Nikhil Kapur
Eastview High School
Apple Valley, MN
Vietnam, Climate Volatility

Vietnam: A Comprehensive Course of Action in the Battle against Climate Volatility

For many Americans, Vietnam is closely associated with a war where, between 1955 and 1975, the United States and USSR fueled and supported conflict between a divided North and South Vietnam. The Vietnam War notably destabilized much of Southeastern Asia, as surrounding countries became victims of American bombing campaigns. Even 40 years later, there are tensions within the country over who ultimately won the war. Although some Western citizens may be led to believe that Vietnam is a nation still shrouded in turmoil and remains economically feeble, the country has its sights set on becoming an economic powerhouse by 2020 and is one of the fastest growing economies in the world (BBC, 2018). Unfortunately, rather than pursuing goals of economic vitality, Vietnam will likely be forced to fight another battle, only this time with the increasingly volatile environment.

Vietnam is a Southeast Asian country bordering China, Laos, Cambodia, and the Pacific Ocean. It has a total land area of 331,210 square kilometers and is home to over 97 million people, making it one of the most densely populated countries in the world. While a majority of Vietnamese citizens practice Buddhism, the nation still holds pockets of ethnic minorities.

To understand the toll that natural phenomena take on Vietnam, it is important to understand its geography. The average point in Vietnam is about 350 meters above sea level. Additionally, the country as a whole is largely bordered by the sea. Vietnam has roughly 3500 km of shore line, where the width of the nation ranges from 50 km to 500 km (Central Intelligence Agency, 2018). This indicates that a majority of the nation is tied to the sea, both culturally and economically. While the average standard of living is slightly below Western benchmarks, there have been vast improvements in the past two decades. One indication of this trend is in the health sector. Access to healthcare has skyrocketed in tandem with a sharp decline in infant mortality rates. While there are still clear disparities between rural and urban areas, nearly 98% of the Vietnamese people now have access to clean drinking water, whereas 25 years ago, only 60% did (World Health Organization, 2016).

Politically, Vietnam abides by a constitutional framework, which establishes a Prime Minister, Parliament, and other elected officials. Despite this framework, Vietnam is controlled by a single Communist Party. The socialist ideals and governance introduced by this party have gone a long way to shape modern Vietnam. For instance, a traditional family unit in Vietnam was patriarchal, where the father held the utmost power over his wife and children (BBC, 2018). Furthermore, a large extended family was traditionally preferred over a “nuclear” family. In recent decades, however, there has been a shift away from this traditional paradigm. Under the rule of the Communist Party, small, nuclear family units have been encouraged as they are considered beneficial to the socialist state, while patriarchal families are dubbed feudal. The government has also passed a series of laws encouraging equal rights between spouses and de-incentivizing having several children (Fisher, 2007). As for the economy, Vietnam seems to be thriving. With a GDP of $224 billion, millions of people continue to be lifted out of dire poverty every year as the middle class expands. In fact, it has been reported that poverty rates for *ethnic minorities* alone have fallen by 13 percentage points in the past ten years, which stands as another indication of robust economic growth (World Bank, 2018). As productivity has increased, particularly in the manufacturing sector, the emergence of a consumer society has been noted. However, the most important parts of the economy are by far the agricultural sector and aquatic industries, which account for

over half of the jobs in the country. More specifically, the production of rice and the fishing industry help support the national economy and are a primary form of sustenance for many of the Vietnamese people (Osborne, 2019).

Unfortunately, these major industries are at serious risk with more volatile climates. Vietnam is well known for its low-lying, fertile soil, making it one of the most agriculturally productive regions in the world. Much of the world's fish, fruits, and rice can be traced back to the Vietnamese Mekong Delta on the southern tip of the country. Over the past ten years, rising sea levels, increasingly violent storms, and shoreline pollution have resulted in a net population loss of 1 million from the Mekong Delta as people migrate North (Chapman, 2019). Shockingly, a Vietnamese Government report issued in 2013 concluded that *none* of the farmers in the southern commune of An Thạnh Đông had any substantial crop yields. The entire area had lost its sugarcane due a record breaking tropical storm, which brought high levels of salt into the plants' soil. It is estimated that a total of 9.1 million tons of crops, particularly rice, will be lost *annually* by 2050 at the rate of current trajectories (USAID, 2017). The same government report previously referenced found that roughly 15% of farmers decided to leave the delta as a direct result of the changing climate, where the biggest reason cited for leaving the delta was to escape poverty. However, the report concludes that the largest contributing factor behind depleting returns on agricultural investments was destruction of goods and property by natural events. Thus, it can reasonably be concluded climate volatility played a significant role in the impoverishment of local farmers. The situation is only going to get direr.

The issue of increasing climate volatility will hit Vietnam harder than almost any other country. The Notre Dame Global Adaptation Initiative Index indicates that, as of July 2019, Vietnam is ranked 89th out of 181 identified countries in terms of its ability to adapt to climate change (Notre Dame, 2019). While it is true that this figure places Vietnam in the middle — and not the very bottom — of a lengthy list of nations, climate volatility will take a far greater toll on Vietnam than most other nations due to its size and ambitious economic plans. A report authored by the Vietnamese Ministry of Natural Resources and Environment finds that a one meter rise in sea levels would result in a 10% loss of national gross domestic product. While the current growth rate is 2.8 millimeters/year, the report suggests that the rising sea level adds massive volumes of water to the coastal region and can lead to longer lasting, more erratic, and more violent storms. Unfortunately, this volatility has already manifested in other ways than tropical storms, which were already common in Southeast Asian oceans. Rising temperatures and heavier rains over the last 50 years have also been recorded inland and towards the Northern part of Vietnam, with an average of 0.5° C and 20% increase, respectively (NHAT, NDG). These two occurrences have several ramifications, most notably increasing the frequency of landslides which block roads and disrupt business activity. Furthermore, landslides deposit copious volumes of silt into rivers and streams, making it harder to fish and access clean drinking water.

As is the case with climate change around the world, the effects of harsher storms and rising temperatures take the heaviest toll on ethnic minorities and the impoverished. While the government tends to focus on reforms that help mainly the wealthy and those who are in urban areas, the effects climate change has had on rural communities have gone, to a certain extent, ignored (Shukman, 2018). Last year alone, there was an increase in the number of Vietnamese people who were malnourished even though the overall economy grew slightly (Chapman, 2019). This indicates that even from a governmental standpoint, the way that worsening climate is being addressed is not helping the people who need it the most.

Some important groundwork has been laid for future climate reform, but not nearly enough. Vietnam's government has already begun to establish domestic programs to fight the effects of a deteriorating climate, but such initiatives continue to focus on data collection rather than building infrastructure and ensuring agricultural security. As a part of a long term initiative, Ho Chi Minh City has established its Climate Action Plan for 2020-30, aiming to reduce their carbon emissions, encourage electric

transportation, and shift to renewable energy consumption. Similar policy is likely to take root around the country. However, there are two main issues with such a plan. Some argue that development of the green energy sector, largely through the deployment of solar panels, will benefit the economy and grow rural communities. While this may be beneficial in the long run, many of the rural communities and economies which are being benefited by the development of green tech stand at major risk with worsening tropical storms. Additionally, the CAP fails to explicitly target environmental sanitation or the prevention of natural disasters, making these issues less likely to receive direct consideration in the future.

Hope for a solution still exists. There are vital steps that the Vietnamese government must take in order to prepare for increasingly stronger storms, rain, and temperatures. First, Vietnam must draw the attention of the international community to its situation regarding climate volatility. While Western nations tend to pursue policies of CO_2 reduction, as seen with the Paris Agreement, Vietnam needs to convey the importance of addressing climate *volatility* through international cooperation and increased funding into infrastructure. The key difference is that the former efforts attempt to slow the effects of a changing climate, whereas the latter help combat the already existent threats. Additional resources and attention is needed to create the necessary changes in infrastructure and public policy to help the Vietnamese people prepare for harsher conditions. This is why it is important for Vietnam to clearly and continuously relate the damage already seen in their country to the rest of the world. Unlike Vietnam and other coastal nations, a majority of landlocked and industrialized countries don't endure the same problems that worsening climates cause for their national economies and thus do not consider climate action to be a top priority. This is certainly not the case in Vietnam, where nearly 50% of the population feel that addressing worsening climate conditions is the number one task facing their nation (Galvin, 2018). Vietnam has already started to become a leading international voice in the fight against climate change by hosting a landmark UN Climate Summit late last year. However, if they continue to draw attention to their issues and ask for help from other major countries, Vietnam can become the face of a new wave of targeted environmental reforms, which encourage addressing high-risk zones, rather than the status quo which incentives countries having broad goals to help the climate which they do not always achieve.

In the short term, Vietnam needs to focus less of its resources on Green Energy Development and rather on building barriers to absorb the impact of storms and rains on high-risk coastal regions in the South and along the Northeastern border. It is necessary to prioritize development of storm and wind breaking devices along shores in order to dampen the effects of more volatile storm surges. Such infrastructure should include elevating embankments and coastal polders, which are manmade concrete slopes that absorb the shocks of rushing water, provide drainage, and prevent landslides. There has been limited development of such structures in the country's coastal regions thus far. For a clear model, Vietnam should follow in the footsteps of Bangladesh, where over $10 Billion has gone into the development of both embankments and coastal polders, as well as cyclone shelters, early warning systems, and other tools for local emergency services to deal with flooding (World Bank, 2016). To attain funding for such projects, Vietnam can look to international groups such as The World Bank and their Climate Change Action Plan, who are committed to investing in such ventures. In order to adapt to worsening conditions in the future, embankments and polders must be ubiquitous along the southern end of Vietnam and certainly require more attention and funding from the government.

Another major issue that must be addressed is the agriculture problem; powerful storms, strong rains, and fluctuating temperatures erode vital lands and subject them to bouts of flooding and drought. While it is true that development of barriers and embankments will go a long way to help mitigate the issue, agriculture still needs extra protection as it provides much of the workforce and food for Vietnam, if not the whole world. In the short term, policy makers must focus on reducing soil erosion. To do this, they should encourage farmers to build insulating stone, sand, and metal barriers around their crops in order to limit the movement of water. The government should also encourage farmers to plant crops on higher ground to limit the effects of both stagnant and rushing water. In the long term, crop production

(especially that of rice) should be relocated northwest, which is currently experiencing less exposure to rainfall and tropical storms than the South where most of the countries rice is grown. While it will certainly be hard to inspire such a dramatic shift of location, through subsidies and other incentives, the Vietnamese government should certainly take this gradual approach.

It is important to note that Vietnam must not only take steps to prevent future crises, but also to help alleviate the destruction caused by the previous storms as well. Many prominent deltas in the Southern part of Vietnam face high salinity rates combined with dark, dirty water which harms local fisheries and farmers. The government must invest in water filtration facilities to clean up rivers and low lying reservoirs which many people rely on to survive. This will also help incentivize people to stay in the region as conditions improve, helping to keep local economies alive. Additionally, desalination facilities located closer to the shoreline could be extremely beneficial as well, as Gnaneswar Gude argues in his 2018 book titled “Emerging Technologies for Sustainable Desalination Handbook”, desalinated water that comes from coastal regions can be used to irrigate crops inland (Gude, 2018). Such methods have proven successful from Spain, to Israel, and even California. While this technique is used primarily for arid climates, such facilities can help flush out seawater brought in by storms, and help revitalize the dry climate more inland.

While targeted solutions in infrastructure and agriculture as well as addressing existing issues are vital, the Vietnamese government must also set up emergency response and assessment task forces to help in the aftermath of future powerful storms or rainfall. Such task forces can go to damaged regions and help locals to assess the conditions of their communities, help restore buildings and land as quickly as possible, and help to give an accurate account of the damage done. At implementation, locals should be given the tools to measure and report the damage being done to their crops, making the information reliable and centralized. This will help by quickly restoring the cultivation of food back to its expected level, while helping the Vietnamese government find areas of improvement in future prevention methods.

Ultimately, it requires a thorough and targeted approach for Vietnam to tackle the impending challenges that will arise due to climate volatility. Through preventative infrastructure, specified task forces, and a combination of short-term and long-term policy, there is hope for Vietnam to preserve the agricultural and fishing industries which are crucial to its survival.

Works Cited

"Bangladesh: Building Resilience to Climate Change." *World Bank*, 2016, www.worldbank.org/en/results/2016/10/07/bangladesh-building-resilience-to-climate-change.

Chapman, Alex, and Van Pham Dang Tri. "Climate Change Is Triggering a Migrant Crisis in Vietnam." *The Conversation*, 2 Feb. 2019, theconversation.com/climate-change-is-triggering-a-migrant-crisis-in-vietnam-88791.

"Climate Change Risk Profile: Vietnam." *Climatelinks.org*, USAID, Jan. 2017, www.climatelinks.org/sites/default/files/asset/document/2017_USAID_Vietnam%20climate%20risk%20profile.pdf.

Fisher, Elyse. "Vietnam Cultural Portfolio." *Vietnamese Family*, 2007, academic.depauw.edu/mkfinney_web/teaching/Com227/culturalPortfolios/VIETNAM/VIETNAM/family.html.

Galvin, Gaby. "Climate Change Is A Top Threat For These 5 Countries." *U.S. News & World Report*, U.S. News & World Report, 2018, www.usnews.com/news/best-countries/articles/2018-01-24/why-climate-change-worries-these-countries-most.

Gude, Veera Gnaneswar. *Emerging Technologies for Sustainable Desalination Handbook*. Butterworth-Heinemann, 2018.

Hòa, Kính. "Đồng Bằng Sông Cửu Long Trước Hai Đe Dọa Nghiêm Trọng: Thiếu Nước Và Phù Sa." *Radio Free Asia*, Radio Free Asia, 30 June 2017, www.rfa.org/vietnamese/in_depth/mekong-delta-facing-menaces-06302017110825.html.

News, Vietnam. "HCM City Builds New Climate-Change Response Plan - Viet Nam." *ReliefWeb*, July 2019, reliefweb.int/report/viet-nam/hcm-city-builds-new-climate-change-response-plan.

NHAT, Le Minh. "Climate Change Impacts and Adaptation Efforts in Vietnam." *UNFCC*, Ministry of Natural Resources and Enviornment, unfccc.int/files/adaptation/application/pdf/viet_nam_summary_cca.pdf.

Osborne, Milton Edgeworth, and Joseph Buttinger. "Vietnam." *Encyclopædia Britannica*, Encyclopædia Britannica, Inc., 7 Feb. 2019, www.britannica.com/place/Vietnam/Government-and-society.

Shukman, David. “Vietnam's Children and the Fear of Climate Change.” *BBC News*, BBC, 4 Oct. 2018, www.bbc.com/news/science-environment-45738136.

University of Notre Dame. “Country Index // Notre Dame Global Adaptation Initiative // University of Notre Dame.” *Notre Dame Global Adaptation Initiative*, 2019, gain.nd.edu/our-work/country-index/.

“Viet Nam: Closer to Bringing Drinking Water and Sanitation to All.” *World Health Organization*, World Health Organization, 12 Jan. 2016, www.who.int/features/2015/viet-nam-water-sanitation/en/.

“Vietnam Continues to Reduce Poverty, According to WB Report.” *World Bank*, Apr. 2018, www.worldbank.org/en/news/press-release/2018/04/05/vietnam-continues-to-reduce-poverty-according-to-world-bank-report.

“Vietnam Country Profile.” *BBC News*, BBC, 24 Sept. 2018, www.bbc.com/news/world-asia-pacific-16567315.

“The World Factbook: Vietnam.” *Central Intelligence Agency*, Central Intelligence Agency, 1 Feb. 2018, www.cia.gov/library/publications/the-world-factbook/geos/vm.html.