It is well known fact that clean water is essential for healthy living. Adequate supply of fresh and clean drinking water is the basic need of all human beings, yet it has been observed that many people all around the world are deprived of it. Freshwater resources all the over the world are in danger of extinction not only by overexploitation and poor management but also by ecological degradation try to understand the problems associated with the water supply systems such as leakages, siltation, hour and timing of water supply, quality of water, politics in supply system, due to which people not able to get sufficient water or they have to do hard work to get water, rain water harvesting system is not incorporated. What could be the possible changes if implemented? Mumbai receives a good amount of rainfall and such a technology works in places where there is good amount rainfall. How advantageous in different aspects will it prove to be if it is installed in different places in Mumbai and what kind of possible changes will it bring.

Urban growth pattern in India is different unlike other developing countries where urbanisation is slow. In India, population is concentrated in metropolitan cities and is marked by high rate of population influx. Urbanisation is the physical growth of a city in terms of modernization, industrialization, and the sociological process of rationalization, entailing further increase in population leading to the spatial sprawling effect in the city. This does not happen in one particular point of time but over a period of time. Urbanisation dramatically increases per capita fresh water demand as more households receive piped water supply connections, industry increases, and large irrigated farmlands replace subsistence farming. Thus, better management of this resource is the need of hour to make it available for all in standard quality and quantity.

Mumbai, a port city on the western coast of India, is one of the most densely populated cities in the world. Since the city's municipal corporation, it is felt, is unable to supply enough water for the growing population, households have resorted to other means to fulfil their needs; they pay 5-6 times more for the water than the standard municipal charge. For the residential areas, MCGM charge Rs. 4.32 per thousand litres. Sometimes households that have piped water connections or get huge amount of water from tankers tend to resell them; reselling is illegal but the authorities do not take any action against them as they are aware of utility providers' failure to supply fresh water; also, they are unable to deal with the complexities of water hoarders and local water mafia. The present demand for water in Mumbai is 4500 MLD but

the approximate supply is just 3750 MLD; a shortage of 750 MLD. The supply utility has failed to provide something as basic as water.

Municipal Corporation of Greater Mumbai (MCGM) is in charge of supplying water to the city. Water supply is falling short of demand and the gap has been increasing ever since. To deal with the shortage of water in the city in 19th century, the first dam, Vehar project was completed in 1860. Access to water has always been a question. Even though seven dams supply water to Mumbai today, it is not able to fulfil the increasing demands of the population in the city. Mumbai gets only four hours of water supply on an average. Some parts even receive contaminated water with South Mumbai topping the list. The present demand for water in Mumbai is 4500 MLD but the approximate supply is just 3750 MLD; a shortage of 750 MLD. This includes water supply to the bulk users, commercial enterprises, industrial use and leakages. Deshpande in his review report on White Paper, 2009 suggests that there needs to be a change in the policies of the bulk water consumers (whose requirements are more than 2 lakh litres a day) and they need to shift to the use of recycled water.

There is a looming crisis of water quantity and quality in Mumbai. Water has become the matter of politics, where votes are demanded in return of promises to provide water, but no election changes the perennial scenario. People have to depend on private water supply tankers to meet their daily water demands. These tanker operators provide poor quality water and charge them at high rates. The officials of the municipality and the police have perhaps somewhere lobbied with the mafias of private water tanker proprietors.

Growing urbanisation has increased concretisation, which has left less water to percolate and soak into the earth. Less water percolates into the aquifers but the demand for water is ever-increasing. In urban areas private water tanker proprietors have emerged who supply water to the urban slums as well as residential apartments. Unlicensed tankers also exist who tap groundwater illegally. As water is necessary for survival and well-being, its scarcity has led to some malpractices. It has become or can become subject to hoarding and illegal storage, creating deliberate shortages so that it can be sold at higher price for profit, especially during the dry months when the demand is high and supply is low which also means denying the right to this vital element of life. Excessive tapping of groundwater for meeting the demand by the population without the same rate of recharging the source is leading to lowering of groundwater table. This can subsequently lead to multiple problems like searching for new sources of water and laying of pipes for the transportation of water from far off places to the urban areas, which

can raise the cost of supply to the customers. If water is not conserved and sources not protected from pollution then this could lead to a costly spiral as the cost of pumping and supply increases.

Moreover, depleting ground water sources in places near coastal areas, as in the case of Mumbai pose a major problem. Depletion gradually creates a vacuum underneath and the ingression of seawater adversely affects the whole aquifer that is spread across a vast area, turning its freshwater, saline.

What Can Be Done

"Rain water harvesting (RAINWATER HARVESTING) is a technique of collection and storage of rainwater into natural reservoirs or tanks, or the infiltration of surface water into subsurface aquifers (before it is lost as surface runoff). One method of rainwater harvesting is rooftop harvesting."

This is a technological process that can be implemented in urban and rural areas. Here I am focusing only on Urban Rooftop rainwater Harvesting. There have been cases where people with surplus of water reserves have provided water to others. One of our informants, Mr. Navin Chandra, who took the initiative of installing RAINWATER HARVESTING system in his Khar residential building, told us during our pilot study interaction, that they have helped buildings in their neighbourhood by providing them water in times of deficit. This reveals what Rainwater harvesting technology can bring about in an urban area if such initiatives are taken up. Water security can lead to food security, improve sanitation and together they can lead to better health, social and economic development. Water scarcity is affecting the urban and rural poor more economically and also in terms of health.

Purpose Statement

The purpose of this study is to understand the status of rainwater harvesting system, utility and perceptions of stakeholder about the utility of rainwater harvesting and conflicting views among stakeholders. With this objective I will try of unfold why this technology has not yet been fully implemented on a large scale.

Research Objectives

- To understand the workings of rainwater harvesting systems and their utility in urban water supply.
- To understand the different perspectives around Rainwater harvesting among actors across political/administrative, technical and neighbourhood levels and conflicting views therein.
- To observe the gaps between Framework, policies of Rainwater Harvesting and their implementation.

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