Water Scarcity in India

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**Introduction**

 Water covers seventy percent of our planet, and it is easy to think that it will always be plentiful. However, freshwater—the stuff we drink, bathe in, irrigate our farm fields with—is incredibly rare. Only three percent of the world’s water is fresh water, and two-thirds of that is tucked away in frozen glaciers or otherwise unavailable for our use (Krchnak, n.d.). Water scarcity is the lack of sufficient available water resources to meet the demands of water usage within a region. Over the years, increasing population, growing industrialization, expanding agriculture and rising standards of living have pushed up the demand for water (“Water Crisis,” 2015). Efforts have been made to collect water by building dams and reservoirs and creating ground water structures such as wells. Also, there has been progress to drinking water, but many other water sources are contaminated with bio and chemical pollutants. Due to contaminated water, twenty-one percent of the country’s diseases are water related. Furthermore, only thirty-three percent of the country has access to traditional sanitation; leaving sixty-five percent of India’s population that does not have any toilets facilities. This calls for immediate attention by the stakeholders to make sustainable use of the available water resources (“Water Crisis,” 2015).

**Water Shortage – Facts and How It Started**

The major causes of water contamination are discharge of untreated sewages, industrial waste into rivers, excessive use of fertilizers in agriculture and contamination of ground water with salts and minerals present in the lower soil profile. Due to growing human population, severe neglect and over contamination of this resource, water is becoming a scarce commodity for India (Hegde, n.d.). India is more vulnerable because of the growing population and its in-disciplined lifestyles. With China being the first, India has the second largest population in the world (Snyder, n.d.). According to the World Bank, India has taken significant steps to reduce poverty, but the number of people who live in poverty is still highly disproportionate to the number of people who are middle-income, with a combined rate of over fifty-two percent of both rural and urban poor. Though India has made improvements over the past decades to both the availability and quality of municipal drinking water systems, its large population has stressed planned water resources and rural areas are left out. In addition, rapid growth in India’s urban areas has stretched government solutions, which have been compromised by over-privatization (Hegde, 2012). One concern is that India may lack overall long-term availability of replenishable water resources. While India’s aquifers are currently associated with replenishing sources, the country is also a major grain producer with a great need for water to support the commodity. As with all countries with large agricultural output, excess water consumption for food production depletes the overall water table (Hegde, 2012).

Many rural communities in India who are situated on the outskirts of urban sprawl also have little choice but to drill wells to access groundwater sources. However, half of India’s water supply in rural areas, where seventy percent of the country’s population lives, is routinely contaminated with toxic bacteria (Snyder, n.d.). According to 2001 census figures, 77.9 percent of India’s population have access to safe drinking water. At 90.0 percent, urban population was better placed than 73.2 percent of rural population. However, these figures could be misleading and the real picture emerges only when we look at the individual cities. A survey conducted by Tata Institute of Social Science (TISS) showed 50 million households in Mumbai, Delhi, Kolkata, Hyderabad, Kanpur, and Madurai are water deficient (see Table 16.5 below). Table 16.6 shows that several cities particularly the southern cities are most water deficient. Chennai and Bangalore suffer from 53.8 and 39.5 percent deficiency respectively. Andhra Pradesh has too extremes: deficiency is at moderate 24.2 percent in Hyderabad, an alarming 91.8 percent in Vaizag. In the north, Delhi records 29.8 percent water deficiency and Lucknow 27.3 percent (Chand, 2013).

**Table 16.5 – Number of Water Deficient Households**

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| --- | --- |
| **City** | **Number of water deficient households** |
| Mumbai | 1735,756 |
| Delhi | 14,73,114 |
| Kolkata | 4,36,905 |
| Ahmedabad | 4,29,199 |
| Hyderabad | 4,13,881 |
| Kanpur | 3,29,714 |
| Madurai | 1,48,533 |

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**Table 16.6 – Demand, Supply and Deficiency of Water in Selected Cities of India in Million Liters per Day (MLD)**

|  |  |  |  |
| --- | --- | --- | --- |
| **City** | **Demand** | **Supply** | **Deficiency (%)** |
| Mumbai | 4,300 | 3,600 | 43.3 |
| Delhi | 3,830 | 2,950 > | 29.8 |
| Kolkata | 2,258 | 1,568 | 44.0 |
| Chennai | 3,000 | 1,950 | 53.8 |
| Hyderabad | 956 | 770 | 24.2 (least deficient) |
| Indore | 318 | 184 | 72.8 |
| Bangalore | 1,200 | 860 | 39.5 |
| Lucknow | 560 | 440 | 27.3 |
| Jabalpur | 239 | 144.5 | 65.4 |
| Vaizag | 305 | 159 | 91.8 (most deficient) |

India’s water crisis is often attributed to the lack of government planning, increased corporate privatization, industrial and human waste and government corruption. Every year, about 600,000 Indian children die of diarrhea or pneumonia, often caused by toxic water or poor hygiene (Harris, 2013). The sad part is that, water scarcity in India is expected to worsen as the overall population is expected to increase to 1.6 billion by the year 2050. To that end, global water scarcity is expected to become a leading cause of national political conflict in the future, and the prognosis for India is no different (Harris, 2013).

It is the human nature that we value things only when they are scarce or are in short supply. As such, we appreciate the value of water once the rivers, reservoirs, ponds, wells, etc. run dry. Our water resources have now entered an era of scarcity. It is estimated that thirty years from now, approximately one-third of our population will suffer from chronic water shortages.

**Case Study - Example – Water Scarcity in Indian Villages**

Increased water scarcity is impacting Indian families. Poor management, unclear laws, government corruption, and industrial and human waste have caused a water crisis in India that is worsened by changing climate and continued population growth. According to HSBC, among the world’s leading industrial and emerging economies, India is the most vulnerable to future water stress. The implications of this water crisis extend beyond agricultural and industrial challenges; the social dynamics of Indian villages are changing. In the western states of Gujarati and Maharashtra, rainfall during the last two monsoons has been less than fifty percent of the average, compared with ninety-three percent in 2011 (“Water Scarcity in Indian Villages,” 2015). According to recent reports, this water crisis has led to permanent bachelorhood for many men, risen debt, an increase in suicide and clashes between people and civic authorities. A recent *Times of India* story reported on this forced bachelorhood. Parents of many brides-to-be have broken their daughters’ engagements because they do not want their daughters to walk more than five kilometers (3.1 miles) to fetch drinking water. This is becoming a more common occurrence in the region as parents do not want to send their daughters to a village that is at the mercy of erratic and expensive water tankers, since common wells, the only source of drinking water in many villages, are drying up. These severe shortages of water are also leaving many farmers unable to grow crops and provide food for their livestock. As a result of this lack of income, and increasingly a depletion of their backup resources that has driven people deeper into debt, India has seen an increase in farmers committing suicide in the last four years. While some have unwillingly moved out for the sake of their boys’ and their own future, others have organized themselves against the authorities to demand protection for their livelihood (“Water Scarcity in Indian Villages,” 2015).

**Case Study – How the Pink City Saved Water, Jaipur, India**

 With dried-up reservoirs and a terrible record of rain water conservation, Neeraj Doshi works on rain water harvesting systems in the city. When Sawai Jai Singh of Amber founded the city of Jaipur in 1727, it is said that he decided to shift the seat of power from Amber to the newly founded city, mostly because of water scarcity in the region. Jaipur did offer some respite with its wide roads, unique architecture and untapped ground water. But with increasing population and scanty rainfall, the city’s water resources started drying up. This brings us to where we are now – a State with dried-up reservoirs, and a city with a terrible record of rain water conversation. The city has hope, though, in the form of experts like Neeraj Doshi, for instance, who has been working on rain water harvesting programs for the last five years. He believes that “development” and “standardized lifestyles” have taken a toll on the environment and caused large-scale depletion of ground water. Besides development on environmentally-sensitive zones like catchment areas of rivers, etc. has led to an acute scarcity of water. One of Neeraj’s projects in the city involves creating an ecosystem for locally-grown crops like Bajra (which requires less water) by developing an organic snack made out of such crops. Considering that there are no storm water drains in Jaipur, rain water gets mixed with sewage. Setting up Sewage Treatment Plants (STPs) is not a solution as you need extra water and energy to run them. There are only few STPs outside of Jaipur, but they do not serve any purpose. He focuses on urban spaces, as he feels that, that is where most of the consumption takes place. While the poor man has no water to drink, city folks run their washing machines on fresh water. In turn, to fulfill our own selfish needs, we divert rivers and lakes, when villages around these water bodies suffer from drought and famine. Neeraj and his colleague, Aditya Sharma, a young engineer from Delhi, are working on building a rain water harvesting system in the Jaipur City Palace Complex. Since it is a heritage building, structural modifications cannot be made, therefore only roofs are harvested, and leading them to old unused wells and bores that have gone dry. The duo is also working on a foot-operated faucet which can be connected to the wash basin, to minimize water usage. Neeraj has set-up an incubator in the city to develop sustainable systems to combat water scarcity. Despite all these inventions and smart systems, the situation cannot improve unless the attitudes of people change. Neeraj mentions that “Education is of prime importance.” People must be aware of the scenario and do their bit towards water conservation. People cannot merely complain and protest against existing systems, but they need to think locally and focus on building alternatives. Multiple steps must be taken to replenish existing water bodies in the country (Singh, n.d.).

**Analysis**

Both of the cases have illustrated how serious the issue of water scarcity is and it is not just one particular area of India that is suffering from the lack of water. Water scarcity in India ranges from north to south and east to west. One thing that India can do to tackle the water crisis is that the central and state governments should empower local groups with knowledge, understanding, and real-time information on the status of groundwater so as to manage extraction in a cooperative way. Also, some areas of India are privileged to have a somewhat wet climate, even in the driest regions (Snyder, n.d.). However, with no rain catchment programs in place, most of the water is displaced or dried up instead of used. In these areas, rain harvesting could be one solution for water collection. Collected water can be immediately used for agriculture, and with improved filtration practices to reduce water-borne pathogens, also quickly available for human consumption (Snyder, n.d.).

**Conclusion**

Clean, safe drinking water is scarce. Today, nearly one billion people in the developing world don’t have access to it. Yet, we take it for granted, we waste it, and we even pay too much to drink it from little plastic bottles. Water is the foundation of life. And still today, all around the world, far too many people spend their entire day searching for it. In places like India, time lost gathering water and suffering from water-borne diseases is limiting people’s true potential. Education is lost to sickness. Economic development is lost while people merely try to survive (Snyder, n.d.). But it does not have to like this. It is needless suffering. However they do it, India needs solutions now. Children in 100 million homes in the country lack water and one out of every two children are malnourished. Environmental justice needs to be restored in India, so that families can raise their children with dignity, and providing water to communities is one such way to best ensure that chance.

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