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India, Water Sanitation

India: A Journey to Better Water

Known for being the largest democracy country in the world, India has a large history and a large future. With an ever growing population, India will soon become the most populous country in the world, overtaking China in the near future, but this growth does not come without numerous risks. There are many environmental problems plaguing the country that worsen with time and only increase in proportion to the population. One of these environmental issues is the water pollution and the lessening of freshwater in homes of people living in India. Every year, nearly “38 million people suffer from waterborne diseases like typhoid, cholera, and hepatitis” due to poor water sanitation and lack of water (“How Water”). Fortunately, the government and groups in India that are aiming to lower the risks of waterborne diseases in India and other impacted countries.

India is the world’s second most populous country in the world only following China. However, India is expected to overtake China’s position as the largest country in 2026 where India’s population will hit 1.46 billion people. Even now, the population of India is at 1.38 billion people meaning it will increase over 100 million people in the next five years (“Population”). According to the World Bank, nearly $\frac{2}{3}$ of India’s population is rural, but India’s city population is growing every year. In India, more and more people are coming to cities to look for better opportunities and a steadier income. While some individuals find a better life, others have not leading to worse living conditions and even poverty for them. Due to the influx in cities and no stable job available, people have to live on the streets. In all of India, about 70 million people live in extreme poverty and while that number is decreasing, it is by no means a small amount (Slater). However, even individuals who are not in the category of extreme poverty have had issues in regards to their lifestyle. Many of these individuals facing poverty have a hard time finding clean water to drink in their daily lives creating an even larger issue with finding clean water.

India is known for being the country with the most public voters, but it is considered a fairly new government as it was only liberated from British rule in 1947. From that time, it was further separated into India, a majorly secular country, and Pakistan, a Muslim country. Influenced by the United States’ own government, Indians fought for a free nation and a democratic republic government. The system of government used in India has three major branches, the legislative, the executive, and the judicial. While the judicial branch is much like the judicial branch in America, the legislative and executive branches are constructed differently. In the legislative branch, there are two houses, the Lok Sabha, where members are elected from the people and the Rajya Sabha, where members are elected from state legislators (Karan). Then, there is the president, who is elected by an electoral vote, but the most powerful individual in the government is the Prime Minister who is elected directly by the public (Karan). While India does have a newer democracy, it still contains high levels of corruption as the

Transparency International corruption ranking India as 78 out of 175 in the world for corruption (Mourdoukoutas). Even though this number may seem low for a third world country, India has nearly a sixth of the world's population. With such high corruption, the rich only inch to get richer and may adjust some of the environmental laws and policies to fit their needs instead of the country's.

The majority of Indians remain quite close to their extended family where typically "interests of a family will take priority over those of the individual" (Pier). These extended families could be grandparents, aunts, uncles, cousins all living under the same roof or at least one call away. Much of India still has patriarchal rule in families where the elder male will make decisions regarding marriage and schooling for children. Families could be living in villages, where they would have a one story house or cities, where most families live in apartments. In India, families consume three meals, breakfast, lunch and dinner, but snacks are also quite common in a household. The majority of Indian foods are "rich with curries and spices" along with rice, flatbreads and chutneys (Zimmermann). About ¼ of the population consider themselves vegetarians while "lamb and chicken are common in main dishes for non-vegetarians" (Zimmermann). Food is typically cooked at home and is either grown on a family farm or bought from a local vendor.

Agriculture in India has been important for generations, but is slowly dying out because of newer opportunities in cities or the amount of debt farmers are in at this moment. Right now, about 155.22 million hectares of land is cultivated in India, which calculates out to about 47% of India. The main crops of Indian farmers include "rice, wheat, and several vegetables and fruits" ("India - Total Cultivated Area 2015"). Much of the major exports of India include "petroleum products, gems and jewelry, and drug formulations" and in agriculture, "major exports include spices, tea, coffee and tobacco" ("Topic: Exports from India"). While nearly half of India is cultivated land, most of the land is owned by families who live off of subsistence farming rather than specializing. Most of these farms have been decreasing in size with the average now approximating to 1.08 hectares or a little over 2 and ½ football fields (Padmanabhan). With the equator passing through, much of India has a hot, tropical climate, however there are snowy regions in the north of the country and a few rainforests as well. The major issue with agricultural growth and water is that many areas are unable to acquire clean water for their crops. Aside from that, pesticides are becoming more common for farmers to use, which is polluting the nearby water streams. In general, agriculture in India is simply unfit for the growth happening now.

Education and healthcare are also important aspects of Indian life that have been slowly improving throughout the years, but they still need quite some work. India's literacy rate has been increasing, but about 313 million individuals are still illiterate with the majority being women (Desai). The difference in education in men and women goes back to the cultural roots of families as women were traditionally only to be responsible to support the family. While gender roles are equalizing, more parents are deciding to send their child to school to earn a better future. Healthcare, as well, has been an issue dealt with by the government. In India, the National Health Policy was implemented in 2000 to give universal health care to all citizens ("Healthcare System in India"). The only issue with this is the difficulty of getting proper health care as there may be more physician shortages in both rural areas. This leads to wealthier families paying for their bills out of pocket while poorer families have to wait to receive

treatment. This again affects the dangerous path for poorer families and discourages them to reach out to medical professionals when they deal with any waterborne diseases.

While water pollution is such a large issue globally, it has been deeply defined in the rural areas of India throughout the years. About 50% of the population in India “has no access to safe drinking water” (“India’s Water Crisis”). Water, one of the essentials in human life, is unable to reach everyone in the country. Additionally, the effect of the coronavirus has made it even harder to stay healthy with the limited amount of water they have. This severity of the water crisis in India is increasing year by year as the population rises and the amount of freshwater in India decreases. For example, in rural areas, only 18% have direct tap water come through pipes while the rest have to attain water in other ways like using well water (Taylor). In many rural areas, water must go through treatment for it to be deemed drinkable water, but oftentimes, the water does not pass that requirement. However, even in many cities, like Delhi, which failed all 11 of its water quality tests in 2019, water sanitation is an issue that is not quite recognized (Desai). This points to the issue not only being found in rural communities as it was initially thought. Moreover, “about 70 percent of the freshwater sources in the country were found to be contaminated” demonstrating the initial water quality has deteriorated (“India - Total Cultivated Area 2015”). A large cause of this pollution in the water are the factories sending their runoff to the nearby freshwater and taking the extra freshwater for themselves. One instance of this in India is the Coke factories that are set up in the rural areas of India. These factories know there is no more freshwater that is available to them so they decide to dig up freshwater reservoirs from deep underground. This not only used up freshwater needed for the local villages to survive, but also dirtied the freshwater in surrounding areas. The pollution from the runoff not only affects the village’s drinking water, but even their agriculture and food supply. Coke offered to give their “cadmium laded waste sludge as “free fertilizer” to tribal farmers living near the farm” at one point, increasing the risks for their foods to threaten lives (Talk). This is a large problem for the farmers in rural India because they rely on the groundwater for “90% of their irrigation” and if there is no groundwater or it has become unable to be used, they cannot survive in those conditions.

While there seems to be many issues regarding the water crisis in India, both non-profit organizations and the government are working towards resolving these issues. One of these missions is the Jal Jeevan Mission implemented by Prime Minister Modi through the government. The Jal Jeevan Mission aims to give everyone in rural India a way to obtain freshwater through their taps (“About JJM”). The mission itself pays for the piping, drilling and transporting of freshwater to rural areas and hopes to improve the water sanitation issue by 2024. For rural communities to be able to have freshwater at the back of their homes will also give women the opportunity to spend time with other activities rather than collecting water. Studies have shown that Indian women “may take up to six trips a day” and walk about 10 miles a day on average, “carrying 15 litres a day” (“Water In Crisis”). After the implementation of tap water, women will be able to spend more time in their own education, their children’s life and be able to remain healthier without the immense amounts of suffering from the daily walks. Another organization working towards clean water is the Water Project which advocates for wells in the rural areas of India. This organization works towards freshwater by opening up the water reservoirs in many of the rural areas to secure water to the villagers. Additionally, organizations around the world have been working to improve the water quality in India. For instance, the

World Health Organization and United Nations Children's Fund have often convened "the priority area group on health, water, and sanitation" ("UN India"). To help in large projects like this, an ordinary citizen is able to volunteer in certain scenarios like being able to get together and help with placing pipes. For many major projects from organizations, much of their funding can also come from donations, which many ordinary citizens can give and they can help out in that way.

Other solutions that may improve the sanitation of water could be to give villages a better filtration system for their homes. Even with the government attempting to provide communities with water from safe drinking sites, there is always the risk of piping being incorrect or deteriorating in the following years. With a filtration system or filters in their homes, villagers have a better chance of drinking safe water even if the origin source or pipes have less than adequate water. A popular filtration system in Uganda is Purifaaya, which does not require any heating processes or additional materials aside from the water. The point is to pour the water into the filter and let the clean water run through with the filter utilizing a "combination of physical filtration and bacterial disinfection" ("Purifaaya Technical Info"). Another solution is to educate the public about drinking unsafe water and how to identify if their water is safe to drink. This will help reduce the amount of waterborne diseases as individuals will be able to understand the risks of drinking unsanitized water and stop individuals from polluting the water themselves. This education should be happening from a young age as older individuals are less likely to change their ways due to them only wanting to follow their habits. The best way for this to happen is government officials need to send someone who is aware of a village's culture and traditions to try to explain to the village what types of water is the best to drink. If the official is familiar with the village's culture, the villagers will be more likely to respond in a positive manner and follow the water recommendations since they have a connection or some trust in the individual themselves rather than the science. Additionally, a larger awareness could be given to landowners who are thinking about selling their land to factories. While there are many laws and policies implemented to try to prevent water pollution, many factories have avoided or bent the laws to fit their own needs and caused the nearby communities harm. With proper knowledge of the consequences of their actions, more people will attempt to fix the issues of sanitation. A final solution could be to start a campaign in rural areas or even the cities because both areas have suffered from dirty water. In this way, more people would become aware of the issue going on and encourage local governments to reform their policies to better local water issues. With this campaign, more people may also donate to areas where the water quality is low to help build pipes and wells. The campaign could be done online and posted to websites like change.org which deals with many of the social and environmental issues that deserve to be fought for. Individuals would be able to spread the word through social media and sharing through texts to create awareness of the situation.

Overall, it will take a large group in India taking initiative to start to have an impact on the future. Even if the government is trying to resolve the issue, it cannot do it without the help and agreement of the public. Additionally, the funding for these projects must come from taxes of the common people for infrastructure. Otherwise, the government will not be able to have enough money to create the ideal changes for a sustainable solution to the water crisis. However, it is a good idea to have increased awareness of the issue before any true taxes are implemented. It is better to give individuals the opportunity to help before claiming they are selfish and

increasing taxes on a project they do not understand. The question of foreign aid is also brought up, but overall, it might not be necessary with the growth of India. One of the main problems is how money is being used in individual states. With the coronavirus pandemic, the distribution issues of money were truly highlighted, however, if this is able to be revised, there is a high probability that money from proper taxation will at the very least reduce the problem.

All in all, water sanitation is a large issue in India that needs to be rectified in the next few years. With the population of India reaching a high of 1.46 billion in the next 5 years, individuals in the country will not have enough fresh drinking water to thrive. With the amount of pollution in the water, the few solutions to lessen this crisis is to prevent further pollution, educate the public about unsafe water conditions and attempt to supply areas about India with proper sanitized water. Working towards recommended water quality means working towards a healthy future.

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