

Ella Cecil-Starlin

East High School

Sioux City, Iowa, USA

Bangladesh, Climate Volatility

### **Bangladesh: The Climate Crisis**

Bangladesh is one of the most densely populated countries in the world. It houses a population of around 167 million people in an area just slightly smaller than Georgia, which has a population of 10.62 million. With this dense of a population, food needs to be readily available in copious quantities. But Bangladesh has a monsoon climate and experiences catastrophic flood seasons every year. These floods destroy crops and take the lives of thousands. There have been some ideas to solve the problem of devastating floods, but they are not sustainable and have failed in the past, exacerbating the damage from the flooding. Most of the solutions that have been implemented, such as embankments, have tried to stop flooding completely. This is not the solution. Bangladesh needs the flood waters to spread silt and sediment across the land which helps to rebuild it. A simple solution could be just what Bangladesh needs. Trees could be planted around the various rivers in Bangladesh to prevent severe floods but still allow some water flow. This manageable and sustainable solution would inevitably change the climate crisis in Bangladesh and improve the lives of average families.

The average family in Bangladesh has four to five people and does not have proper housing. Most families in rural areas live in slums consisting of houses made of mud and bamboo. Even in urban areas, most people live in small houses and apartments. Only the very wealthy have large houses. Most families eat lots of rice and fish. They also eat eggs and vegetables and use a variety of common spices that are available. In urban areas, families can get food from shopping malls and convenience stores. Rural Bangladeshis can also get food from convenience stores. Most food that Bangladeshis eat is cooked over a fuel burning stove which creates air pollution in their homes. The Improved Cook Stoves (ICS) program has been trying to help Bangladeshis gain access to better means of cooking, but many families have been cautious and worried about how it could affect the quality of their food. “But that is changing with sustained efforts through the ICS program, which began addressing the problem holistically in May 2013 by focusing on the gender and health aspects of cleaner cooking” (Bangladesh: Healthier Homes through Improved Cookstoves paragraph 4). Peoples in Bangladesh have similar jobs, lifestyles, and sources of food. Of course, to support themselves and their families, Bangladeshis must have a source of income. There are many different job markets such as garment production, agriculture, or jewelry making.

The average income of a working person in Bangladesh is roughly \$154 USD. Most employed people work in the field of agriculture or garment production. People in Bangladesh have access to free education up to eighth grade, but higher education does cost money. Basic healthcare is available for free. But this healthcare does not meet most people’s needs. Hundreds of deaths could be prevented if there was a better system of healthcare in place. “Bangladesh's high infant mortality rate is due partly to widespread malnutrition, and undernourished women are at risk of giving birth to babies with low birth weights” (Bangladesh: Health). Many Bangladeshis also do not have access to clean drinking water which takes a large toll on them. “Groundwater is also not safe as the threat of arsenic contamination is very high all over the country. Ninety-seven percent of the total population in rural areas depend on the tubewells for drinking water; as a result, 35 to 77 million people have been chronically exposed to arsenic in the first decade of the millennium (Flanagan et al., 2012). 8.5% of the total death in Bangladesh is caused by water, sanitation and hygiene-related issues (UN-Water, 2013)” (Hasan paragraph 3). In urban Bangladesh, electricity is widely available and used by the wealthy. But in rural areas there is not access to electricity. Many families do not even have access to toilets and the means they do have are incredibly

unsanitary. “Roads are not extensive, and most are not paved. People take either a bus, a rickshaw, or a baby-taxi for public transportation. For private transport, most people walk or ride bicycles, but private taxis are expensive. Because of the many rivers, land transportation links are poorly developed. However, rivers are used to transport people and goods throughout the country” (Bangladesh: Transportation and Communications paragraph 1). Public transportation in Bangladesh is often crowded and can be unsafe. Private transportation is much safer, but it is expensive. The use of mobile phones in Bangladesh is on the rise as the number of internet café’s increases. While some conditions are improving, there are still many other challenges that families face regarding income and access to nutritious food.

The amount of arable land in Bangladesh has been declining which negatively impacts the amount of food that can be produced. There is also a lack of diversity in agriculture in Bangladesh, which is not good for soil, and can be detrimental to the health of the population. Diversity and balance in the food that people eat is incredibly important to overall health. One of the biggest challenges that families face is natural disasters exacerbated by climate change. Natural disasters, such as monsoons and floods, kill hundreds of people each year and destroy crops that would prevent malnutrition. The impact of climate change is much worse in rural areas which are mostly composed of people in poverty. While some trends are improving, such as life expectancy which is around 72 years as of 2019, (Life Expectancy at birth, total (years)-Bangladesh), there are still too many deaths caused by hunger and climate change every year. Food insecurity affects the elderly and young children the most, especially women and Indigenous people. Indigenous families have been struggling, “The families live in one of the poorest areas of the country, with low household incomes and poor nutritional status” (Strengthening the Resilience of Indigenous Communities in Bangladesh paragraph 1). The biggest contributor to this trend is insufficient methods of flood prevention.

There is little being done to prevent climate change as most of the current and past solutions have been reactionary. These solutions have also been working against nature instead of with it. Flooding is inevitable and can be beneficial. Floods move silt and sediment across the land which adds nutrients to the soil and prevents erosion. The land is already dangerously close to sea level, but flooding can help build it up. Embankments and walls have been used to block flood waters from reaching residential and agricultural areas, but these barriers are not permanent. There have been crises because of overflow and breakage of these walls. The water builds up and then breaks through causing much more damage than a natural flood. “The prospect of fortified walls to contain rivers might seem alluring, but the high-water mark in parts of south-west Bangladesh has been rising faster due in part to the constriction of water flow caused by embankments, putting these areas at a higher risk of flooding. ‘It’s like stepping on a gardening hose and then releasing it,’ says Mohamad Khalequzzaman, a geoscientist and coastal oceanographer at Lock Haven University, Pennsylvania” (Imtiaz paragraph 7). These so-called solutions are intensifying the problem. Bangladesh will benefit more from working with the environment, not against it.

One solution that has not been tried before could be just what Bangladesh needs. Instead of building walls to stop flooding altogether, Bangladesh could work with nature to minimize the damage of inevitable natural disasters. Trees near the edges of rivers can help decrease the overflow during rainstorms. Trees can help prevent flooding in many ways. One of the biggest ways is soaking up water after storms so it does not run off into lakes, rivers, streams etc. which is what causes them to overflow. Tree roots can hold the soil around them in place, which reduces erosion. The leaves of trees also have a significant impact. Leaves stifle the force of raindrops hitting the ground, so even less erosion happens. “Lots of raindrops that land on leaves evaporate straight into the air- so less water reaches the ground. And, leaves intercept rainfall, slowing the rate that water flows into rivers and reducing the risk it’ll burst its banks” (Kemp paragraph 11). Trees can also help people physically and mentally.

“Numerous studies show that both exercising in forests and simply sitting looking at trees reduce blood pressure as well as the stress-related hormones cortisol and adrenaline” (Immerse Yourself in a Forest for Better Health paragraph 14). These studies have been so significant that new terms have been created, “in

1982, the Japanese Ministry of Agriculture, Forestry and Fisheries even coined a term for it: shinrin-yoku. It means taking in the forest atmosphere or ‘forest bathing,’ and the ministry encourages people to visit forests to relieve stress and improve health” (Immerse Yourself in a Forest for Better Health paragraph 10). “Using the Profile of Mood States test, researchers found that forest bathing trips significantly decreased the scores for anxiety, depression, anger, confusion, and fatigue. And because stress inhibits the immune system, the stress-reduction benefits of forests are further magnified” (Immerse Yourself in a Forest for Better Health paragraph 12). Immune system boosts could be incredibly helpful for Bangladeshis as it would decrease their likelihood of getting sick and losing nutrition levels. Even planting trees has a positive impact on people and has been shown before. Using trees to prevent flooding has been implemented before in urban areas of the UK that experience regular flooding.

This solution has been applied in Wolverley, Worcestershire, a village town in the UK that has felt the massive impact of flooding for decades. The people of Wolverley felt like their help planting trees was really making an impact. “For those who’ve come with climate change in mind, it is therapeutic to see some change happening right in front of them” (Kemp paragraph 27). Trees also take in carbon and release oxygen which can help reduce climate change. Climate change is the main reason flooding has and continues to become worse. So, planting trees tackles two facets of this flooding problem; it helps prevent and minimize the damage of floods. While this solution does not solve every problem affecting the people of Bangladesh, it solves one of the fundamental issues, which also prevents smaller ones. This project could also easily be run by already existing organizations.

This project could be run by the main government of Bangladesh, local governments, civil organizations, or nonprofits. The government of Bangladesh could fund this project as they have funded other projects that have to do with climate change. Or the World Bank could fund this project, as they have worked with Bangladesh before and could be run by a volunteer organization called the Obhizatrik Foundation. The about section of the Obhizatrik Foundation’s website says, “OBHIZATRIK Foundation is a government registered (Reg No: S-12013) organization working towards overcoming socio-economic challenges that Bangladesh has been facing since its independence as a nation.” (Obhizatrik Foundation About Us paragraph 2). Since the Obhizatrik foundation is a volunteer organization Bangladeshis would have more of a direct impact on their own wellbeing. The changes to the methods of flood prevention might be more widely accepted if they are done by the people of Bangladesh or local organizations. It is important to remember that sending in people from a more developed country is not the solution. If outside organizations and volunteers are sent in to change things without permission from the population, it could lead to colonization. When one decides what is best for someone else without their input, they control them which is not the goal. However, with the cooperation of locals, this project could be incredibly successful.

In the past, locals have been resistant to help in forms other than just blocking the water. They understand that flooding is important, but there have not been many solutions proposed other than blocking the water. Some Indigenous communities have tried a method of building up the ground to have raised houses, “An area could be raised by digging and elevating the soil, before building – known as the ‘dig, elevate, dwell’ approach. Historically, this allowed homesteads to cope with all but the worst storms” (Imtiaz, paragraph 13). This solution would be difficult to implement in many areas especially urban cities. It also does not account for the changing climate. “Preparing for a world without structural defenses is going to be the way forward, says Rahman, who worked on the most recent master plan for Dhaka. He is planning settlements as they would exist in the absence of embankments or flood gates. Though shifting away from the conventional approach is a slow process. ‘Tension between the new understanding of water and the inertia of continued investment is fraught,’ he says” (Imtiaz paragraph 17). But there could be regulations or laws in place to prevent people from destroying or hurting the trees which would combat opposition. Meetings could be held where people can learn about the environment to further encourage them to allow change. These meetings could be taught by scholars already in Bangladesh who study the specific environment of Bangladesh. There could also be organized planting days in flood prone areas where

people could sign up or just show up to help plant trees and see the change happening. While the solution is being implemented, there could be food relief programs that bring food to families, especially in rural areas, until they have stable housing and food sources. This solution would take many years to be successful and only native trees could be planted, but it is worth the time to see real change.

Two thirds of one of the largest mangrove forests lies in Bangladesh. “The forest also provides essential ecosystem services including protection against natural disasters and rising sea levels. It also filters and assimilates pollutants from upstream run-off” (Knowledge Hub paragraph 2). These mangrove trees live off an environment submerged in water, so they would be perfect to plant around rivers. These trees are crucial for the survival of the people of Bangladesh, “In addition to supporting a rich assemblage of globally threatened wildlife, the Sundarbans provides essential natural resources, including fish, crustaceans, firewood, nipa palm and honey, for a large and growing human population living along the fringes of the mangrove forest” (Knowledge Hub paragraph 2). The root systems of mangroves can also filter pollutants from water which would help with Bangladesh’s water contamination problem. This solution solves many of the underlying problems in Bangladesh. Overall, this solution has many benefits and would not cause any damage to the people or environment.

This solution would help the climate, prevent catastrophic floods, and create better environments for people and animals to live in. So many people are struggling with food insecurity in Bangladesh even though some health trends have been improving. Bangladesh just needs a little more help to become a fully functioning country. The mangrove trees would prevent flooding and help clean the environment. Trees are beautiful and have physical and mental health benefits for people. There are so many benefits of trees along with a solution to Bangladesh’s problem. These Mangroves can help everyone in Bangladesh, especially the people living in poverty. There are hundreds of millions of people in Bangladesh who need help to survive, and it can be done.

## Works Cited

- "Bangladesh: Health." *CultureGrams Online Edition*, ProQuest, 2022, from [online.culturegrams.com/world/world\\_country\\_sections.php?cid=16&cn=Bangladesh&sname=Health&snid=22](https://online.culturegrams.com/world/world_country_sections.php?cid=16&cn=Bangladesh&sname=Health&snid=22). Accessed 27 January 2022.
- "Bangladesh: Transportation and Communications." *CultureGrams Online Edition*, ProQuest, 2022, from [online.culturegrams.com/world/world\\_country\\_sections.php?cid=16&cn=Bangladesh&sname=Transportation\\_and\\_Communications&snid=20](https://online.culturegrams.com/world/world_country_sections.php?cid=16&cn=Bangladesh&sname=Transportation_and_Communications&snid=20). Accessed 30 January 2022.
- "Detail." *Food and Agriculture Organization of the United Nations*, 17 Apr. 2018, <https://www.fao.org/resilience/news-events/detail/en/c/1111434/>. Accessed 1 January 2022.
- Hasan, Md. Khalid, et al. "Water Pollution in Bangladesh and Its Impact on Public Health." *Heliyon*, Elsevier, 2 Aug. 2019, <https://www.sciencedirect.com/science/article/pii/S2405844019358050>. Accessed 6 March 2022.
- "Immerse Yourself in a Forest for Better Health." *Immerse Yourself in a Forest for Better Health - NYS Dept. of Environmental Conservation*, <https://www.dec.ny.gov/lands/90720.html>. Accessed 4 March 2022.
- Intiaz, Aysha. "The Nation Learning to Embrace Flooding." *BBC Future*, BBC, 1 Dec. 2020, <https://www.bbc.com/future/article/20201201-bangladesh-the-devastating-floods-essential-for-life>. Accessed 5 February 2022.
- Kemp, Emma. "Planting Trees to Tackle Flooding." *The Ecologist*, 22 Mar. 2019, <https://theecologist.org/2019/mar/14/planting-trees-tackle-flooding>. Accessed 27 February 2022.
- Knowledge Hub. "Wildlife Conservation Society Bangladesh Mangrove Initiatives." *The Mangrove Alliance*, Global Mangrove Alliance, 26 July 2018, <https://www.mangrovealliance.org/wcs-bangladesh/#:~:text=The%20Sundarbans%20are%20the%20world's,two%2Dthirds%20lie%20within%20Bangladesh>. Accessed 15 March 2022.
- Obhizatrik Foundation. "We Provide Charity and Volunteering Service 2010." *Obhizatrik Foundation*, 2021, <https://obhizatrik.org/about>. Accessed 1 March 2022.
- World Bank Group "Bangladesh: Healthier Homes Through Improved Cookstoves." *World Bank*, from <https://www.worldbank.org/en/results/2018/11/01/bangladesh-healthier-homes-through-improved-cookstoves>. Accessed 31 January 2022.

World Bank Group “Life Expectancy at Birth, Total (Years) - Bangladesh.” *Data*, World Bank, 2019, <https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=BD>. Accessed 20 February 2022.