

The background of the page is a close-up photograph of water ripples. A single drop of water is captured in mid-fall, creating a series of concentric ripples that spread outwards. The water is clear and bright, with highlights and shadows that give it a three-dimensional appearance. The ripples are most prominent in the lower half of the page, where they overlap with the text.

The Public-Private Tug-of-Water
Water Privatisation in Mumbai: An Analysis of the Water
Distribution Improvement Project in the K-East Ward

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CCS Working Paper No. 198
Summer Research Internship Programme 2008
Centre for Civil Society

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A. Introduction

1. What Is Water Privatisation?

Water privatisation is a term used to refer to private involvement in the supply and management of water resources and in some cases, the privatisation of the water resource itself.

2. Types of Water Privatisation:

Water privatisation can be brought about by a management contract or a lease contract or a concession contract.¹ The following methods may also be used:

- a) BOT: Build- Operate- Transfer
- b) BOLT: Build- Operate- Lease- Transfer
- c) BOOT: Build- Operate- Own- Transfer
- d) DBFOT: Design- Build- Finance- Operate-Transfer
- e) ROT: Rehabilitate- Operate- Transfer

3. Water Privatisation around the World and In India

Today, less than 10% of all the water management systems in the world are in private hands. The rest are publicly managed. There are few big players in private water management who in the past have bagged contracts in countries like Bolivia, Uruguay, Peru, South Africa, Ghana, the Philippines and India. All these projects have been ridden with controversies and followed by massive protests. In India, the entry of private players into water management was encouraged by the National Water Policy, 2002 which

¹ A Management contract involves the least degree of private participation followed by Lease contracts. A Concession contract on the other hand is long term and gives maximum autonomy to the private operator.

explicitly stated the need for *“various combinations of private sector participation, in building, owning, operating, leasing and transferring of water resources facilities”*.¹

4. Water as a Human Right Vs Water As a Commodity

Water is the essence of life. Water is a natural resource to be publicly owned and enjoyed. Human survival depends on water. The importance of water as a vital resource for human survival was recognized as early as 1946 by the international community. In 2002, UNESCO officially recognized it as an independent human right. Water's recognition as an independent human right implied that it is the duty of every state to *'respect, protect and fulfil'* this basic human requirement and thereby prevent undesirable corporate interference in its accessibility. Many advocate that water is a public good to be shared and enjoyed by all human beings and all private property rights to water must be withdrawn. Water's importance for human existence is undeniable and hence it has been hailed as 'Blue Gold'. The conversion of water into a commodity would restrict its access only to those who have the ability to pay for it, thereby violating a human being's right to live. Examples all over the world have shown that private water management projects have been unable to supply water for free/ at lower costs to the poor. This is the reason why water privatisation projects all over the world have met with fierce resistance from civil society groups and citizens. The lack of access to safe drinking water is a problem faced by many countries today.² At the heart of this problem lies the controversy of privatisation of water resources and management.

² As per 2005 estimates, nearly 2 billion people across the globe lack access to safe drinking water.

5. Important Abbreviations and Measurement Units

GIS – Geographic Information System

GOI – Government of India

HC – House Connection

JUSCO – Jamshedpur Utilities and Services Company Limited

MCGM – Municipal Corporation of Greater Mumbai

O & M – Operation and Maintenance

PPIAF – Public Private Infrastructure Advisory Facility

PPP – Public Private Partnerships

PT – Public Tap

ToR – Terms of Reference

UFW – Unaccounted for water

WSS – Water Supply and Sewerage

km – kilometre

km² – square kilometre

lpcd – litre per capita per day

m – metre

m³ – cubic metre

m³ per day – cubic metre per day

m³ per day per c – cubic metre per day per capita

mm – millimetre

MLD – millions of litres per day

N/A – Not available / not applicable

B. Executive Summary

*“Water, water, everywhere,
And all the boards did shrink.
Water, water, everywhere,
Not any drop to drink”*

These lines by Samuel Taylor Coleridge perfectly encapsulate the quandary that we face today in Mumbai and the rest of the world. While water availability is plenty, distributing the same equitably to everyone has been a struggle. Thus, the Government of India promoted the concept of private participation in water management.

However this move has incensed several people and civil society organisations since it is believed that water will cease to be a human right and will be commercialised by the private sector. There have been several such examples globally wherein water prices rose by more than 200% in countries like Bolivia, the Philippines and Ghana. Also with the advent of water privatisation the urban poor suffered the most and had to pay nearly 25-40 times more than water prices in other publicly run utilities, especially in cities like Dhaka and Egypt.ⁱⁱ

In 2004, a similar attempt at private participation was encouraged by the MCGM in Mumbai and initiated by the World Bank. This project does a brief analysis of this attempt at privatisation in the K-East ward of Mumbai. It also goes on to compare this publicly managed water utility with a privately run water utility. The paper attempts to determine if private participation would assist in solving present problems of water management and if yes, to what extent is private involvement desirable.

C. Research Objective

This study is being done to analyse the overall functioning of the privatised water management system in the K-East ward of Mumbai. Following are the objectives of this study:

- 1) Will privatisation of the MCGM project improve overall efficiency in water supply and management at affordable costs in the specified area? This paper therefore attempts to understand the justifications behind the attempt to privatise the water utility in the K-east ward of Mumbai.
- 2) How does the MCGM run water utility in the K-east ward fare in comparison to the successful private water management project run by JUSCO in Jamshedpur?
- 3) Is privatisation the answer to Mumbai's water problems?

This paper utilises certain quantitative and qualitative parameters as laid down by the Asian Development Bank to analyse the performance of this particular water utility. By doing so, one can discover whether privatisation really does violate the basic human right or whether there exists a solution in private participation to protect and promote water as a human right.

D. Research Methodology

1. Secondary Research

Information has been gathered about the background of the project by reading various opinions on water privatisation, MCGM reports and Castalia reports on the project and understanding the demographics of the area in question. The factors that determine the efficiency of any water utility were identified and put to use during the primary research.

2. Primary Research

Primary research focussed on gathering information from the major stakeholders in this project viz.

- The MCGM
- The people living in the K-East ward
- Civil society groups and NGOs
- The private management company

For the purpose of obtaining relevant data, the following factors have been identified:

TABLE 1.0: *Factors used to obtain comparative data for analysing water utilities*

	<i>Quantitative Parameters</i>	<i>Qualitative Parameters</i>
1	Water Supply Coverage	Water Quality Sampling
2	Per capita consumption	Customer Service
3	Water Availability	
4	Unaccounted for Water	
5	Operating Ratio	
6	Accounts Receivable	
7	Average Domestic Tariff	
8	Staff per 1000 connections	

The quantitative parameters will be calculated as follows:

1) Water supply coverage (%)

$$= \frac{[(\text{population served by HC}) + (\text{population served by PT})] \times 100}{[\text{Total population of the concerned area}]}$$

2) Per capita consumption (lpcd)

$$= \frac{[\text{total annual domestic consumption (m}^3\text{)} \times 1000/365]}{[\text{number of people served}]}$$

3) Unaccounted for water (%)

$$= \frac{[\text{total annual production (m}^3\text{)} - \text{total annual consumption (m}^3\text{)}] \times 100}{[\text{total annual production (m}^3\text{)}]}$$

4) Average Domestic Tariff (Rs per m³)

$$= \frac{[\text{total annual domestic billing (Rs)}]}{[\text{total annual domestic consumption (m}^3\text{)}]}$$

5) Operating Ratio

$$= \frac{[\text{annual O \& M cost (Rs)}]}{[\text{annual revenue (Rs)}]}$$

6) Accounts Receivable (month's equivalent)

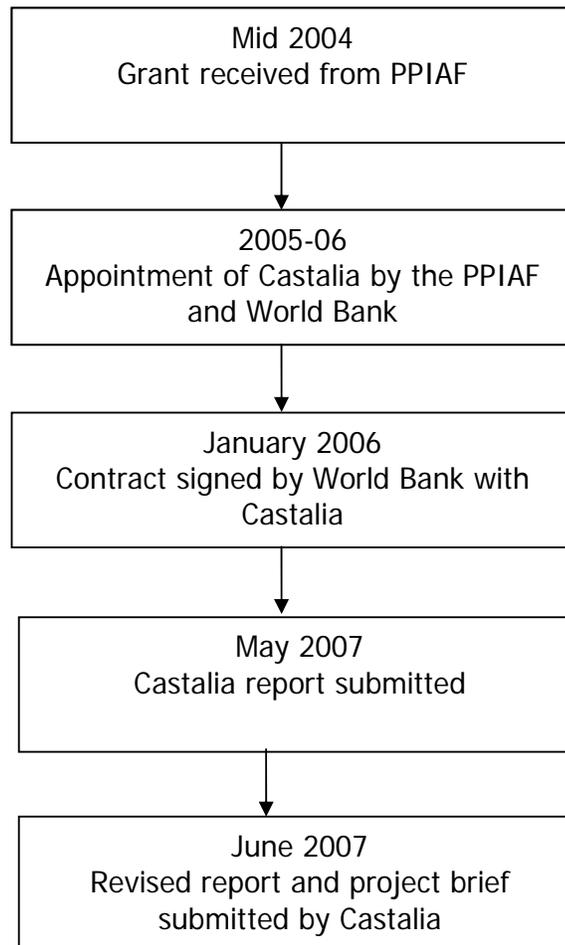
$$= \frac{[\text{accounts receivable at the end of the fiscal year}]}{[\text{total annual billings} / 12]}$$

7) Staff per 1000 connections ratio

$$= \frac{[\text{number of utility staff}]}{[\text{number of utility connections} / 1000]}$$

E. The Water Distribution Improvement Project (WDIP)

1. Background of the Project



Since 1999, the MCGM has been looking at options to privatise their water management network and this search was buttressed by the National Water Policy of 2002 by the Government of India. In 2004, the MCGM received a generous grant of US\$ 692,500 (approximately 30 million rupees) from the Public Private Infrastructure Advisory Facility (PPIAF) to hire international private consultants in water management projects, specifically the K-East ward of Mumbai.

The PPIAF also appointed the World Bank as the executing agency for this grant. In 2005-06, Castalia, a French consultancy firm based in New Zealand was appointed by the PPIAF and World Bank to conduct a study on the water supply and management system in the K-East ward of Mumbai. They even signed a contract and a Terms of Reference (ToR) whereby Castalia was required to design and develop a model that would put an end to water leakage, pilferage and contamination and eventually ensure a 24x7 supply of water to the residents of the K-East ward by availing the services of a multinational private operator.

In January 2006, the World Bank and Castalia signed a contract in order to improve the water distribution system. This venture was initially named the *'Pilot project of privatisation of water distribution'*. However, the term 'privatisation' invited a lot of resistance and hence the project was renamed *'Pilot project of water improvement'* and eventually changed to *'Water Distribution Improvement Project (WDIP)'*.³

At the same time, Castalia began its independent study on the existing water utility in the K-East ward. The first stakeholders' meeting was conducted in May 2006 to provide information about the project. In May 2007 Castalia submitted its full report, followed by a second stakeholders' meeting in June 2007. Due to strong opposition by citizens and activists, minor modifications were made to the report, which was presented less than a month later.

2. The MCGM and the Existing Water Utility in K-East Ward, Mumbai

The MCGM is one of the most efficient municipal bodies and a pioneering force in urban development projects. It is known to be financially robust and has its very own Water department (something which not many municipal corporations can boast of). For the past 30 years, the water department's activities have yielded profits only, thereby creating a corpus of nearly Rs 24000 million.

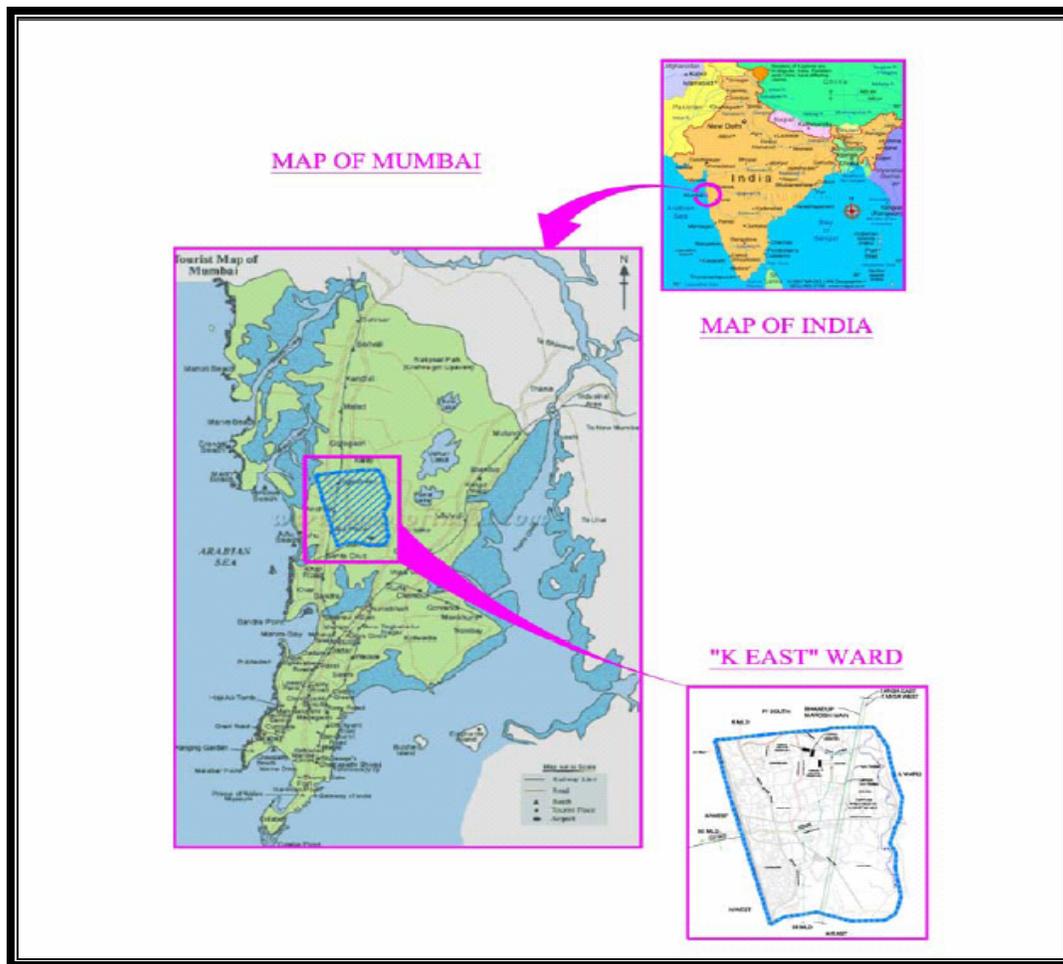
³ These changes were viewed as an attempt to conceal the privatisation agenda of the World Bank and Castalia. After the initial stakeholder consultations, the term 'privatisation' was never utilized even though the project brief outlined a plan to introduce private operators.

It therefore leaves one to wonder why the MCGM accepted a grant of Rs 30 million from the PPIAF, when its own coffers had enough to revamp the entire water distribution system.

In 2005-06, the K-East ward of Mumbai was finalised as the location for testing the efficiency of private water management. The K-East ward was selected as a suitable testing area because of many reasons.

- 1) It comprises of a diverse group of consumers including slums, middle-class and rich households, industries, hospitals and commercial enterprises. Therefore it would provide a better analysis of the water distribution project
- 2) The K-East ward is fed by four zonal reservoirs and can be easily isolated from the rest of the city. Thus, operations in this ward would not affect those in other wards.

Figure 1.0: *Location of the K-East Ward*



Source: Black & Veatch

The main characteristics of the K-East ward are shown below:

- Population: 0.8 million, 50% living in slums
- Activities: 65 major industries, 6 five-star hotels, 1 international airport with a domestic terminal, 2 major sports clubs
- Distribution pipes: 240 km, diameter 80 mm to 1,350 mm (plus 6.5 km of transmission lines, diameter 1,800 mm and 2,500 mm)
- Total connections: 25229 – 87% residential, 10% commercial and 3% industrial
- All connections are metered
- Non-functioning meters:
 - Domestic – 56%
 - Industrial and Commercial – 8%

- Water supplied and billed: 176,000 m³ per day and 162,590 m³ per day(**198 lpcd**)
- Total revenue in 2005: Rs 661.7 million
- O & M Costs – Rs 65 million
- MCGM staff employed in the ward: 145

MCGM WSS Tariff Structure (Rs./m3)			
	Water	Sewerage (60% of Water)	Total
DOMESTIC			
Standpost, Chawls with common toilets etc.	2.25	1.35	3.60
Buildings, Bungalows	3.50	2.10	5.60
NON DOMESTIC			
Hospitals	10.50	6.30	16.80
Govt. Premises, Petty trades	18.00	10.80	28.80
Industries, Shops	25.00	15.00	40.00
3 & above Star hotels, Race Course	38.00	22.80	60.80
Average tariff			10.00
Higher/lower tariff			16.88

Source: www.keastwardwater.org

It is clear that the K-East ward water utility is extremely profitable with minimal operating costs. Yet, the World Bank chose to implement the pilot project in one of the most successful wards of Mumbai. In order to establish the efficacy of private enterprise in distributing a public good such as water, a ward that was ineffective or loss making would have been a more suitable selection for the pilot project. Thus at the outset, the World Bank was assured of a success if the pilot project was in fact implemented in K-east ward.⁴

⁴ The World Bank had failed in its prior attempts to privatise water utilities in India. After an embarrassing and abrupt end to the privatisation plans in Delhi, the World Bank hoped to meet with some success in the K-East ward of Mumbai.

3. Project Partners

1. PPIAF
2. World Bank
3. Castalia Limited – specialists from New Zealand, advising MCGM on project design
4. Black & Veatch South Asia (India), Mumbai– engineering firm appointed by Castalia to carry out physical survey in K-East Ward
5. Trilegal, Mumbai – Legal consultants
6. CRISIL, Mumbai – Financial Analysts
7. Hammer and Partners, Mumbai

4. The Contract

In January 2006, the World Bank and Castalia signed a contract, whereby Castalia would conduct a study on the K-east ward water utility and submit its report on technical and management reforms to improve the water distribution service. The MCGM however was not made a party to this contract even though it was the chief body that carried on water operations in the ward. The World Bank had complete controlling authority over various aspects of this contract from which the MCGM was excluded.

There were two main points of contention with regard to this contract:

- 1) It did not entirely rule out the possibility of privatisation in the future. It stated that the MCGM wished to develop a medium term contract with an operator with a management fee and performance based bonus. It also stated that the MCGM was willing to consider a transfer of more risks and responsibilities to WSS operators, indicating the possibility of increased privatisation in the future.
- 2) The ToR indicated that the services specified in the contract consisted of four main aspects, one of which was the invitation of bids from private operators to implement the suggestions of the Castalia report. Throughout the stakeholder

consultation process, the World Bank and Castalia insisted that this contract was merely to conduct an independent study and not to appoint private operators. However, the contract included the invitation of these bids and hence it seemed as though water privatisation was the hidden agenda behind this contract. The appointment of operators after the bidding process also rested in the hands of the World Bank and lacked any democratic processes in their selection.

5. Customer Service and Technical Report (The Draft Background Review Report)

As required by the contract, Castalia submitted a report on the technical soundness and quality of customer service of the K-east ward water utility. Most of Castalia's report was based on existing MCGM data and any additional information required was obtained by studies conducted by Castalia and its sub-consultants.

Castalia's report identified four main problems with the water utility in the K-East ward and provided solutions to the same:

- a) Supply hours: They identified intermittent water supply as the main cause of contamination. Also, the hours during which the water is supplied to the people are inconvenient in most cases and therefore there was a need to bring about 24x 7 water supplies.
- b) Contamination: Intermittent water supply was seen as the main culprit for water contamination. Water quality declined especially during monsoons. Also the old water distribution networks and pipes led to a lot of leakage allowing for further contamination
- c) Equity: According to Castalia, water distribution was not equitable among all areas of the K-East ward primarily because of faulty pressure in the piping network. While some areas received only 1.5 hours of water supply, others received more than 12 hours of uninterrupted supply.
- d) Customer service: Castalia's report suggested that the customer complaints redressal system was inefficient and slow.

While the report did have some plausible truths about the water utility in K-east ward, it failed to justify the need for privatisation. Some portions of Castalia's report spawned a debate between civil society groups and the World Bank and Castalia. Some of these have been highlighted below:

- a) MCGM supplies nearly 540 million litres of water per day to the K-East ward. This quantity is not only sufficient for the inhabitants of K-east ward, but also around 47% of this water are exported to other wards. The average daily consumption of people in K-east ward is also much higher than that of other world class cities. In K-east ward non-slum consumption is 250 lpcd and average slum consumption is 134 lpcd, both of which are better than the prescribed standard of 123 lpcd. Castalia agreed in their report that the water supplied by the MCGM was sufficient for the needs of K-east ward.
- b) Intermittent supply causes no problem to society dwellers since they have water sumps and overhead tanks which store water during supply hours.⁵ This helps them enjoy a 24 x 7 water supply.
- c) Castalia conducted a water quality test by testing 229 water samples across 17 water supply zones in the K-east ward for signs of contamination. All 229 samples passed the test and indicated no contamination. However Castalia insisted that inspite of the test results, they believed that the water would be contaminated. Even as per MCGM records, on an average there was 5% contamination throughout the year (largely attributed to the floods in 2005), wherein during 8 out of 12 months, water quality was 'good' as per the standards laid down by the World Health Organisation.
- d) Castalia's findings indicated that the Unaccounted for Water (UFW) was around 20% in the K-east ward. It stated that the bulk export of water to the K-west ward

⁵ A water sump is a low space, usually located at the lowest point/ basement of a building that collects excess liquids such as water. Water pumps are then used to distribute this accumulated water throughout the day to all the society dwellers.

was to the tune of 80 MLD. However, MCGM's billed water consumption in the K-west ward was much higher than that. Thus Castalia's report indicated that UFW was 0 in K-west ward, whereas it was 20% in the K-east ward, making it seem illogical.

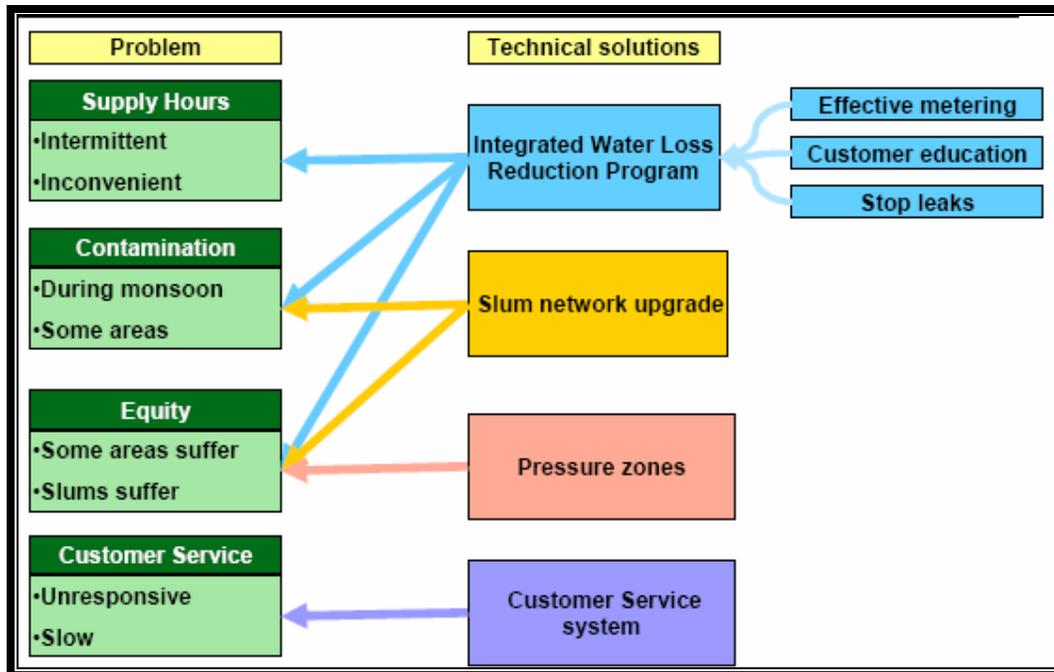
- e) Castalia insisted that a 24 x 7 supply of water was essential to reduce the UFW and reduce consumption. However, cities like London which have a 24 x 7 water supply system complain of nearly 50-60% of UFW. Considering the age old pipe networks and leakage problems in the K-east ward, introducing a 24 x 7 water supply would escalate the UFW in the ward, leading to further water losses. Also, it is a known fact that consumption rises when water is available for longer hours. Thus Castalia arguments in favour of privatisation to introduce 24 x 7 water supplies and reduce contamination were flawed.

Castalia did make some pertinent points with regard to the customer service system in the K-east ward. The report stated that the ward had no separate department to handle customer complaints and feedback and this was done by the regular staff in the ward that was busy dealing with other matters. Thus, MCGM took a greater amount of time to respond to customer complaints regarding leakages, insufficient supply and inconvenient supply hours.

6. Castalia's Recommendations

The project brief submitted by Castalia introduced a four pronged solution to K-east ward's water problems as shown below:

Figure 2.0: Recommendations made by Castalia to improve water distribution in the K-East ward



Source: Castalia. June 2007. Project Brief. K-East ward Water Distribution Improvement Project.

It also provided alternative management solutions to implement the above stated technical reforms. Castalia's report explored various management options depending on the degree of privatisation. They divided the entire project into 3 main phases:

- a) Phase I (months 1-12) – Mastering the system: The first 12 months would be spent to understand the existing system and network, installing or replacing , meters where necessary, inspect the pressure zones, develop GIS and calibrated network model for the whole ward, implementing the first two slum distribution upgrades and assessing the customers' needs.
- b) Phase II (months 6-36) – Rehabilitation: The main focus at this stage would be to reduce leakage points, development of pressure zones, replacing the deteriorated assets and implementing a customer education programme to reduce wastages.

- c) Phase III (months 24-72) – Continuous Improvement: The final phase would focus on rapid responses to consumer complaints, continuous detection and repair of leakages and constant monitoring and fixing of contamination problems.

7. Conditions Laid Down By the MCGM

The MCGM assured the citizens that any outsourcing contract would not be undertaken unless the following conditions are honoured:

- There would be equitable distribution in the entire ward, including the poorest of the poor.
- There would be no privatisation. i.e. no sale of MCGM water or water assets.
- There would be no retrenchment of the existing MCGM staff.
- There would be no hike in tariff linked to the WDIP.

8. Stakeholder Meetings

Three stakeholder meetings were conducted between 2006 and 2007. The first stakeholder meeting was held in May 2006 and the second meeting was held in June 2007. During the second meet, Castalia put forward its report to the audience which consisted of MCGM officials, Corporators, Civil society and NGO representatives. Castalia's recommendations were met with strong resistance by the majority due to the inherent privatisation agenda in their report. Also, the fact that Castalia focussed more on management contracts than the actual technical improvements in the K-east ward irked most of the members present.

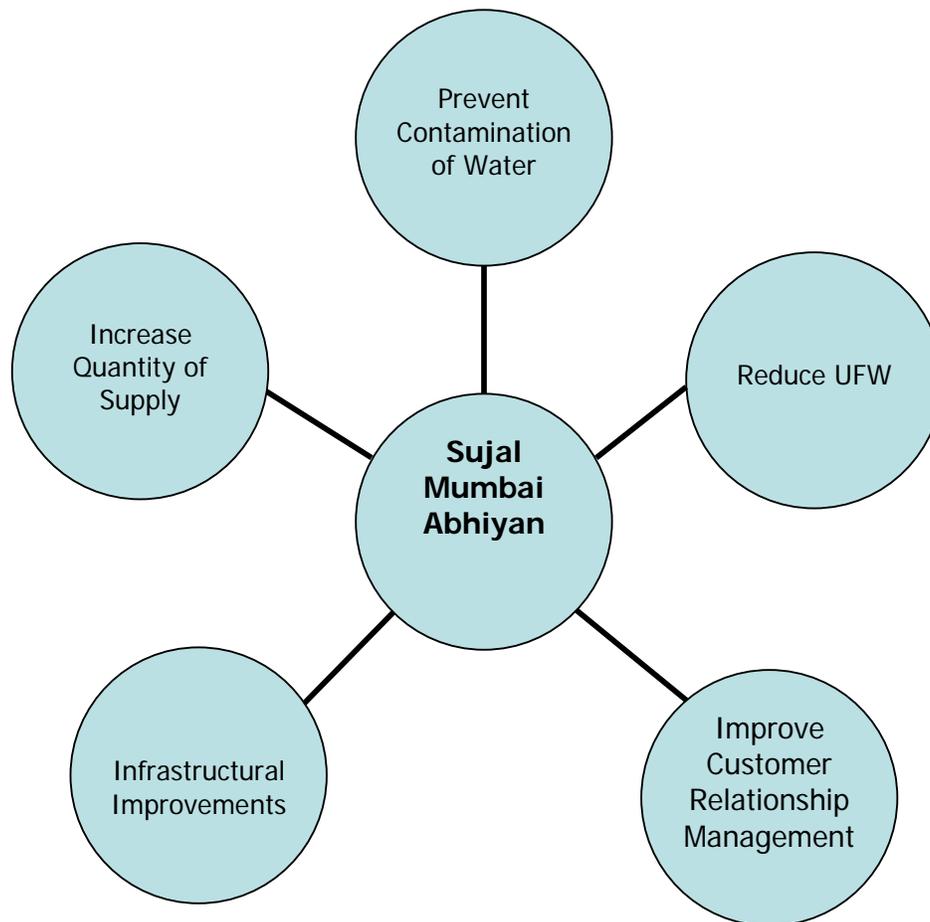
The third stakeholder meeting was conducted in November 2007, wherein, it was announced that the WDIP would no longer be implemented. World Bank and Castalia had withdrawn from the project and the MCGM launched the 'Sujal Mumbai Abhiyan' which was based to a certain extent on Castalia's reports. This project was not restricted only to

the K-east ward, but would be extended to the whole of Mumbai. Castalia claimed that only 10% of the Sujal Mumbai project was based on their recommendations.

This stakeholder meeting however turned extremely chaotic with young activists protesting against the interference of the World Bank and Castalia. The meeting also witnessed an angered physical tiff between activists and hired musclemen. The WDIP was brought to an end by the jailing of six activists and complaints lodged by the MCGM and the activists against each other. Close to 30 million rupees were spent on the study conducted by Castalia as a part of the WDIP which ended abruptly towards the end of 2007.

9. Sujal Mumbai Abhiyan

Figure 3.0: *Key Features of the Sujal Mumbai Abhiyan*



The *Sujal Mumbai Abhiyan* was launched by the MCGM with the objective of a 24 x 7 supply of pure water at economical costs to the city of Mumbai.

This scheme plans on adopting an integrated approach to water management. Some of its important features have been explained below:

a) Private Contractors:

Six private contractors have been hired, one for each of Mumbai's six zones. These contractors have been hired on a work order basis. Whenever there is a task that needs to be done, for instance fixing leakages, replacing old pipelines, constructing new water mains, replacing fire hydrants and improvement of the existing networks, the respective contractor is informed who performs the task on behalf of the MCGM. The quality of materials to be used has been standardised by the MCGM. After the task has been performed the contractors are reimbursed. In this case, no controlling authority has been sanctioned to any of the private contractors. The financial and operational aspects are still controlled by the MCGM. A provision of Rs 20 crore has been made for repairs and maintenance in each zone. Remuneration is paid only on the basis of work done and thus far work equivalent to Rs 25.78 crore has already been performed in all zones put together.

b) Pre-paid water meters

This has been the most controversial of all decisions taken under the *Sujal Mumbai* scheme. According to a state government regulation in 2001, slum dwellers that moved to Mumbai after January 1, 1995 are not entitled to the water supply service by the MCGM and must seek alternative sources. This has been a major cause for illegal connections, water thefts and unauthorized water vendors. In order to resolve this problem, the MCGM decided to introduce pre-paid water meters for such slum dwellers to reduce the incidence of thefts and illegal connections. However, this concept could violate the right of every human being to have access to safe drinking water. Every customer could purchase a pre-paid card for a certain amount. Water supplied to them will correspond to the pre-paid amount. However as soon as the pre-paid card expires and if the person has no more money to recharge his card, he is automatically denied the access to water. This feature of *Sujal Mumbai* has met with strong resistance from social groups and has not yet been implemented.

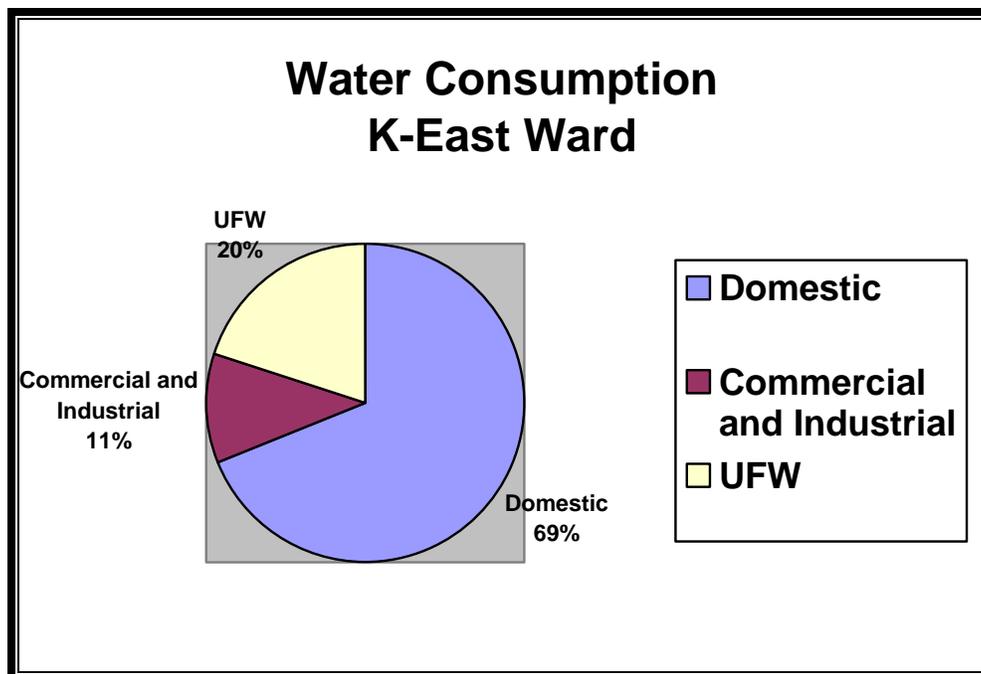
The Sujal Mumbai scheme has also introduced various technical solutions such as the use of superior quality AMR meters (Automatic Meter Recording System), replacement of bunches of connections by stub mains, replacement of old valves, diversion of water mains from open gutters as well as leak detection surveys.

F. A Comparison of The K-East Ward Water Utility And The JUSCO Water Utility

In order to understand whether privatisation is necessary to improve the operations in K-east ward, a water utility profile of the K-east ward has been prepared, which will be compared to the entirely privatised JUSCO utility project in Jamshedpur. While both K-east ward and Jamshedpur are comparable in size, this analysis does have its own limitations as listed below:

- 1) The composition of customers varies. While in K-east ward, domestic consumption is more dominant, in Jamshedpur, there are greater number of industrial and commercial users
- 2) The Jamshedpur utility was initiated by the private enterprise itself and was developed along with the entire township. JUSCO did not have to work on existing networks laid down by any government body.

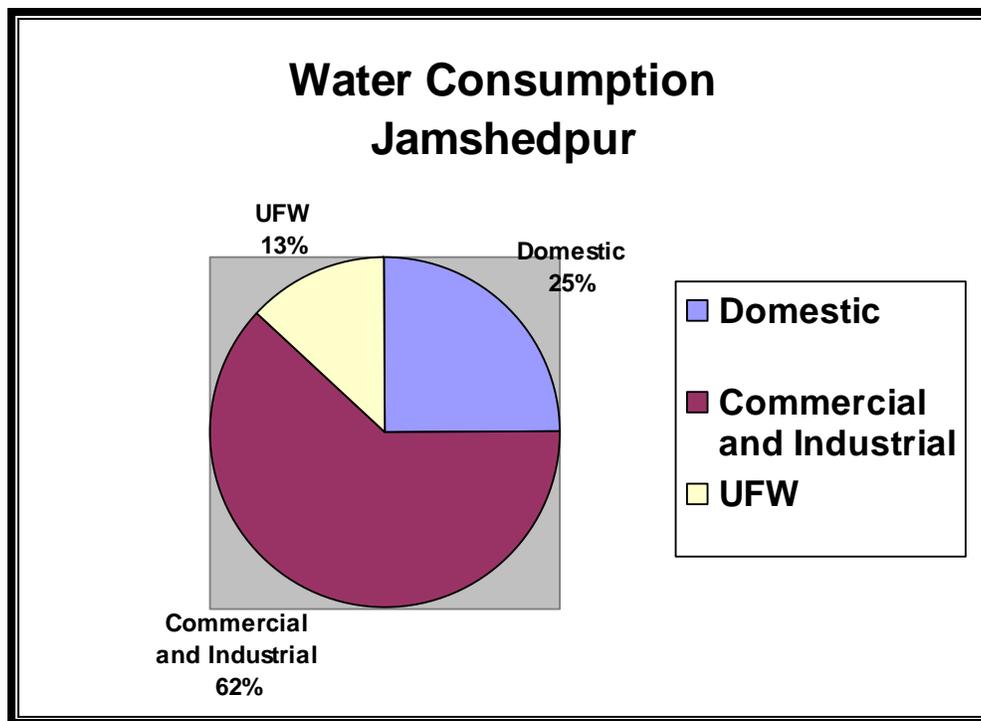
Figure 4.0: *Distribution of Water Consumption in the K-East Ward Water Utility, Mumbai*



Source: MCGM, www.keastwardwater.org

The Municipal Corporation of Greater Mumbai (MCGM) has been in operation since its establishment in 1888. Water production, distribution and source development is entirely done by the MCGM. MCGM has no current master development plan. Initially the MCGM did not manage the water operations in K-east ward. However as several suburbs were gradually included in Mumbai city, the MCGM inherited the responsibility of water management in the K-east ward during the 1950s. This utility serves a population of about 0.8 million people.

Figure 4.0: *Distribution of Water Consumption in the JUSCO Water Utility, Jamshedpur*



Source: Asian Development Bank

Jamshedpur Utilities and Services Company, Limited (JUSCO) is a private company that is responsible for the production, distribution and source development of water in Jamshedpur since 1919. All operations of the utility are handled by the private sector. JUSCO is following a master development plan for the period 1986–2010. It serves a population of about 0.65 million people.

The table given below summarizes some key performance indicators of both water utilities along with the prescribed standards.

TABLE 2.0: Comparative performance of the K-East Ward water utility in Mumbai and the JUSCO water utility in Jamshedpur along with prescribed standards.

Sr.No.	Performance Indicator	K-East Ward	Jamshedpur	Ideal Level
1	Water Supply Coverage (%)	100%	74.4%	100%
2	Per Capita Consumption (lpcd)	198	203	123
3	Water Availability (hours)	5.79	6	24
4	Unaccounted for Water (%)	20	13	As low as possible
5	Operating Ratio	0.1	0.62	0.75
6	Accounts Receivable (month's equivalent)	10	0.3	3 months
7	Average Domestic Tariff (Rs per m ³)	4.6	4.51	N/A
8	Staff per 1000 connections	5.7	5.6	5

Sources: Asian Development Bank, www.keastwardwater.org, calculations as outlined in section D - Research Methodology.

1. Comparative Analysis

a) Customer Satisfaction

- **Water Supply coverage:** The K-east ward water utility is capable of supplying water to every single resident in the given area and thus has 100% coverage as compared to 74.4% of the JUSCO utility.
- **Per Capita consumption:** A consumption level of 123 lpcd is ideal to meet daily requirements and also to avoid wastage of water resources. On an average an individual in the K-east ward consumes around 198 lpcd out of which average slum consumption is 134 lpcd, average non-slum consumption is 250 lpcd and average domestic consumption is 210 lpcd, indicating that availability of water is sufficient. The same holds true even for the JUSCO utility where per capita consumption is 203 lpcd.
- **Water Availability:** A supply of 24 hours ensures minimal chances of contamination and also ensures efficient functioning of meters. Both utilities are unable to provide 24 x 7 water supplies and average at 5.79 hours and 6 hours respectively.
- **Water Quality:** While the K-east ward records an average of 5% contamination in the water supplied (primarily caused by monsoon flooding) and 0% contamination during 4-5 months, the water samples at the JUSCO utility indicate a 4% contamination. This water quality level is however accepted as reasonably good.⁶
- **Customer service:** The JUSCO utility has a fully computerized customer complaint management system which looks into complaints registered on a daily basis and hence such complaints are processed much faster. The K-east ward on the other hand does not have a separate department for customer complaints and hence the system is slow and at times unresponsive towards customer complaints.

⁶ However, as per a report by the Hindustan Times dated 10 July 2008, traces of the E-Coli bacteria were found in 10 sources of MCGM water supply after 1700 people were treated for water borne diseases. Another disconcerting revelation was that several fish were found dead along the banks of the Bhatsa River, which is a main source of the MCGM water supply. No conclusive report has been made available to explain the cause of such contamination.

b) Water Resource Management

Unaccounted for Water: A higher percentage of UFW indicates water losses due to either thefts or leakages and hence should be minimized as far as possible. The JUSCO utility fares better in this case with only 13% of UFW as compared to 20% UFW in the K-east ward.

c) Financial Management

- Operating Ratio: This is one of the most important indicators of the cost efficiency of any water utility. An ideal operating ratio should be around 0.75; a low ratio indicates that the revenue generated is sufficient to cover the O & M costs and is hence favourable. The operating ratio at the JUSCO utility of 0.62 fares better than the required standard. The K-east ward on the other hand indicates an operating ratio of 0.1. While much better than the required standard, this ratio is a bit misleading. 60% of the water revenue is collected for sewerage, however only 10% of this revenue is utilised for treatment of the sewerage, which greatly reduces the O & M costs. Thus it indicates overall operating efficiency in the ward, but a lack of adequate expenditure for sewerage treatment.
- Accounts Receivable: Accounts receivable of less than 3 months is ideal, and less than 6 months is acceptable. However anything beyond 6 months indicates inefficiency in collection of revenue. This could drastically affect the cash flow in the utility and may be an obstacle to further investment. JUSCO has an excellent level of accounts receivable of a mere 0.3 months, whereas the K-east ward fares poorly with receivables equivalent to 10 months.
- Average domestic tariff: Both utilities are successful in supplying water to domestic users at a low cost of approximately Rs 4.60 per m³.

d) Human Resource Management

Staff per 1000 connections: A lower ratio indicates that the current staff is well trained and motivated to perform the regular tasks of water management. Thus it indicates labour efficiency. An ideal ratio would be 5 staff members per 1000 connections. Both the K-east ward and JUSCO have a reasonably good level of staff efficiency.⁷

2. Overall Remarks

From the above analysis, it is clear that in comparison to the JUSCO water utility, the K-east ward water utility performs remarkably well in terms of operating efficiency, pricing and staff efficiency. With 100% coverage, it also delivers a more than satisfactory volume of good quality water each day. It does need to improve its customer service mechanism and financial management and also reduce UFW. However privatisation does not seem to be the necessary solution. These improvements can be introduced by providing greater responsibility to the existing staff and by recruiting new employees to handle the customer complaints, introducing a plan to detect and rectify leakages in the system and being stern with revenue collection.

The private water utility of JUSCO is also an excellent model of efficiency; however it had its own advantages. The entire water network on Jamshedpur was laid down by JUSCO. However, privatising an existing public water utility would require greater efforts since it would demand a thorough understanding of the existing network and would also escalate the initial costs of rehabilitation. Also, since most of their water consumers are industrial or commercial users, it is easier to recover costs by charging a higher tariff on such users. Thus efficiency is not restricted to the private sector alone and can be achieved by the public sector as demonstrated by the above analysis.

⁷ The overall MCGM staff per 1000 connections ratio is 17.6. Thus the K-East ward is one of the most labour-efficient wards managed by the MCGM.

G. The Debate over Public Management Vs Privatisation of Water – A Speculative Analysis

From the previous analysis, it can be observed that while the public management of water was indeed satisfactory overall, the private sector proved to be more efficient in a lot of management areas.

The analysis given below studies certain steps and scenarios in the water management process. This would help identify those areas which are best run by the public sector and those areas where assistance from the private sector would be beneficial. For this purpose, two extremes have been considered i.e. 1) absolute public management and 2) complete privatisation of an existing water utility.

TABLE 3.0: *Comparison of the impact of public management vis-à-vis privatisation on water management systems*

Sr. No.	Activity / Scenario	Public Sector	Private sector
1	Initial Investment	Obligated to make such investment to uphold the Constitution	Long gestation period. Thus, may not agree to huge investments and take financial risk
2	Establishing the network	Fewer procedural delays, easy approval of plans	Delays in obtaining necessary permissions, difficulty in understanding interdependent public services
3	Government benefits	Enjoyment of subsidies	Limited incentives from the government
4	Type of users	All users	Preference to commercial and industrial users

5	Citizens vs customers, Human right vs commodity	Provision of basic human right to all Citizens	Marketing a commodity to its Customers
6	Pressure to perform	Less	High
7	Consequences of Customer complaints	Relatively lesser liability	Relatively greater liability
8	In case of losses	Water supply must continue	Company can choose to halt operations
9	Breach of contract	N/A	Company might charge local governments with hefty penalties
10	Social and environmental costs	Such costs not accounted for	Only financial responsibilities are undertaken

To begin with, any water management project involves a huge amount of initial investment to improve the existing network and also lay down new pipelines. The gestation period involved in such an exercise is long and hence might deter the private sector from making huge investments. Also rehabilitation of an existing network implies huge initial costs for the private sector. On the other hand, the state is obligated to provide water to all its citizens and thereby uphold Article 21 of our Constitution that guarantees every citizen the protection of and the right to enjoyment of pollution free water. Thus the state would have to make such an investment irrespective of its yields.

In order to establish the water distribution network, especially in areas where roads need to be dug up, several government permissions need to be obtained. Also, since water services are entwined with various other public utilities, the private sector would be required to understand these systems and obtain the necessary approvals. On the other hand, the local municipal body would be well aware of other public works and there would be no delays in obtaining approvals for laying the network, since the municipal body itself is the governing authority.

The public sector also enjoys several subsidies and government benefits, which the private sector does not. Also the taxes levied re-enter the government coffers which can be re-invested in the water utility. The same does not hold true for the private sector.

The public sector is obligated to supply water resources to every single user irrespective of their occupation or income levels. The private sector however would certainly prefer supplying to commercial and industrial users that are capable of paying a higher price for the water service. Private enterprises find it challenging to deliver the same quantity and quality of water to poor people in developing countries who are not capable of making payments for the service. Thus the private enterprise would be unable to recover its costs when supplying to poor people. In January 2002, this very fact was admitted by J. F. Talbot, CEO of SAUR International (fourth largest water company in the world). He stated that even though private water companies have a higher success rate in Europe, the same is impossible in poor and developing nations where the basic tariff covers only an insignificant amount of their total costs. He insisted that without subsidies and soft loans from local governments, water management cannot be undertaken by private multinationals.ⁱⁱⁱ

This again brings us to the debate of citizens vs customers and water as a human right vs commodity. It is clear that the public sector treats every water user as a 'citizen' and hence is obliged to supply water, which is a basic human right. The private sector would treat each water user as a 'customer' wherein this newly commercialised natural resource would be made available to only those who can afford to pay for it. For instance, few years ago, a section of the Sheonath River in Chattisgarh was handed over to a private entity and eventually people were charged for collecting water from their wells and even rainwater from their roofs.^{iv}

One of the key justifications for privatisation of water is the efficiency that the private sector would generate. There is thus constant pressure over private MNCs to ensure cost effective management of the water utility. The failure of the MNC to deliver water resources are seen with greater disdain than if the local municipal body were in a similar situation. Thus the private sector experiences greater performance pressures.

At the same time, customer complaints could possibly generate different responses in case of the public and private sector respectively. When a customer complaint against the private company is heard in a court of law, it is likely that the company would not be pardoned easily and would result in huge fines or unreasonable compensation. The same however would not be true for a complaint registered against the public body.

A loss making public entity has no choice but to continue providing water services to its citizens. This has been the case in many cities like Indore, Kolkata, Mathura, Bhopal and many others. However, no private enterprise would enter into a loss making project since profit is its main motive. Thus, it can choose to discontinue its operations and withdraw entirely from the project. This could have serious implications since water supply would come to a sudden halt if and when the company withdraws from the project.

Usually when a water utility is privatised, it involves an agreement or contract between the private company and the local governing body. Several situations might lead to a breach of contract and the privatised operations may be forced to stop. Private companies might penalise local governments with heavy fines as has been demonstrated by examples all over the world. In Bolivia, the private water management company Bechtel threatened the Bolivian government with a US\$ 25 million legal battle when the deal was called off due to powerful protests by the citizens and civil society groups.^v In Africa, many private water deals are being struck up as a debt relief measure. In Argentina, water prices were indexed to the US dollar, but after the Argentine economic crisis and default on an external debt, a new law called the "Public Emergency and Reform of the Exchange Regime" allowed for the renegotiation of private water contracts. However this law was ignored by the MNCs and French and Spanish governments were called in to represent them in a court of law.^{vi}

It has been stated earlier also that establishing and managing a water utility involves huge investments and high costs. While most public and private water management companies pay for financial costs of a project, the social and environmental costs are often borne by the people. A classic example is that of the Tehri dam for the Suez-Degremont project in Delhi whose construction would divert irrigation water for private

supply and thus deprive poor farmers of much needed irrigation water. It was to be located in an earthquake prone zone which could possibly have unimaginable environmental ramifications.

H. Conclusions

Overall it is evident that absolute privatisation of an existing water utility is not a feasible option since it involves several legal, procedural and operational hurdles. The efficiency, technical skills and professionalism of the private sector however cannot be altogether ignored. It is therefore prudent to not privatise water assets or key financial and operational aspects of a water utility. The risk and responsibility must lie with the public sector and assistance of the private sector could be sought, which would be unique to each water utility. Also, in order to uphold water as a human right and avoid any social or environmental exploitation, water must continue to be publicly held.

The following conclusions can be drawn from the study:

- 1) Water privatisation in the K-east ward and Mumbai:
 - a. Mumbai's water distribution system boasts of 100% coverage at economical costs. The MCGM is a fine municipal body that provides an acceptable quality of water services. The only problems that the system faces are leakages, intermittent supply, an old distribution network and poor customer service management. These can be rectified with an appropriate scheme as proposed by the *Sujal Mumbai Abhiyan*
 - b. More investment should be made towards storage of excess water and rainwater harvesting solutions which utilise the stored water during paucity of water. This is primarily because Mumbai has no shortage of water. The annual water production is sufficient for all its residents on a 24 x 7 basis.⁸
 - c. Private participation can be beneficial as long as water assets are not privatised and the MCGM retains the controlling authority in the water utility.
 - d. Private involvement can be in the form of technical training, staff training, consultancy and small work orders.

⁸ The MCGM is currently contemplating the possibility of 'making rain' or 'cloud seeding' using common chemicals such as silver iodide. This they hope will solve the problem of limited water supply in case of erratic monsoons.

- e. The concept of pre-paid water meters should however be discontinued since it violates the right to life and water. There should be no water-discrimination against slum dwellers who settled in Mumbai after January 1, 1995. Continuance of such discrimination will only intensify the problem of illegal connections, water thefts and unauthorised plumbers.

There are many lessons to be learnt from the K-east ward WDIP experience. The lack of transparency and absence of water democracy will undoubtedly generate resistance towards a project, however good it might be. The practice of water democracy is the key to success of any such project. Privatisation alone is not the solution to Mumbai's water problems, but can complement the existing structure.

For the provision of pollution free water, every individual must be treated as a citizen first. Also, our legal system includes the public trust doctrine as a part of its jurisprudence, which entrusts the government to protect vital resources such as air, water and forests for the enjoyment of the public at large and disallow commercialisation or privatisation of the same. While upholding this doctrine, we can find a solution to our water problems even with private participation.

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I would like to extend my sincere gratitude to those mentioned below for all their valuable inputs:

- Mr. Shripad Dharmadhikary, Co-ordinator, Manthan Adhyayan Kendra
- Mr. Sitaram Shelar, Field Convenor, YUVA
- Mr. Janak Daftari, Founder, Jalsangrah
- Mr. Afsar Jafri, Senior Research Associate, Focus on the Global south, India
- Mr.D.P.Joshi, Executive engineer (personnel), Hydraulic Engineering department, MCGM
- Mr. R.R.Hariname, O.S.D Sujal Mumbai mission and JNNURM projects, Hydraulic Engineering department, MCGM