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India, Factor 9 Water and Sanitation

India: Water and Sanitation

India is one of the largest countries in the world it covers 1,269,219 square miles of land with an estimated population of 1.27 billion people. India is also the world's second-most populous country its population grew at 1.76% between the years 2001-2011. More than one-third of the populations are living below the poverty line. The average house hold contains five people with income of 33713.24 Rupees which is equivalent to 554.13 USD a month. Most of the population is settled in Delhi which is mainly cropland and mixed forest. Climate is usually humid with short cool summers and daily temperatures between 74 degrees and 83 degrees. The climate is controlled is by the humidity and rainy monsoon seasons from (June-September) rainfall is very destructive and in high quantities. India's coastline measures 7,517 kilometers (4,700 mi) in length; of this distance, 5,423 kilometers (3,400 mi). According to data collection and environment assessment studies of World Bank experts, between 1995 and 2010, the progress India has made in addressing its environmental issues and improving its environmental quality has been among the fastest in the world (Census. Web).

Currently India is one of the highest poverty stricken areas in the world. While living in India most of the poorest people live in the countries semi-tropical regions such as Delhi and New Delhi. The families in India usually have large amounts of family living within one household. Most of the family is unemployed and survive off of the pay check of one or two of the members in the household. Those that are employed work on farms or in other agricultural areas. Other opportunities to work are in construction, mining, and the railroad industry. Although India is a leading provider of agricultural goods only twenty-six percent of the population in India have full time jobs. Children start working at young ages but instead of working at local stores many end up working on a family-owned farm or for a family owned business. The Indian work force is comprised of 486.6-million worker Indian labor force is the world’s second largest, as of 2011. The service sector makes up 55.6% of GDP, the industrial sector 26.3% and the agricultural sector 18.1%. Major agricultural products include rice, wheat, oilseed, cotton, jute, tea, sugarcane, and potatoes (Census. Pdf).

India continues to be plagued in high unemployment, over-crowding, illiteracy, and one of the world’s lowest per capita incomes. These problems can usually be traced directly back to extremely high population which is still growing. Most households live on less than 600 dollars a month a three bedroom apartment to rent every month cost 32187.87 Rupees which is equivalent to 529.10 USD. After households rent an apartment most of their paychecks are depleted and the remaining is approximately 1525.37 Rupees (25 dollars), which is left for the rest of the month for entertainment and other expenses. Most of the income is made by the youth because out of those living in the household at least two or three of them are children. The main incomes of the average citizens come from major industries such as textiles, telecommunications petroleum, and machinery. India has doubled wages for work in the past seven years but even with that some 431 million people are still in poverty (India Bradbury, James Pages 1-11. Book).

The average diets of the’ average’ person in India diet consist of fruits, vegetables, eggs, dairy products and sometimes meat. The meats that they eat are contaminated so this continues the process of bad food going into their system. Cows are sacred but their milk is still needed and also in this situation bad nutrients are brought in to their body. Even though Indians have such healthy eating habits many of the people are malnourished (zeenews.india.web). The problem in India is so common to where every, one and three children are malnourished. Forty-six percent of kids under the age of three are too small for

their age. Malnourishment has many long term effects on their bodies.

Vitamin and mineral deficiencies have long term medical effects on the population which usually disturbs the developing of the older and younger people. Anemia affects 74 percent of children under the age of three, more than 90 per cent of adolescent girls and 50 percent of women. Iodine deficiency, which reduces learning capacity by up to 13 percent, is widespread because fewer than half of all households use iodized salt. Vitamin A deficiency, which causes blindness and increases morbidity and mortality among preschoolers, also remains a public-health problem. An estimated 801,000 children younger than 5 years of age perish from diarrhea each year, mostly in developing countries. This amounts to 11% of the 7.6 million deaths of children under the age of five and means that about 2,200 children are dying every day as a result of diarrhea based diseases (UNICEF. Web).

Much of the education system has improved over the last twenty years but most of the people are still illiterate. 224 million females in India are non-literate, but 35 percent of children aged 6 to14 are still not in school and millions of women remain non-literate despite the R.T.E (Rights to education) act passed in 2009 (theguardian.education.Web). The illiteracy rate for female children aged fifteen and up is seventy five percent while the illiteracy rate for young men aged fifteen and above is forty-five percent. Many social problems, such as the caste system, are still in effect. The system is banded but people are still being mistreated as untouchables for the system is limiting opportunities for the youth. The education system faces a shortage of resources, schools, classrooms and teachers. Additionally, concerns relating to teacher training, the quality of the curriculum, assessment of learning achievements and the quality of school management remains. The United Nations and UNICEF, one in five girls of primary-school age are not in school, compared to one in six boys. (India Bradbury, James Pages 60-64 Chapter 5. Book).

Despite the improvements in healthcare in the last thirty years women still lose their newborn babies based off of quality standards. Infant mortality in India is as high as 63 deaths per 1,000 live births. Most infant deaths occur in the first month of life; up to 47 percent in the first week itself. Children in India continue to lose their life to vaccine-preventable diseases such as measles, which remains the biggest killer. India has an estimated 250,000 children infected by HIV/AIDS. It is estimated that 55,000 to 60,000 children are born every year to mothers who are HIV positive. Without treatment, these newborns stand an estimated 40% chance of becoming infected during the mother's pregnancy, labor or through breastfeeding after six months. There are effective treatments available, but this is not reaching all women and children who need it. In 2009 an estimated 5.7 million men, women and children in India were living with HIV/AIDS. Nevertheless, the recently released UNAIDS Report 2013 claims that India has managed to reduce new HIV infections by a staggering 57% since 2001. (National AIDS Control Organization) (thehealtsite.in. Web).

Large numbers of India's poorest people live in the country's semi-arid tropical region. In this area shortages of water and recurrent droughts impede the transformation of agriculture that the Green Revolution has created. In a 2011 a survey was conducted by the Central Pollution Control Board revealed that 160 out of the 8000 towns had both water treatment areas and sanitation centers. According to the World Health Organization and UNICEF, regions with the lowest coverage of improved water conditions in 2010 were sub-Saharan Africa (31%), Southern Asia (33%) and Eastern Asia (65%). Unsafe drinking water, inadequate availability of water for hygiene, and lack of access to sanitation together contribute to about 88% of deaths from diarrhea diseases. Thus, next time you have a glass of water take a hand full of dirt and put it in the glass and that is still better then what many of the people have in India (Unicef.Pdf)

Water is the bare necessity for everyday activities such as cooking, cleaning, and fresh farming. The citizens of India have access to water but in many of the locations people bathe in the rivers that are used

to retrieve for their family. Oddly enough the lack of a local access of water hinders girls from being able to go to school since the girls are interrupted during the school day to tend to chores in the house. Females are also more likely to be responsible for collecting water for their family which also makes it hard for the women to go to school and get a good education thus showing the inequality between the men and women at such a young age. The installation of toilets and latrines may enable school children, especially menstruating girls, to further their education by remaining in the school system (India Bradbury, James Pages 143-147).

Eighty percent of the sewage collected in the cities are flushed into water ways and remain untreated. This is also the same water that is also used for drinking and cleaning. After walking bare footed for miles and carrying gallons of unclean to get water for their families many get sick. With the population steadily increasing within in the last decade and living in such close quarters the environment needs to be adapted to people to get fresh water. By understanding that India has many other environmental problems and humanitarian problems, fresh water is a permanent long term start to a cure. Additionally, pollution effects water and other environmental features (Watercontrol.Pdf).

While researching and understanding that the country of India has tried to stop the polluted water. The unhealthy water subsequently continues to reach their citizens. The pollution rate is so high and can contaminate the water by creating acid rain that over time can be harsh to the environment. My suggestion is an Eco-friendly water purification center completely solar powered. The center would be placed in between the heavily populated cities of Delhi and New Delhi that are still growing in size. The water purification center would be composed of three facilities. One area that captures the water, a second to purify and the third distribute and store the water. This masterpiece would be called project '**C. Simon 170**.' The center could be made from heavy duty recycled plastic to cut down on the price of materials and promote an environmentally safe system. The solar panels would still be able to work even during the monsoon season, as long as the area is cloudy the panels will still be productive, but the efficiently will cut down about 50%.

Monsoons are very common in the region; monsoons are the seasonal reversing of winds that occur around the same time when the region has large amounts of precipitation. During summer monsoon seasons (June-September) monsoons are powerful destructive storms that carry hundreds of gallons of waters. In these storms many people in India lose their belongings, homes, and sometimes their life. Each day during this time, the abundant rainfall soaks farm fields, overfills rivers, floods villages and cities for over three whole months. Whenever this does not happen and the crops that they do have died and large numbers of people and animals can face starvation. What if we could harness this destructive water and provide fresh safe water for farming, drinking and recreational uses. While the purification center is being constructed the local people could help in the construction. Hence, allowing a growth in the economy and employment. In addition after or during the construction the citizen can be taught about the purification center and how the distribution and gathering process (Go.Inida.About Monsoon. Web).

The way that the purification center would be set up would be with tanks outside for gathering water during the storms. The tanks would be made of an infusion of plastic and carbon fiber so that the tanks would be easy to clean off and hard for germs to reproduce. The lids of the tank would be made of plastic with solar panels built in to the lids them self so that they would not break away in a storm or other various situations. The solar panels would be able to help in the detection of barometric pressure to help determine the best days of operation. As rain falls into the tank it would go through a coarse filter to separate the water from heavy substances. Since water has a natural tendency to move from high pressure to a low pressure area the concept will be a form of reverse osmosis. The prior tank will force the force the water to enter the next tank that has the least amount of volume taken. If the osmosis does not work we could lift the pipes slightly in an angle to allow the water to flow from the previous tank. There would be a transport tube that would be place underground the tube would be made from a heavy plastic instead

of metal to ensure that there would be no rusting that could contaminate the water. As the water is going through the tube there would be a secondary carbon filter to absorb pollutants in the water. After the water is filtered it would go into a pre-heated tank at one-hundred and one degrees to boil the heat would be produced by the electricity generated from the solar panels. After the water is sanitized and heated the water would be cooled to thirty-four degrees. The water can cooled off by staying in a circular motion by law of thermodynamics water will naturally release heat ,also if the tank is kept in a cool area the water will adjust to the temperature of the tank. By the water being cooled off after being heated this will allow for the bacteria that survived to be killed and or shocked so that they could not be harmful in any manner.

Momentously, we have this water built up to give to people but what is the use of having the water and not being able to disrepute it. In order to do this the water would travel through a distribution tube to a storage center and continue through the distribution tube to the capital of India, New Delhi. The water would be further distributed to the North East district since that is the most poverty stricken area in New Delhi. Citizen could come to the designated distribution centers and gather water for their family. While the water is in the storage tank it would be able to stay fresh for up to six months which is the average life of fresh water without using any preservatives such as bleach. From this we have given the people of India access to fresh water. With it being easier for people to get water little girls will have a hope of getting an education because they wouldn't have to go for miles to find water to get for their families. To keep the water refrigerated a simple "Zeer Pot" could be used .In order to make the "Zeer Pot" a small pot is put inside of a larger pot. Fill the space in between the two pots with wet sand or wet dirt. Then cover the pots with a wet cloth. Then when the water evaporates, it pulls the heat out with it. This simple alternative refrigeration unit uses basic laws of physics to keep the inner vessel cool (provident living today. Web).

Now that the people of New Delhi are being provided with fresh water hygiene, food, and farming can be improved. Since after the monsoon season is over and the crop soil becomes dry and unable to bear crops there is nothing to do with them. Now that people have an alternative of water instead of being monsoon dependent. Fresh water can be used for crops to grow and have more food year round. Also with the production of fresh water people will be able to properly wash and clean their fruits and vegetables that could be contaminated with bacteria. Fresh water would provide an increase in the job market when it comes to the involvement of agricultural products and goods. With this large boom there would be an increase in their GDP. The main crops grown and used in India diets are rice, maize (corn), wheat, and jute which require large amounts of water. (India.Gov.In agricultural crops. Web)

The government has played a large part in the decontaminating of water and sewage. The Indian Ministry of Environment and Forests (MoEF), initiated a technical and financial support system to promote common facilities for treatment of water. In the United States the clean water act and safe drinking act was passed. This ensured that the citizens have the ability to access fresh water. Haiti has also face water sanitation issues. In the Island of Haiti a majority of the people use wells to gain access to water that can work out there, but since there is such a large difference in population that might not be much success in India. Ordinary citizens can encourage the proper disposing of trash to all citizens. The international organization such as the W.H.O (World Health Organization) can help implement the need for the distribution of fresh water in third world countries.(W.H.O United States, Web)(ncbi.nlm.nih Haiti, Web)

After the monsoon season is over if enough crops have not been grown then the people will starve. The Indian Government has done well with their citizen on an economic stand point, but improvements can always be made when it comes to the health of many of the families. Women still need to be treated equal and not as second class citizens. There are also many other things that can also to be done to help the country to better its self. Changing the access of water may not seem like such a big deal to those in India since they have been living in these conditions for such a long time. Small improvements to water can lead to large changes to their life and health. There is a light at the end of the tunnel for the progression of

India.

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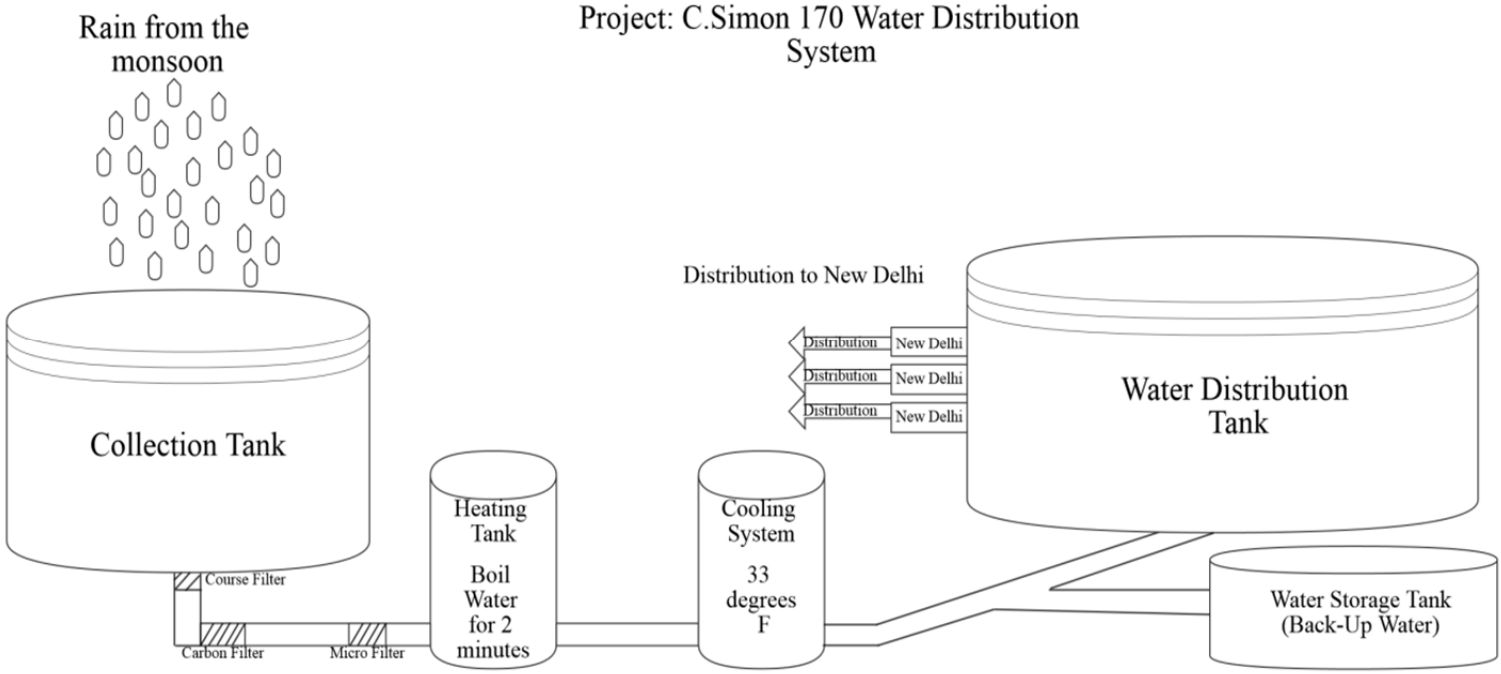
Project: C.Simon 170 Water Distribution System



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