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India, Factor 2: Water Scarcity

India:

India is a large country with a large population of 1.267 billion people and growing (“Rural Population”). A family living in a rural area has numerous problems that the average person cannot even fathom. If that rural family has farming as its main occupation, then because of water scarcity, it turns their lives into a nightmare. Almost 857,194,567 people live in rural areas (“Rural Population”). Almost 40% of those people depend on farming. The fact is that almost 70% of India’s people are living in rural areas.

A family living in a rural area with farming as their main occupation has an average monthly income of less than 6500 rs (Rukmini), which is close to about \$100 US. That is not a huge amount of money. The average number of people in a family is 4, so they have to manage on \$100 per month, which is only \$25 per person. That is less than \$1 per day. So with this amount of money, a family has to provide for all their day to day needs. This affects the standards of living, like the basic needs of food, clothes, and shelter. Also it endangers the next generation’s quality of education. A family with such a small income can only afford a basic education for their children, which usually does not go beyond 7<sup>th</sup> grade (Rukmini). Plus, such a small income can lead to a lack in health care. Not only do they not have sufficient clean water for good hygiene and survival, a rural farmer eats about 1900 calories per day (Sinha), which is way less than he needs for the amount of work he does.

The average farm size of an Indian farmer is 1.37 hectares (Sinha). In this piece of land he can only grow 1 type of crop produce. And because the amount of income he gets is very low, the choice that he is left with is that he can only produce cash crops, like sugarcane and tobacco (“Agriculture in India”). And because of the cash crops the farmer produces again and again it reduces the land fertility and could lead to a barren piece of land. There are still many farmers that do not take cash crops. India is the largest producer of spices, pulses and milk. Since India has the largest population of cows and buffalo (“Agriculture in India”), milk production is very important to many farmers. India is also the second largest producer of wheat and rice (“Agriculture in India”). A majority of the land is getting cultivated with these crops in addition to the cash crops. Indian agriculture is on a small scale because of the land. But there are some huge farms. The average size of huge farms is around 100 or more acres (“Agriculture in India”). This is the variety of farm sizes in India.

Animals are playing a major role to help with the agricultural activities like harvesting. There are machines available, but still some of the people depend upon animals for the harvesting and cultivating. There are still 5% of people that use cattle as a resource of farming (“Machine Drives”). That doesn't seem like very much, but still the amount of population we are considering is a large number. Some poor farmers who can not afford to breed the livestock they need to do the work, do it by themselves by carrying the heavy tools on their shoulders. This means that these poor farmers cannot produce as many crops because they rely on manpower and not machine power.

Some of the major barriers for expanding the agricultural activities is scarcity of rain (“Natural Resources”). Many parts of land in India which can be cultivated lie in the rain shadow region. It is the biggest barrier in the expansion of agriculture. Almost 13% or 41 million hectares of land is barren because of water scarcity (“Natural Resources”). Also because of financial reasons, poor people can not afford to buy enough fertilizers and seeds for their lands. This eventually results in the farmer selling the chunk of land he has and look for another job. Also that piece of land is developed into a commercial

place rather than again utilizing this land for agriculture. Another major problem is lack of water resources other than rain, like the stored water. In addition, due to the continuous use of the groundwater, the groundwater index has sunk very low. It was about 300m to 400m below the ground in 2002 (“Ground water”). In 2013 the data explained that it has gone to around 500m in some parts and 600m in other parts (“Ground water”). In some places it is sinking around 4m per year to 10m per year (“Ground water”).

After all these many difficulties involved with small farming, once the crops have been harvested, the farmer has another big challenge. The merchant, or middleman, who purchases the farmer’s products exploits the farmer by giving very low prices for his goods. He then turns around and sells the goods to the consumers for much higher prices. The farmer who does all the works sees little in return.

### Water Scarcity in India

India is not a water poor country. India receives an average of 1500 cms of rainfall every year (“Climate in India”). Cherrapunji is the place in India which receives the highest rainfall in the world (“Cherrapunji”). It receives around 2640 (“Cherrapunji”) cms of rainfall per year. The thing that causes water scarcity in India is poor water management. India also has an abundance of rivers. But the other part of it is India has the 17<sup>th</sup> largest desert, known as the Great Indian Desert which lies in the state of Rajasthan (“Thar Desert”). The water scarcity has caused so many problems that some people get water once every two weeks. In some places, there is such an acute water shortage that the people have to walk around 5 to 6 miles everyday to get drinking water. This is only because of poor water management. In agriculture, almost 75% (“Agriculture in India”) of farmers still don't have efficient ways of providing water to plants.

If we consider a family of four people living and one member of that family has to bring the only drinking water from a place which is around 5 to 6 miles from the house, it would take at least 2 rounds back and forth. And if this is the condition with the drinking water, then what about the regular water. It can result into degradation of health and life due to the stress caused.

And when it comes to farming, the farmers don't get the amount of water needed for the plants. The traditional ways of farming lead to water waste. One of the main reasons why the rural cities do not get enough water is because of the urban cities. Local water bodies are incapable of providing the amount of water needed in the highly populated cities. In order to provide the large amount of water needed in the cities, the water supply that is assigned to the farming sector and to the rural areas is turned toward the big cities. This happens almost 62% of the time (“Agriculture in India”), and the rural areas are badly affected by it.

And one of the issues that causes some of the water to be unusable is the dumping of the residual and chemical wastes from the industries without treating it. New Delhi, which is the capital of India, creates about 3.6 million cubic inches of waste every day, and not even half of it is treated before dumping it into the river (Planning Commission). In fact, 45% more is not included because it is not connected to the sewage system (Brooks). If this contaminated water is used to grow plants, what will be the health index of the produce? Eventually the people will get diseases from eating contaminated food. So if this is the case with one city, well let's think of this is happening all over India. A minimum of 2 to 4 liters (“Natural Resources”) of water is wasted by an individual, so millions and millions of tons of water goes to waste every day. And this waste water can not be used again. The leakages in the pipelines cause major water waste. In New Delhi alone, almost 40% of water is wasted because of the water leakage (Sengupta).

About 567,065 hectares of region in the central part of India is rain shadow region (Datti). This is not the whole data only part of it. If this much area is rain shadow, how much of an effect will it have on

agriculture? And what about global warming? Global warming is another issue that is leading to water scarcity. Water saving will give its share to help this cause to go better. It is important that the usage of water is done properly so that even a tiny drop of it can be saved and used for farming purposes. If the water is saved, the crops will get enough water to grow, and if the crops are good, eventually the farmers will earn enough and everyone will get high quality food rather than contaminated food. It will help people to be healthy, and they will work more if they are healthy. If they will work more, then they will get a good salary, which will help them prosper. This is the big cycle which will help improve the lives of all Indians.

### What Can We Do?

The first way to start saving water is to start on personal levels, like when bathing, use buckets that will help you to save water. Water which is used for washing utensils can be used again for watering small gardens. If we start on the personal level, we can contribute as a whole to our community. If I waste as little water as possible, it will be helpful in giving water to one other person or a plant. In that case, it is a community service starting on your personal level.

The thing about industrial waste is that it can be treated so that it will not harm the water bodies, and industries can also find another solution for dumping the waste, like reusing the waste somewhere else where it is needed. Governments should enforce strict rules on the industries so that not even a single drop of contaminated water goes out to the water body without treatment. Fines and other penalties should be issued to the industries that are not following the rules. If this is done, most of the waste will be treated and the water will be good to use again. Even if half of the industries follow this one rule, that will go a long way in providing healthy water to people and food sources.

Farmers, no matter how much land they farm, also need to use the appropriate methods of irrigation where water will not be wasted, like drip water irrigation and canal irrigation. Farmers should rotate their crops to avoid infertility of soil. And they should avoid using chemical fertilizers because when they use chemical fertilizers, the soil, water and the crops get contaminated. Using the methods of rainwater harvesting is the best way to save the rainwater and use it for irrigation which would help them and the community. Finally, the government should promote rainwater harvesting all over the country for individual use.

If all these implementations are put into effect now, they will be in use for some time. These changes will lead to the betterment of the society. It will be a boon for the future generations so they will not have to run out of the precious resources we rely on to feed our nation and the world. In just over half a century, the image will look so different than what it is now. And it only is not about India; it is about betterment of the whole community and the world.

### Conclusion

India is not a water deficit country, but due to severe neglect and lack of monitoring of water resource development projects, several regions in the country experience water shortage from time to time. Further neglect of this topic will lead to water scarcity during the next 1 to 2 decades. It is therefore necessary to prevent this crisis by making the best use of the available technologies and resources to conserve the existing water resources, convert them into utilizable form, and make efficient use of them for agriculture, industrial production and human consumption. Imposing regulatory measures to prevent the misuse of water and introducing rewards to encourage righteous use of water, will be helpful to conserve water. Awareness and orientation of all the water users to change their lifestyle to conserve water can help the country to reduce the water crisis in the future. The challenge is manageable provided we have favorable policies and mechanisms to help our people to change their lifestyles.

Sponsorship for taking machinery for farming also for the installation of the efficient water usage system will help to save the water. The perfect technological use should be done for growing crops and monitoring them. Also, as India is a developing country, it needs financial help growing, so that should be given.

One of the major initiatives taken to save water was Save Water Save Earth which has taken place since 2012. One initiative that started in the last year was *swacch bharat abhiyan*, which means clean India mission by the Indian Prime Minister, Mr. Narendra Modi. There are many initiatives that take place in small number, but help in collective growing. One of them is Nestle's mission to save water in Moga village of India.

In my opinion, the big organizations like the World Bank should provide financial support to the government for the specific causes and also they should monitor it. The United Nations branch of World Health Organization is trying to help India in cleaning the Ganges, which is considered the holy river of India, and also it is the most polluted river. It is so polluted that the index shows that it is not even suitable for bathing. The government should take the initiative to reach the individual level for promoting rainwater harvesting ("Water-Saving Initiative").

This channel will finally help the people, person to person, to develop and look toward the bright future. Having good quality of food and a sufficient amount of water is essential for a strong, healthy India. It would help small, poor farmers increase their income and standards of living. However, organizations, industries or the government cannot do everything. We, as responsible citizens of this world, should start with ourselves.

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