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India, Water Sanitation

India is a beautiful country in South Asia known for their amazing spicy food and beautiful culture. But have you wondered what the main concern in India is today? Let's take a look at India’s background and what a typical family does and does not have. To start off, it is important to know how India's government operates and how they are leading one of the biggest countries in the world. India is a Federal Parliamentary republic which means there is someone who is the head of state that usually comes from the legislature. Although India is not as big as China, they have the largest population in the world by country with over 1.45 billion (Total Population, 2023). Most of their population lives in rural areas whereas 36.4% of their population lives in urban areas (Antarctica Information Program, 2023). Most families in India, since they live in rural areas, are able to have their own farms and are run by these families. This makes about 60.05% of the land currently cultivated. This is a good thing for India and agriculture because they can produce more crops to provide for families and more to export. Average farm sizes are estimated to be 1.08 hectares. That is equivalent to 2.47 acres, and an acre, visually, is roughly a typical football field which is 120 yards long. Moving on to what an average family in India looks like, we can see that most families aren’t doing as bad as the world perceives them. When people think of India, they think most children aren't enrolled in school. However, that is not true. Over 90% of children are enrolled in school. The biggest concern to anyone would be whether someone has healthcare. In India, healthcare is actually free and is accessible to everyone. Most families in India are fortunate to live in flats and apartments with an average of 4.44 people in each family. This is because typical jobs in India are Medical assistant, retail sales associate, and warehouse supervisor. The highest paying job out of the three is medical assistant with an average wage of ₹1,84,159 per year (2122.62 usd). A retail sales associate has an average wage of ₹2,11,846 per year (2545.27 usd). And lastly the average wage of a warehouse supervisor is ₹2,35,372 per year (2827.92 usd). This provides enough money to buy their staples in their diets such as rice, wheat, vegetables, lentils, fruits, and sometimes meat. They have a special way to cook and it's called chaunk/ Tadka which is a process that is also referred to as tempering. Tempering is when you use different temperatures to cook food. The good news is that about 15% of their imported foods are from the USA. The growing conditions are moderate with a tropical monsoon in the south. This part of Southern Asia has flat and rolling planes with deserts in the west. Families in India have very good access to drinkable water with 95.5% of the population having access. Most people have access to other things such as electricity, toilets, telephones, roads and local markets. Electricity is accessible to 99.5% of the population, telephone usage (subscriptions) is 1.15 which is more than half of the population. India has 6,371,847 km of roadways including national highways and expressways, state highways, and other types of roads. So what is actually wrong with India? Although the country is thriving, we need to look at what exactly they are doing to succeed. As we recall, the most important factor in their diet is rice and wheat. Rice is a seed from the grass species, Oryza sativa. To grow rice, you first have to plant them in prepared beds until they are about 25-50 days old. Once the seedlings are mature enough, the rice seedling will be transported to a field or paddy and is submerged under 5-10 cm of water. Although that might not seem like a lot of water, 129,471 tons of rice is produced. Think about all of the water that is used to grow that much rice. When we look into the SDG’s of India, water sanitation isn’t improving as much as it needs to. Accessible water to the people in India is easy because we have created water purification systems for average households, but what about the water that is needed to grow their crops? Luckily, there are new ways to improve their water quality and sanitation. We can take a look at their progression now and use that to develop ways that can help the progression such as looking at what most cities are doing to the water. In some towns such as the Cuddalore district, we can see that some workers in that town are dumping waste into Indian rivers. Using that information, we can find ways to prevent that from happening or we find ways to have an even stronger water purification system.

So how can India move forward? Looking at their SDG report card, we can see that about 71.3% of the population has used basic sanitation services such as garbage collection since 2020 (Sustainable Development Report, 2023). Although it isn't less than 50%, that percentage is still concerning for people's health and environment. Rivers such as the Ganges, Yamuna, and Godavari river are polluted with trash that has been accumulating the past couple of years. So being able to solve this crisis with just one solution would be close to impossible. That’s why the best way to solve this predicament is to introduce machinery to clean up water sources. Currently, India’s GDP since 2022 is 3.42 trillion (World Food Bank, 2022). Keeping that in mind, it wouldn’t be unrealistic for ships to capture the trash that is clogging up water systems. Having boats with nets connected to each other collect trash from rivers on a regular basis would speed up the process to cleaner water. Then once the trash is collected, professionals could sort the trash out properly and dispose of it as it should have been disposed of.

Currently, the Ministry of Drinking Water and Sanitation (MDWS) and the government of India is proposing to do regular monitoring protocols to ensure the safety of drinking water (Dr. Rao). What this means is that there will be regular monitoring to regulate its quality of the water and identify chemical and microbial contamination in their distribution systems. However, this isn’t enough to make water safe and because of that, many Indian households have POU systems which are point of use units that treat only one faucet. So instead of trying to fix water distribution systems, the Indian government could instead create a system that does not only treat one faucet but could treat one small village supply of water. For example, in Africa there are water wells that are put in place by a non profitable organization called The Water Project. The Water Project placed water projects in communities that lack access to clean drinkable water by purifying rainwater (The Water Project, 2024). However, as the World Factbook has stated, 95.5% of the population has access to drinkable water. So instead of having a non-profit organization make water projects, India could have the same approach to give farms access to clean water for their crops and fund it themselves. To add on to this solution, India's primary source to water is using groundwater. India could use the same idea as the Water Project and use rainwater and purify it as the average rainfall India gets as a country is around 92.5 cm yearly. (BYJU’S Exam Prep).

Another way to solve this issue is to do regular cleaning for India's surface water. Surface water is a body of water that is on top of land. India generates 62 million tons of waste in one year, with 43 million tons of it being collected and 31 million tons of the trash is discarded in wasteyards (International Trade Administration, 2023). Only 70% of trash that is produced in India is collected and disposed properly. Some citizens dump trash into rivers and the Indian Ocean to dispose of trash because it is taking up space in their town and also leaves an unpleasant smell. Approximately 11 million tons of trash is dumped into oceans and ends up in the Indian Ocean which makes it the second most polluted ocean (Nkarta). So in order to create safer and cleaner drinking water, it is important to start with daily but strict trash collection. To do this, India could collect trash in trucks and transport it to either dump it in their landfill in Mumbai or instead sort it and recycle the plastic that could be found in the waste that is collected. It is also important to spread awareness to the citizens as it is also the community’s responsibility to throw out their trash accordingly. With the help of the public, the trash collection would conclude more rapidly and can also create awareness. So in conclusion, there are many ways to solve this predicament such as cleaning and collecting garbage from towns and the ocean where it ends up due to pollution. Using rainwater instead of groundwater could also improve water scarcity and at the end of the day help agriculture as a whole starting with India.

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