution of food such as farm supply routes and markets (Israel, Roehlano). This leads to the unintended consequence of causing a sharp decline in the agricultural productivity and output while causing a sharp increase in the production cost (Israel, Roehlano). Due to these sequence of events, the prices of produce goes up which threatens the food security of the surrounding area -- when one takes into consideration the existing disparity between the cost of goods vs. the average salary in the Philippines one can see why this causes a major problem. This isn't the only consequence that climate volatility has, one should also take into account the fact that climatic conditions are considered a major determinant of crop production and patterns in the Philippines and when unexpected variables come into play it may damage the already existing crops in the area.

Stuecker discovered in his studies that climate volatility, specifically the temperature fluctuations that it causes deals the most harm during the second quarter of the year (Stuecker, Tigchelaar, Kantar 13). The reason for this is because during the second quarter the average daily temperature in the Philippines is already high, and any temperature before that will be detrimental to the crops. When the crops are damaged and agricultural output is low it harms not only the consumers but also the farmers. The community will have to deal with the high prices that are caused by the lack of agricultural output, but also the lack of availability and access of the food. The farmers also deal with the ramifications because with the lack of goods being sold it makes it harder for them to make a living with the profits, in addition to this it also makes it harder for the farmers to prepare for the next production season which decreases the overall agricultural output further. This is why it is important to create solutions so that the community will be able to retain their right to secure access to food. In the next section of the paper, there will be proposed solutions that may be used to tackle these problems.

STRATEGIES TO COMBAT THE IMPLICATIONS OF CLIMATE VOLATILITY ON FOOD SECURITY

One of the solutions to combat the temperature fluctuations that climate volatility brings is to fund a push to provide farmers with readily available climate information. The Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) will be the one who will spearhead this plan. It begins with the government funding them with the necessary resources to improve the technologies

required to make accurate meteorological predictions as well as tools that are capable of constructing models that show the vulnerability and risks in certain areas. There should also be an effort made by the organization to build more agrometeorological stations in regions where they're not available; furthermore, an effort should be made in improving the already existing stations in the areas where they have already been planted (Reyes 5). This solution would meet the needs of the farmers both at the national and local level as it will prepare them with adequate information to decide which type of crops will be the best to grow within the season. This solution will also be perfect to tie in with introducing and implementing the concept of precision agriculture to Filipino farmers.

The Department of Agriculture and The Philippine Atmospheric Geophysical and Astronomical Services Administration (PAGASA) could develop a partnership with the Department of Agriculture to introduce precision agriculture to the farmers around the nation. Precision agriculture will be able to increase production yield whilst working around the implications of climate volatility. It entails The Department of Agriculture educating farmers about precision farming and PAGASA gathering data to construct a model that shows the best planting dates for the current conditions of the climate. This model takes into consideration a variety of factors ranging from the sun and wind exposure to the soil and weather patterns (Reyes 6). This method will mitigate the problems caused by weather fluctuations as a drastic fluctuation in the temperature is accounted for as well as the excessive amount of moisture or a lack of thereof caused by climate volatility. This method ensures that the supply chain won't be affected as much by climate volatility which secures the people's access and availability to food.

After natural calamities or temperature fluctuations the agricultural output given by the farmers is low and this leads to the farmers facing difficulties not only in preparing for the next production season but also in their personal lives. To solve this problem, there should be a damage assessment agency to survey the amount of damage caused by climate volatility ranging from natural calamities to extreme temperature fluctuations. If this agency concludes that there has been a significant amount of damage dealt to the parties involved then they shall be eligible to be given compensation for the damages caused. It should be noted that this solution requires further refinement to ensure that no malicious organizations will find and exploit a loophole. If implemented, this will solve the problem stated earlier wherein the spike of the cost of agricultural production drives the prices up longer than it should. This solution will not only help farmers on a local and national level, but it will also help the consumers in their time of need, because when calamities happen the wages of the people cannot match the increase of prices.

In order to tackle the climate volatility problem and see a somewhat immediate result -- the Philippines can take adaptation measures instead. This approach involves the Philippines investing in the improvement of existing infrastructure and equipping them with the necessary guards to withstand extreme weather conditions not limited to: storms, floods, water intrusion, or erosion. Standards should also be implemented to ensure the long term success of the plan as it will make sure that the new infrastructure constructed will not succumb to the damages climate volatility can cause. This step is needed to combat the problem that was stated earlier regarding natural calamities disrupting the essential infrastructure needed for the distribution of food to the community. Another adaptation measure that the Philippines can take is investing in research related to the identification and breeding of certain crop varieties that are climate resilient -- crops that can survive being in drastic weather fluctuations and excessive moisture or lack thereof (Reyes 6) . The implementation of this part will assist in providing the community a reliable supply of food that will not waver in the face of climate volatility which will ultimately keep the community's food security intact.

It is imperative that long term solutions are implemented due to the fact that when the intensity of climate volatility increases in the future there comes the possibility that crucial and irreversible consequences on food security will increase. Taking this into consideration, it'll be important to observe and analyze the solutions various nations in the world have implemented in order to create a more efficient and

sustainable solution. Among various sectors around the world Japan is currently one of the countries that is best equipped to handle climate volatility. They have created programs and measures that not only tackle the agricultural sector, but also the industrial and architectural sides. The programs that they have implemented not only addresses the issues that temperature fluctuations can bring but also the emissions that the agricultural sector can bring which has the potential to worsen the problem even more. There are several practices that Japan has adopted in order to tackle variability in soil moisture that climate volatility can bring. One of which is the utilization of different irrigation systems for different types of crops for efficiency -- they may use drip irrigation when dealing with fruit trees, or intermittent irrigation for paddy rice. Another method they use is the usage of mulching and cover crops in order to retain the soil moisture if there is a spike in temperature. In order to avoid the unintended consequence that climate volatility can bring which can include the outbreak of pests Japan implemented a timely pest control system based on the forecast of pest outbreaks. An ideal agricultural system that is built to withstand climate volatility in the Philippines will encompass the practices that the Japanese are currently using to tackle the problem of climate volatility along with the other measures that were presented such as the coordination of PAGASA and the farmers to the adaptation measures that were presented previously.

In the aforementioned solutions, the Filipino government plays a major role in addressing climate volatility and it should be noted that presenting the government with this responsibility creates barriers that makes it difficult to implement as there are a lot of parties that are involved in the process to apply these solutions. There may be a conflict of interests which can lead to these solutions being altered which may lead to it being rendered ineffective and inefficient. There could also be a problem with allocating the funding to these projects. This is where the people have a huge role as in a democracy every citizen has a voice through their votes, and through the power of the people's voice action may happen. If everyone advocates and pushes for these solutions the Philippines will be able to tackle the consequences climate volatility will bring and lead the country into the right direction.

CONCLUSION

Therefore, I conclude that climate volatility is an issue that needs to be addressed in the Philippines in order to secure their citizen's right to food. There are a lot of direct and indirect implications that climate volatility has that can harm the nation's agricultural sector, which in turn causes the nation's food security to be in peril. However, one must acknowledge that there are multiple avenues that the Philippines can take to combat and mitigate the effects of climate volatility. With the combined efforts of the community and various government agencies they can implement the strategies needed to lead the world one step closer into a more food secure place.

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