

Serving all urban consumers

Book 6: A Sample Strategic Marketing Plan
for Water Services in Guntur, India

**A marketing approach to water services
in low- and middle-income countries**

A. Narender, V.S. Chary and K.R. Sansom

In collaboration with
Administrative College Of India (ASCI)
Bella Vista, Hyderabad



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Acronyms

AE	Assistant Engine
CVM	Contingent Valuation Method
DFID	Department For International Development (U.K. government department)
ELSR	Elevated service reservoir
FI	Financial Institution
GIS	Geographic Information Systems
GMC	Guntur Municipal Corporation
HUDCO	Housing and Urban Development Corporation
IAS	Indian Administrative Service
NSDP	National Slum Development Programme
OHT	Overhead tank
OYT	Own your tap – a municipal pipe connection procedure
PGC	Public Grievance Cell
PSP	Public Stand Post
SMP	Strategic Marketing Plan
SWOT	Strengths, Weaknesses, Opportunities, Threats
TACE	Total Annual Capital Expenditure
UFW	Unaccounted For Water
WTP	Willingness To Pay

Units

Crore	10 million
kl	kilolitres
Lakh	Rs. 100 000
MGD	Million Gallons per Day
ML	Million Litres
Rs	Rupees (basic unit of currency in India), approximately US\$1.0 equates to Rs43.00.

1. Introduction

This sample strategic marketing plan (SMP) for Guntur in India has been completed as part of urban water sector marketing research that was led by Water and Engineering Development Centre (WEDC) and funded by DFID (UK). The purpose of the Guntur urban water sector work was to test the strategic marketing methodology which entails: establishing ‘where are they now?’ in terms of services provided and utility/municipal performance, in a comprehensive manner, including consulting water consumers. The Guntur SMP situation analysis provided a basis for addressing the question ‘where do we want to be?’ in terms of serving the urban poor in Guntur, in conjunction with other consumer groups as part of a comprehensive marketing approach. This work builds on a similar study in Mombasa by Njiru and Sansom, 2001.

This publication serves as an example of marketing approaches for the urban water sector that are set out in the following three guidance books that are published by WEDC:

Serving All Urban Consumers

A marketing approach to water services in low and middle-income countries

Book 1: Guidance for government’s enabling role

Serving All Urban Consumers

A marketing approach to water services in low and middle-income countries

Book 2: Guidance notes for managers

Serving All Urban Consumers

A marketing approach to water services in low and middle-income countries

Book 3: PREPP – utility consultation with the urban poor

These publications can help assist in the development of plans to a) improve water services and increase service provision to all consumer groups and b) to ensure utilities are financially sustainable and therefore creditworthy to enable additional investment to improve further. The books are available on the WEDC web-site (www.lboro.ac.uk/wedc/projects/psd/).

1.1 Background – Guntur Study

Rapid urbanisation and population growth in developing countries has resulted in increased demand for water services. The major responsibility for provision of water services lies with municipalities and water utilities. However, these agencies are not able to meet the growing demand for water services, particularly for the poor and low-income population. A significant proportion of the population in urban areas depend on a variety of water services such as water vendors, bore wells, open wells, streams and so on. A major challenge for the water utilities and municipalities is to provide improved water services on a sustainable basis. Research studies indicate there is good potential for water utilities to generate

multiple solutions that are financially viable by understanding and catering to the preferences of consumers through commercial marketing techniques. The water utilities can develop better pricing and service delivery practices with the help of a strategy based on customer preferences and willingness to pay for various services.

This study conducted in 2001/02 is an attempt to develop a strategic marketing plan for Guntur Municipal Corporation which provides water for the Guntur city in India. Guntur is one of the five largest cities in Andhra Pradesh, and is an important education centre. The present population of the city is around 6 lakhs and the city attracts on an average 1.2 lakhs (120,000) people every day. There is a growing demand for urban services particularly water supply, and the GMC is unable to meet this growing demand. Although 90 % of population is connected to municipal water, but only about one % depends exclusively on this water. Open wells or borewells are major sources of water but commonly have highly saline water, which is unsuitable for drinking. Low water pressure is one of the main problems of the municipal water supply and most of the connections are fitted with hand pumps to counter the problem. Given this supply scenario it is necessary for the water utility to evolve appropriate service options to improve service delivery in a financially viable manner.

1.2 Study Objectives

The overall objective of the study is to develop an effective and feasible strategic marketing plan for water services, providing customer oriented service options on a financially viable basis in the context of Guntur Municipal Corporation and Guntur City. The specific objectives of the study are to:

- examine the current water service levels in Guntur City
- analyse cost recovery and current financial performances of the water utility
- understand customer perceptions and coping strategies
- analyse strengths, weaknesses, opportunities and threats of the utility/municipality
- develop feasible service options based on customer preferences and WTP of customers for the options, and
- prepare a strategic marketing plan providing feasible service options with estimated costs and benefits and management strategies.

1.3 Methodology and Sampling

The study is based on significant inputs from the field with respect to customer preferences, willingness to pay and institutional strengths and weaknesses. Primarily, the study undertook three types of field level activity:

- WTP surveys of households

- Focused group discussions for cost option ranking.
- Institutional data

The field activities focussed on understanding the nature of consumers, their current practices, needs and demands coupled with their, and utility ideas, innovations and expertise. Customer surveys were undertaken in appropriate market segments. The segmentation of market was based on geographic location and type of dwelling. The sample selection was based on a combination of sampling techniques: stratified sampling, quoted sampling and random sampling techniques.

This study has focussed on the question of where Guntur Municipal Corporation is now in terms of its performance and the level of service experienced by users. The demands, preferences and willingness to pay of different consumer groups in the city have been assessed, as a means of informing future investment planning as part of a marketing approach. This study, however, has not considered future investment plans and how they might be implemented.

2. Marketing Water Services

2.1 Why Market Water Services?

Creating more satisfied customers for the purposes of profitable business expansion is an important function of marketing. Marketing is defined as ‘the total system of interacting business activities designed to plan, price, promote and distribute want satisfying products and services to present and the potential customers.’ Thus marketing as an activity involves a range of functions such as planning, promotion and distribution in a manner that satisfies both existing and potential customers.

The Institute of Marketing, U.K., defined marketing as ‘the management process responsible for identifying, anticipating, and satisfying customer requirements profitably.’ Thus, marketing considers customer satisfaction as the important goal of business. Marketing focuses not only on the existing customer but also the potential customer. The process of identifying, anticipating and satisfying customer needs requires ongoing communication with existing and potential customers. At the same time, the customer focus needs to be matched with the profitability goal of the business to generate sufficient funds for future investment.

Marketing can be an effective tool for water utilities to provide improved water services, while improving the utility’s financial sustainability. In the Indian context, the water services are provided much below their costs and tariffs are kept low resulting in a low level equilibrium trap of poor revenues leading to poor investments, poor service levels, poor cost recoveries and poor investments. One way of breaking this low level equilibrium trap is to develop a commercial and customer service focus by the utility. More satisfied customers means that there is a greater willingness to pay resulting in greater income potential for the utility.

2.2 Strategic Marketing Plans

Strategic marketing plans are viable business plans that target and promote appropriate service, payment and management options that can be provided reliably at appropriate prices to each of the customer groups or market segments. Strategic marketing plan emphasises on marketing mix consisting of a set of tools also known as 7 p’s of marketing: product, price, promotion, place, people, process and presence. It provides for a menu of options for each of the market segments from which the customers can chose.

In the Indian context water utilities provided only limited options such as individual piped connections, free public stand posts and borewells. Water utilities often consider it as a political necessity to supply free water to the low income and poor settlements. Though the consumers have expressed 'willingness to pay', the utilities and government have not shown the 'willingness to charge'. This has seriously affected both the service coverage and financial sustainability of the utility. Water utilities are now making sincere attempts to improve their commercial and customer orientation but are not aware of the ways and means to do it. Strategic marketing approach can be an important tool for these progressive utilities that are aiming to improve both service levels and financial viability.

There is a need for water utilities to offer more service options in a commercially viable manner. This is more so in India where services are currently intermittent and inadequate. There is a need for the utility to explore more unconventional and non-piped options, particularly in the low-income settlements. There is also considerable scope for different shared management options either between a utility and small-scale independent providers or between the utility and the community based organisations. Small private operators play an important part in the provision of water services in Africa, serving over 75% of the urban poor (Collignon B. and M. Vezina, WSP, 2000). In Tanzania and Bangladesh, community groups manage water kiosks that are supplied with water by the utility and payment is based on meter readings.

2.3 The Customer Value Chain

The concept of the "Customer Value Chain" is to *know, target, sell and service*. This concept is increasingly used in the commercial sector. In the context of the water sector, the customer value chain involves better knowledge and interactions with consumers through market segmentation, service differentiation, service promotion and service provision. Details of this concept are as follows:

Know and understand the different customer and potential customer groups, including their attitudes, practices, perceptions, preferences and their willingness to pay and sustain payment for improved water services. Since water is perceived both as a social and an economic good, effort is needed to understand people's perceptions. Methods available for getting to know perceptions of water users include questionnaire surveys, focus group discussions, customer consultative committees and local observation.

Target specific customer groups or market segments (e.g. commercial customers and domestic customers in high, medium and low-income areas), with appropriate service options, such as house connections, yard taps and water kiosks, with or without storage tanks, at appropriate price levels. Other options that can be offered are payment options (e.g. by post, at a bank, or at a local office) and shared management options.

Sell options using suitable promotion techniques. This will often require careful planning and implementation particularly when dealing with groups who use alternative water supplies or if they have unauthorised piped connections and do not currently pay.

Services provided to a high quality standard, delivered through a balance of people, processes and technology by knowledgeable staff. To provide such a standard of service requires utilities to adopt a programme of continual organisational improvement centered on ‘the customer’. In addition, effective collaboration between different departments within a utility (such as customer relations, billing, operation and maintenance, financial management etc.) can enable the resolution of typical customer problems.

A key to gaining knowledge of the different consumer groups is market segmentation.

2.4 Market Segmentation

Segmentation is the process of identifying groups of customers with enough characteristics in common to make possible the design and presentation of a product or service each group needs (Heskett, 1986). By identifying a segment’s special needs, the service provider can then design services to better meet them and in a financially sustainable manner. A market may be segmented according to demographic dimensions such as age, income educational level, family size and location. Each may have different relevance to a particular business.

In many urban areas of developing countries, the type of dwelling that people live in is generally a reflection of their socio-economic status. The people who live in slums and other informal settlements are generally the very poor, while those in well planned residential estates tend to be the more affluent in the population. The type of dwelling is therefore a convenient method that a water utility could use to segment the market and thus be an approximate proxy for household income.

In the Guntur study, market segmentation was carried out on the basis of type of dwelling. The study has identified the following seven market segments in Guntur based on the type of dwelling:

- Bungalows
- Independent houses in planned areas
- Independent houses in unplanned areas
- Flats in planned areas
- Flats in unplanned areas
- Slums and informal settlements with water supply coverage.
- Slums and informal settlements without water supply coverage.

The above classification could be helpful in formulating service options that can meet the financial, technical and customer preference aspects. This method of market segmentation is relatively easy to implement in the field as all dwellings could easily fit into one of these specific market segments. It is also possible to develop viable technical options to suit each of the market segments.

3. Where is GMC Now?

3.1 Water Production

Guntur Municipal Corporation (GMC) supplies about a total of 16.5 million gallons of water to the city (per day) with a theoretical daily per capita water supply of 33 gallons or 130 litres per day, from three filtration plants. Once being treated and transmitted to the reservoirs, the water is distributed through the 19 overhead tanks and 9 different reservoirs serving about 90% of the city area. The city is divided into 10 zones and the water is distributed through a network of pipelines, some 210 km long. (see Table 3.1)

Table 3.1: Water capacity for the 10 different zones in Guntur city

Zones	Present Population	Capacity in M.L. (million litres)
Gujanagulla	34906	1.5
Stambalgaruvu	55027	2.2
A.T.Agraharam	38339	1.5
Sarada Nagar	942043	3.1
HLR	64384	3.6
Court Compound	34228	1.3
Nehru Nagar	68824	2.4
B R Nagar	53651	2.8
LLR	109553	4.8
Nallacheruvu	468673	1.5
Total	600000	24.36

According to GMC, water demand in Guntur is 24 MGD. while the supply is 12 MGD.

The existing system has a capacity of 16.5 MGD. However, the utility is able to supply only up to 12 MGD due to various technical reasons. As a result nearly Guntur's capacity remains unutilised. GMC has estimated severe scarcity of water in view of the growing population over the next few years. To meet this growing demand for water, GMC has proposed to build a 10 MGD plant adjacent to the existing plant at Takkalapadu. The total cost of project is around 36 crores and HUDCO is expected to provide a loan amount of Rs. 25 crores. The project has already received financial clearance and is waiting for technical and administrative clearance. The project is expected to be completed in the next two years.

The existing 12 MGD (million gallons a day) capacity can only provide 40,000 connections. There are about 36,000 existing connections. Thus, the present capacity can only provide 3 to 4 thousand additional connections. The proposed water supply scheme to provide a 10 MGD water supply is expected to provide 35,000 additional connections. It is estimated that if the existing system can function up to its full capacity, an additional 4 MGD can be provided which may result in 12 to 15 thousand additional connections. Previously the GMC prepared proposals to improve the existing water supply system which have remained mainly on paper.

3.2 Water consumption and distribution

The total length of water distribution network of GMC is 600 km. The Guntur water supply distribution system in some parts of old the city is as old as British rule in India and the infrastructure in some colonies of new city is also more than 30 years old. A few areas located in the periphery do not have a distribution system at all and where the pipe distribution network is available, the supply is very poor.

About 32,800 household connections are provided for domestic purposes followed by 1026 for commercial purposes. The number of public stand posts (PSPs) and bore wells stood at 2662 and 1120 respectively. According to the estimates of GMC the physical water loss is estimated to be 15% which can be considered as a conservative estimate as the physical losses are often 30-40 %.

The water supply distribution to customers in Guntur is characterised by very low pressure. One of the important reasons is the lack of sufficient water at the source for distribution. Illegal pumping by residents by using handpumps on the distribution pipes also leads to low pressure. Measures such as improving the water level at source through new schemes, a ban on water pumping from the mains and the use of meters could improve pressure. Metering is considered as highly desirable and could curtail wastage, improve overall quantity and discourage residents from indiscriminate pumping of water. Therefore, all domestic connections should be metered. It is necessary to provide additional manpower and train them regarding all meter related matters. Water auditing, with the help of meters on the lines of energy audit (for electricity), can promote efficient utilisation of water

The same factors that affect pressure are also responsible for the availability of the low quantity of water. Measures such as improving the water source, banning of handpumps and metering of domestic connections could improve the available quantity of water. Three important factors influencing the frequency of supply are: power interruptions, repairs of motors machines and bursting of pipes or leakage. Availability of uninterrupted power, speedy repairing of motors and machines and a trouble shooting team to detect and repair leakage could lead to improvements in frequency.

The GMC provides water through water tankers mainly for those slums which do not have access to a water supply, free of charge. About 20 % of the supply is made to those customers who pay challans (for special occasions such as

marriages) for Rs.250.00. GMC has 12 tankers with each tanker having a capacity of 4 kl (4000 litres). These tankers make around 70 trips per day and cover 20-25 slums. The ITC division and a private company have each given a vehicle and driver to deliver water and the GMC bears only the fuel costs. If enough tankers are provided by donors, then provision of regular water on a sustainable basis through water tankers delivered to community managed ground tanks could emerge as a good option for the slums and also for other areas.

3.3 Procedures for new connections

The process of sanctioning new water connections by GMC is as follows: for a period of three to six months a quota of connections to be sanctioned is decided and a notification inviting applications is issued in the press. Any person requiring a water connection should fill-in a prescribed form and submit it along with a D.D. towards water connection charges along with property tax assessment receipt. The application will be scrutinised after which a water connection is sanctioned. After this, the Engineering Section provides an estimate of connection charges and pipe costs which are to be borne by the customer. The estimate charges are different from customer to customer. It may be useful to standardise these costs to encourage customers as often, estimate charges can be discouragingly high.

In Guntur all apartments are treated as having a commercial purpose and are provided with meters. When meters do not function customers are charged Rs.825 pm – for connections with 1”in width pipeline; Rs.1775 pm – for connections with 1 ¼” inch width pipeline.

The GMC has introduced the provision of group water connections to the low-income population. The guidelines for group connections under NSDP (a national programme) are as follows:

- All households in hutments with thatched roof living within a distance of 100 m².
- Households living in tiled roof houses with an area of less than 500 sq. yards within a distance of 100 m².
- Households living in government constructed economically weaker section RCC roof houses with an area of less than 250 sq. yards within a distance of 100 m².
- Physically handicapped head of the household with an income not exceeding Rs.25,000/- per annum.
- Household headed by a widow having an annual income of not more than Rs.25,000/- per annum.
- The group membership for a connection under NSDP should be between 6 to 10 households. The connection charges are Rs.3000 per connection. Individual domestic tariff rates are applicable. The connection is provided to the house selected by the group. The selected household will take the responsibility of paying water tariff.

3.4 Billing and Revenue Collection

The fixation of the water tariff rate is a political decision rather than an economic one. It is also linked to the earlier or preceding tariff structure which normally happens to be very low. Any decision to increase tariffs significantly to meet the costs of provision attracts resistance from both corporations and the public. The tariff rates for domestic connections were revised from Rs.40 to Rs.60 per month in 1999. Recently the GMC has proposed to increase the tariff to Rs.100 per month which was registered by both public and corporations. Finally, the GMC has settled for Rs.80 per month. The connection charges were increased from Rs.10,500 to Rs.12,000 for OYT (own your tap) procedure and from Rs.6,000 to Rs.6,500 for general taps.

The operating expenses on water for the latest year available stood at Rs.455 lakhs per annum. Given that there are 40,000 connections, the operating cost per connection works out to be Rs.1138. If the average consumption of water per connection is anywhere between 100 to 200 kl per month, then the cost works out to be between Rs.6 to 12 per kilolitre. However, the tariff rate at present is not even Rs. 1 per kl. *Thus, the operating revenues are nearly 1/5 to 1/10 of the operating costs.*

The annual capital cost for the latest year available stood at Rs.600 lakhs. This cost is expected to be recovered through connection charges from OYT (own your own tap) and general charges. Given the present charges of Rs.10,500 for OYT and Rs.6,000 for General connections, the GMC is required to provide new connections anywhere between 6000 to 10,000 a year. At present GMC is able to provide only 3 to 4 thousand connections per year. Although the charges under OYT (Own your tap) have increased up to Rs.12,000 for OYT, for the General connections they are increased only to Rs.6,500. As a result, GMC may not be in a position to recover capital costs unless the number of connections goes up significantly.

It is considered that large amounts are collected through connection charges and or/loans for various projects. But often this amount is kept in the General Account and utilised for some other purpose. Instead, the amount should be kept in a designated ESCROW account for water services and the interest earned through the deposit should be utilized for repayment of loan, if any, as well as for capital expenses.

The billing system for domestic water in Guntur is linked to the property tax assessment. Water tax for domestic purpose is issued along with property tax and drainage tax on a half yearly basis. The collection system is also common for all the three taxes, which are issued through a single bill. The enforcement of collections is also commonly done by the revenue inspectors. Thus, no separate billing and collection system exists for domestic water in Guntur and the bills are issued on an half-yearly basis, which means that the bills are rather large for poorer households. However, since 1998, monthly bills are issued for metered connections in the commercial sector.

3.5 Customer Services

GMC has set-up a Public Grievance Cell to address customer grievances and complaints with respect to the infrastructure such as water supply, roads, health, etc. The cell, with an allotted phone number, functions under an Officer on Special Duty. The complaints are taken down and listed in a register by the concerned clerk as the customer is allotted a registered number for future references. The PGC, classifies the complaints based on their nature and sends them to the department/section concerned. For example, complaints with regard to water supply are sent to the Engineering Section. The Engineering Section in turn allocates the complaint to its field staff, namely the Assistant Engineer. The concerned AE attends to the problem, rectifies it and reports back to the PGC, which duly records the status. Thus, the PGC maintains a comprehensive data comprising the name of complainant, date of complaint, nature of complaint and the date of rectification. A brief look at the nature of complaints related to water supply shows that leakage of pipes, non-functioning of public stand posts, contamination of water and not getting water from taps are some of the major areas of public grievance. Such a system with a long chain of reporting makes it difficult to maintain good relations with customers.

3.6 Cost recovery and financial performance

The total revenue from water has increased considerably since 1995-96. The collection efficiency during the past four years is found to be above 90 %. The total demand and collections during the year stood at about 208 and 205 lakhs respectively (see Table 3.2)

Table 3.2: Water tariffs charged by GMC between 1995 and 1997

Water Charges	1995-96			1996-97		
	Arrears	Current	Total	Arrears	Current	Total
Demand	56.13	140.00	196.13	7.88	200.00	207.88
Collection	53.68	134.57	188.25	5.26	199.73	204.99
Balance	2.45	5.43	7.88	2.62	0.27	2.89
% Collection	95.64	96.12	95.98	66.75	99.87	98.61

Source: GMC

Total operational revenues from water stood at Rs 483 lakhs of which the revenues from domestic use were about Rs. 236 lakhs while the revenues from commercial and individual sources were 246 and 0.50 lakhs respectively. The total operational expenditure for water stood at 443 lakhs (see Table 3.3) of which the power cost alone stood at 200 lakhs. The annual capital investment during the year was Rs. 230 lakhs. GMC has estimated that an investment of Rs. 3600 lakhs would be required to meet future requirements. The operational costs of water supplies has increased during the past three fiscal years while revenue collections have stagnated. All revenues are used to meet the operational expenditure with little remaining for capital investment.

Table 3.3: GMC water sector financial information

Item	Cost (in lakhs)
Total Operational Revenue	483
Total Operational Expenditure	443
Annual Capital Investment	230
Future Investment Required	3600
Net book value of fixed asset at year end	6000

Source: GMC

Revenue is also generated through the one-off water connection charge through the issue/allotment of new connections and regularisation of connections. The major revenue is through the OYT (own your tap) that is purely a new connection, while the general category consists of both new and regularisation of old connections (see Table 3.4).

Table 3.4 GMC connection charges 1995-98 (in lakhs)

Revenue	1995-96		1996-97		1997-98	
	No.	Amount	No.	Amount	No.	Amount
OYT	736	51.52	1371	95.97	744	52.08
General	210	8.4	875	35.00	671	26.84
Total	946	59.92	2246	130.97	1415	78.92

Source: GMC

The GMC revised its tariff charges for water in 1997-98. Prior to this, GMC charged Rs. 40 as a monthly flat rate per domestic connection, which was unmetered, while the tariff rate for metered commercial connections was Rs. 10 per kl. In 1997-98, GMC revised tariff monthly flat rates to Rs. 60 per month for domestic connections and Rs. 25 per kl for commercial connections as shown in Table 3.5

Table 3.5: Guntur MC flat rate water tariff revision

Tariffs (monthly flat rate in rupees)	1996-97	1997-98
Domestic connections (per kl)	40	60
Commercial (per kl)	10	25

Source: GMC

3.7 Existing Service Levels -Household Consumer Survey

This study has used multiple research methods (interviews, observations, surveys and focus group discussions) to collect information on existing service levels and customer services. Triangulation of data was done to confirm the existing situation.

3.7.1 Consumer Survey

A consumer survey of 300 households was conducted to assess existing service levels and customer services in Guntur. This comprehensive survey was conducted in July 2001 and the respondents were selected representatively from different parts of the city and from different market segments. Guntur city is divided into three broad areas: Old Guntur, New Guntur, and Periphery and customers were selected representatively from these areas. The market segmentation was done based on housing typology and the following seven typologies were identified in Guntur: bungalows, independent houses in planned areas, independent houses in unplanned areas, flats in planned areas, flats in unplanned areas, slums with water supply coverage, and slums with no water supply coverage.

A combination of sampling techniques (random, stratified random, and quota sampling) were used to ensure that respondents interviewed represented all three geographical locations and seven market segments of Guntur. A sample of 300 respondents were interviewed using a comprehensive questionnaire administered by trained enumerators. This customer survey was preceded by a pilot customer survey. The questionnaire was piloted in Guntur during July 2001, a sample of 60 respondents were surveyed. The results of the pilot survey were analysed and the information was used to prepare a comprehensive consumer survey and willingness to pay questionnaire.

3.7.2 Levels of Services Provided by Guntur MC

The consumer survey conducted in Guntur revealed that 100 to 96 % of households in five market segments (bungalows, independent houses in planned areas, independent houses in unplanned areas, flats in planned areas, and flats in unplanned areas) have access to either an individual or shared piped connection. Only 30 % of households in slums with water supply coverage had access to an

individual or shared connection, while no one had a piped connection in the market segment of slums with no water supply coverage.

However, the survey also revealed that the level of water services provided by the GMC was quite poor. This can be seen from the fact that only 14 % from bungalows, 4 % from independent houses in planned areas, 25 % from independent houses in unplanned areas, 12 % from slums with water supply coverage and none from flats in planned and unplanned areas reported individual or shared connections as the only source of water. Thus, the majority of the households, irrespective of market segment, depended heavily on water sources other than individual or shared connections provided by the GMC.

The GMC water services were characterised by poor pressure, low duration and inadequate quantity of supply. Most of the households complained about the poor pressure and field observations also revealed that it is almost impossible to obtain water from the taps through normal gravitational mechanisms. As a result each household uses either a motor or handpump to suck the water from the pipeline. Although this practice was considered illegal a couple of years ago, it is more or less legalised in the present context. However, this process is further destabilising the system and the people living on the fringes are not in a position to obtain water even by using hand pumps or motors. This practice also leads to water contamination.

The problem was compounded by the low frequency and duration of the supply. The frequency of supply was once a day and the duration for less than two hours in surveyed market segments, although some localities got water for three to four hours due to technical reasons. At the same time the majority of the respondents considered the supply to be reliable.

Because of the poor water services provided by the GMC, most of the households had developed their own coping mechanisms through alternative sources of supply. For example, 80 to 100 % of households living in bungalows, independent houses in planned areas, and flats in planned and unplanned areas had their own, or use of a shared borewell and used this as an additional source of water (see Table 3.6). About 47 % of households living in independent houses in unplanned areas and one-third of households living in slums with water supply coverage have either a borehole or well as an additional source. Only in case of slums with no water supply coverage, an overwhelming 96 % of people depended exclusively on the municipal water tanker supply by GMC (see Table 3.7).

Table 3.6: Alternative water sources

Market segments	Attribute	Percentage
Bungalows	Individual borehole	80
Independent houses in planned areas	Individual borehole	70
Flats in planned areas	Shared borehole	100
Independent houses in unplanned areas	Own borehole	33
	Own open well	33
Flats in unplanned areas	Shared borehole	100
Slums with some water supply coverage	Public borehole	32
	Own borehole	54
Slums with no water supply coverage	Municipal tanker	96
	Open well	4

Table 3.7: Main sources of water supply

Market segments	Attribute	Percentage
Bungalows	Individual connections and individual borehole / well	80
Independent houses in planned areas	Individual connections and individual borehole / well	90
Flats in planned areas	Shared piped connection and shared borehole/well	96
Independent houses in unplanned areas	Individual connections and individual borehole / well	47
Flats in unplanned areas	Shared piped connection and shared borehole / well	100
Slums with some water supply coverage	Only PSP	36
Slums with no water supply coverage	Municipal water tanker	96

The water services provided by GMC appeared to be unevenly distributed across the different market segments. This can be seen from the fact that more than 90 % of households living in bungalows reported individual piped connection as the main source followed by 86 and 84 % of those living in independent houses in planned and unplanned areas respectively, as shown in Table 3.8. However, those living in flats in planned and unplanned areas indicated that borewells were the main source of supply. Public stand posts emerged as the main source of supply for 44 % of households living in slums with water supply coverage while municipal tanker is the main source for 96 % of those living in slums with no water supply coverage.

Table 3.8: Main source of water supply

Market segment	Attribute	Percentage
Bungalows	Individual connection	94
Independent houses in planned areas	Individual connection	86
Flats in planned areas	Borehole / well	100
Independent houses in unplanned areas	Individual connection	84
Flats in unplanned areas	Borehole / well	100
Slums with some water supply coverage	PSP	44
Slums with no water supply coverage	Municipal water tanker	96

The customer survey data relating to the nature of piped connections (see Table 3.9) showed that 90 to 100 % of households living in bungalows and independent households in planned and unplanned areas had individual piped connections. About 96 to 100 % of households living in flats in planned and unplanned areas have shared connections. About 70 % of households living in slums with water supply coverage and 100 % of those living in slums with no water supply coverage did not have a piped connection. Thus, a significant proportion of the slum population did not have a piped connection and there is scope for substantial improvement in the coverage of the piped water supply. Although a substantial proportion of the non-slum population was covered by piped water supply, they depend heavily on alternative water sources, particularly borewells. The piped supply is dogged by problems such as low pressure, low duration and inadequate quantity.

Table 3.9: Nature of piped connection

Market segment	Attribute	Percentage
Bungalows	Individual connection	100
Independent houses in planned areas	Individual connection	98
Flats in planned areas	Shared piped connection	96
Independent houses in unplanned areas	Individual piped connection	90
Flats in unplanned areas	Shared piped connection	100
Slums with some water supply coverage	No piped connection	71
Slums with no water supply coverage	No piped connection	100

The customer survey data related to method of water storage (see Table 3.10) indicates that 100 to 80 % of households living in bungalows, flats in planned and

unplanned areas and independent houses in planned areas have either a roof tank or ground tank or both for the purpose of storing water. Thus, households belonging to these market segments had made substantial investments for storing water. About 47 % of households residing in independent houses in unplanned areas and 96 to 100 % of households living in slums with and without water supply coverage stored water in small containers and buckets. Except the market segment with no water supply coverage, the stored water was stated to be adequate for only one day in all other market segments. In the case of slums with no water supply coverage, the stored water was stated to last for two days since the municipal water tanker supplied water on alternate days.

Table 3.10: Method of water storage

Market segment	Attribute	Percentage
Bungalows	Roof tank or ground tank or both	100
Independent houses in planned areas	Roof tank	80
Flats in planned areas	Roof tank or ground tank or both	100
Independent houses in unplanned areas	Small containers or buckets	47
Flats in unplanned areas	Roof tank or ground tank or both	97
Slums with some water supply coverage	Small containers or buckets	96
Slums with no water supply coverage	Small containers or buckets	100

The quality of water supplied by the GMC appeared to be poor. This was evident from the customer survey data, which showed that 82 to 96 % of households in all the market segments regularly treat the piped water from the GMC (see Table 3.11). About 66 to 82 % of households in these segments used either a water filter or purifier for water treatment while some boiled the water or adopted both the methods (see Table 3.12).

Table 3.11: Water treatment of piped supply

Market segment	Attribute	Percentage
Bungalows	Yes	94
Independent houses in planned areas	Yes	96
Flats in planned areas	Yes	96
Independent houses in unplanned areas	Yes	91
Flats in unplanned areas	Yes	96
Slums with some water supply coverage	Yes	82
Slums with no water supply coverage	-	-

Table 3.12: Nature of water treatment

Typology	Attribute	Percentage
Bungalows	Water purifier or filter	66
Independent houses in planned areas	Water purifier or filter	82
Flats in planned areas	Water purifier or filter	71
Independent houses in unplanned areas	Water purifier or filter	73
Flats in unplanned areas	Water purifier or filter	72
Slums with some water supply coverage	Water purifier or filter	68
Slums with no water supply coverage	-	-

Most customers had to pay a water bill for GMC water, although households in some market segments received their water for free. For example 86 to 100 % of households living in independent houses, flats and bungalows reported to be paying bills to the GMC. About 44 % of households living in slums with water supply coverage and 100 % of households living in slums with no water supply coverage obtained water for free from the GMC through public stand posts and municipal tankers respectively.

The survey data has shown that households living in bungalows, independent houses in planned and unplanned areas and slums pay their water bills on a flat rate basis at Rs 80 per month per household. Those living in flats in planned and unplanned areas have metered connections and they pay on an average Rs 100 per month per household based on the meter reading. The bills for metered connections were issued on a monthly basis while the bills on a flat rate basis were issued once every six months along with the property tax. Thus, it is

interesting to note that the households living in bungalows and slums pay the same amount for the water supplied by the GMC.

In most market segments, except flats, the head of the household paid the water bills. In case of flats in both planned and unplanned areas, the president or the secretary of the flat owners' association paid the bill. Some of the tenants paid their water bills to the landlord. Generally all market segments in Guntur paid their water bill in cash or by cheque to GMC office or the GMC officer collects cash or cheque as shown in Table 3.13. In the case of bungalows, independent houses in planned and unplanned areas, and slums with water supply coverage, the predominant mode of payment was by cash or cheque to the GMC office. The predominant mode of payment in case of flats in both planned and unplanned areas was collection of cash or cheque by the GMC officer.

Table 3.13: Mode of payment of water bills

Market segments	Attribute	Percentage
Bungalows	Cash/cheque to GMC office.	52
	GMC office collects cheque/cash	34
Independent houses in planned areas	Cash/cheque to GMC office.	49
	GMC office collects cheque/cash	33
Flats in planned areas	Cash/cheque to GMC office.	08
	GMC office collects cheque/cash	79
Independent houses in unplanned areas	Cash/cheque to GMC office.	55
	GMC office collects cheque/cash	36
Flats in unplanned areas	Cash/cheque to GMC office.	09
	GMC office collects cheque/cash	83
Slums with some water supply coverage	Cash/cheque to GMC office.	41
	GMC office collects cheque/cash	59
Slums with no water supply coverage	-	-

It is interesting to note that majority of the households in all market segments found their water bills reasonable (see Table 3.14). For example, 100 % of households in bungalows and slums with water supply coverage found the bills reasonable, despite the poor services. Around 85 % of households in independent houses in planned and unplanned areas, 80 % of households in flats in planned areas and 90 % of households in flats in unplanned areas found the bills reasonable. Some respondents living in flats expressed the view that those having individual connections paid less than them while they end up paying more for a shared connection and thought that this was unfair. However, only 6 to

14 % of households belonging to different market segments had complaints regarding the billing system (see Table 3.15). This clearly showed that water tariffs were quite low and there is scope for increasing tariffs , but only while improving the existing service levels.

Table 3.14: Is the water bill reasonable?

Market segments	Attribute	Percentage
Bungalows	Yes	100
Independent houses in planned areas	Yes	84
Flats in planned areas	Yes	79
Independent houses in unplanned areas	Yes	87
Flats in unplanned areas	Yes	91
Slums with some water supply coverage	Yes	100
Slums with no water supply coverage	-	-

Table 3.15: Complaints about the present billing system

Market segments	Attribute	Percentage
Bungalows	Yes	06
Independent houses in planned areas	Yes	06
Flats in planned areas	Yes	08
Independent houses in unplanned areas	Yes	-
Flats in unplanned areas	Yes	13
Slums with some water supply coverage	Yes	14
Slums with no water supply coverage		-

3.7.3 GMC Customer Services

The customer survey probed the respondents in all market segments regarding the customer services provided by the GMC. The survey data has shown (see Table 3.16) that less than five % of households in any of the market segment rated the customer services of GMC as good. The remaining 95 % or more households considered the services as average or poor. The major areas of complaint appeared to be low water pressure, inadequate quantity, service interruptions and poor quality. The customer services related to billing were rated

as good by 40 to 50 % of households, particularly in the case of complaints related to irregular delivery of bills and over billing.

Table 3.16: Overall opinion of GMC customer services

Market segments	Attribute	Percentage
Bungalows	Good	02
	Average or poor	84
Independent houses in planned areas	Good	-
	Average or poor	86
Flats in planned areas	Good	04
	Average or poor	72
Independent houses in unplanned areas	Good	02
	Average or poor	78
Flats in unplanned areas	Good	08
	Average or poor	76
Slums with some water supply coverage	Good	05
	Average or poor	95
Slums with no water supply coverage	-	-

A number of customers surveyed indicated their willingness to complain in the case of problems with water supply services provided by the GMC. The percentage was highest for those living in bungalows (84%) and lowest for those living in flats in unplanned areas (36 %). About 50 to 60 % of households in the remaining market segments expressed their willingness to complain in the case of problems with the water services provided by the GMC. The complaints were stated to be registered either at the local GMC area office, which is also referred to as the reservoir office, or the head office of GMC (see Table 3.17). Table 3.18 shows that the respondents registered complaints either by visiting in person or by telephone or by both methods.

Table 3.17: Complaint to whom?

Market segments	Attribute	Percentage
Bungalows	Local GMC area office.	38
	GMC head office	46
Independent houses in planned areas	Local GMC area office.	17
	GMC head office	83
Flats in planned areas	Local GMC area office.	50
	GMC head office	50
Independent houses in unplanned areas	Local GMC area office.	31
	GMC head office	35
Flats in unplanned areas	Local GMC area office.	11
	GMC head office	89
Slums with some water supply coverage	Local GMC area office.	58
	GMC head office	42
Slums with no water supply coverage	-	-

Table 3.18: Complaint method

Market segments	Attribute	Percentage
Bungalows	Visit in person or telephone or both	84
Independent houses in planned areas	Visit in person	44
Flats in planned areas	By telephone	50
Independent houses in unplanned areas	Visit in person	81
Flats in unplanned areas	Visit in person and telephone	56
Slums with some water supply coverage	Visit in person	100
Slums with no water supply coverage		

The majority of the respondents considered the GMC office to be accessible in terms of opening timings, distance and the attitude of the officials (see Table 3.19). More than 80 % of the households in flats in planned areas and slums with water supply coverage found the GMC offices accessible.

Table 3.19: Are GMC offices accessible?

Market segments	Attribute	Percentage
Bungalows	Yes	58
Independent houses in planned areas	Yes	74
Flats in planned areas	Yes	82
Independent houses in unplanned areas	Yes	94
Flats in unplanned areas	Yes	67
Slums with some water supply coverage	Yes	83
Slums with no water supply coverage	-	-

3.8 Alternative Water Sources

Customer survey and field observations revealed that individual borewells, open wells, public stand posts, public borewells and municipal water tankers were the main alternative sources to the GMC piped connection. The customer survey data has shown that 100 % of respondents living in flats in planned and unplanned areas were dependent on shared borewells. About 80 % of respondents in bungalows and 70 % of respondents in independent houses in planned areas depended on individual borewells. In slums with water supply coverage, 54 % of respondents had an individual open well while 32 % were dependent on public borewells. In slums with no water supply coverage, 96 % relied solely on the municipal water tanker while the remaining 4 % also had individual open wells as an additional source. The individual borewells and open wells were maintained by the households themselves, whereas shared borewells were maintained by the flat owners associations and the public stand posts, public borewells and municipal water tankers were managed by the GMC.

3.8.1 Characteristics of Borewell Users

Individual borewells were installed by the individual owners at their own cost, within the premises of the house. An accompanying requirement of a borewell is the construction of a roof tank, as well as a ground tank in some cases, and also an electric motor pump. The water is pumped to the roof tank using the electric motor and from there it is delivered to the house through a pipeline. It normally takes 15 to 20 minutes to collect the water. The supply is continuous and the water can be obtained as per convenience. The water supply from this source was considered to be reliable and adequate. Although the water quality was considered to be good, it was mainly used for non-drinking purposes without any treatment. The distance of the source was less than 100 metres away. The capital cost of establishing a borewell was in the range of Rs 30,000 to 40,000 which included the borewell, roof tank and electric pump. The operating costs were

mainly in the form of electricity charges for using the motor and ranged between Rs 200 per month to Rs 300 per month in times of piped water shortages, particularly in summer. The water supply from this source was found to be satisfactory by all the users.

3.8.2 Characteristics of Public Stand Post Users

Public stand posts (PSPs) are managed by the GMC and supply free water to the public particularly to those living in slums and low-income settlements. A member of the household usually collects the water. From the customer survey it was observed that as many as 62 % of PSPs are located within a short distance (less than 100 metres) of the house; 29 % within a distance of 100 to 200 metres and only 9 % located at a distance of more than 200 metres. Thus, PSPs are located at a reasonably accessible distance to the households. As a result, 73 % of households found collection of water as convenient. The supply frequency is once a day and it was found to be reliable. However, only 71 % of the households reported that the quantity was sufficient. According to majority of the users of PSPs (51 %), the quality of water was not good. As a result, nearly 71 % of households treated the water either by using water filters/purifiers or by boiling the water. It is not surprising, therefore, that as many as 60 % of respondents expressed dissatisfaction with this source. The reasons stated for dissatisfaction were insufficient quantity and poor quality of water.

3.8.3 Characteristics of municipal water tanker users

The GMC supplied water by water tanker, free of charge, to those poor slum communities that were not connected to the water supply network.. The distance of collection point from the house was less than 100 metres in case of 42 % of respondents. About 29 % of respondents collected water from a distance of 100 to 200 meters, while as many as 67 % collected it from a distance of more than 200 meters. Despite water only being delivered every two or three days, respondents considered the supply to be reliable. Nearly 80 % of the respondents stated that they received a sufficient quantity of water from this source. It is interesting to note that almost all the households stated that the quality water supplied by this source was good and more than 80 % do not treat the water. About 80 % of the households expressed overall satisfaction from this source.

3.9 Coping Costs and Strategies

In view of the inadequate and intermittent access to piped water supply, households have adopted various coping strategies resulting in additional coping costs. The household survey found that the low income and slum population invest a significant amount of time in collecting water from PSPs and other sources. The monetary value of which can be quite large, as shown in Table 3.20

Table 3.20: Opportunity cost (as a percentage of income) of time spent collecting water

Income Group (Rs.)	Opportunity Cost as percentage of income
<2000	15.10
2000-5000	2.9
5000-10000	1.01
>10000	0.55
Average	4.81

Due to the poor quality of many alternative water sources and the contamination of potable water, households are exposed to water borne diseases, which require incurring of expenses. Once again, it is the low-income category of households who spend a significant proportion of their income towards the treatment of water borne diseases (see Table 3.21).

Table 3.21; Expenses incurred on water borne diseases

Income Group (Rs.)	Percentage of income
<2000	5.40
2000-5000	3.15
5000-10000	0.72
>10000	0.86
Average	2.53

As a preventive measure of water borne diseases, households have incurred expenses on water purifiers, boiling water or mineral water, as shown in Table 3.22.

Table 3.22 Expenses on boiled/mineral water (as a % of income)

Income Group (Rs.)	Percentage of income
<2000	0.2
2000-5000	0.3
5000-10000	0.23
>10000	0.38
Average	0.27

Households have also invested in pumping equipment to cope with the inadequate pressure of the water supply in Guntur. The total annual capital expenditure of households to cope with the situation constitutes 15 % of their income (see Table 3.23).

Table 3.23 Total Annual Capital Expenditure (TACE) as a percentage of income

Income Group	Municipal	Non-municipal	TACH
<2000	9.7	10.0	19.27
2000-5000	4.4	16.0	20.4
5000-10000	2.3	10.0	11.7
>10000	1.4	9.2	10.6
Average	4.45	11.3	15.4

The study has worked out the total coping costs as percentage income (see Table 3.24), which works out quite high for the low-income sections.

Table 3.24: Coping costs as percentage of income

Income Group	Percentage of income
<2000	18.0
2000-5000	16.0
5000-10000	9.4
>10000	9.2
Average	13.15

3.10 Socio-economic Status of the Households

The consumer survey covered both male and female respondents. Female respondents constituted 58 % in the slums with water supply coverage, 53 % in independent houses in unplanned areas and 50 % in slums with no water supply coverage. About 76 % of respondents in bungalows, 72 % in flats in planned areas, 68 % in flats in unplanned areas and 64 % in independent houses in planned areas were male (see Table 3.25).

Table 3.25: Respondent sex

Market segments	Attribute	Percentage
Bungalows	Male	76
	Female	24
Independent houses in planned areas	Male	64
	Female	36
Flats in planned areas	Male	72
	Female	28
Independent houses in unplanned areas	Male	47
	Female	53
Flats in unplanned areas	Male	68
	Female	32
Slums with some water supply coverage	Male	42
	Female	58
Slums with no water supply coverage	Male	50
	Female	50

Data on house-ownership status showed that the majority of respondents were house-owners (see Table 3.26). More than 90 % of the households living in independent houses in unplanned areas, flats in unplanned areas and slums with and without water supply coverage had their own houses. About 84 % of households living in flats in planned areas, 82 % in bungalows and 76 % in independent houses in planned areas stated to own their house.

Table 3.26 Ownership status of the dwelling

Market segments	Attribute	Percentage
Bungalows	Owned	82
	Rented	18
Independent houses in planned areas	Owned	76
	Rented	24
Flats in planned areas	Owned	84
	Rented	16
Independent houses in unplanned areas	Owned	92
	Rented	08
Flats in unplanned areas	Owned	92
	Rented	08
Slums with some water supply coverage	Owned	92
	Rented	08
Slums with no water supply coverage	Owned	92
	Rented	08

All the surveyed households in the market segments of bungalows, independent houses in planned and unplanned areas and flats in planned and unplanned areas claimed to have an electricity connection (see Table 3.27). In slums with water supply coverage as many as 82 % had an electricity connection while in slums with no water supply coverage only two-thirds of households had a connection. The customer survey data relating to average monthly expenditure on electricity shows that those living in bungalows spent the most (Rs. 810) per month, followed by those living in flats in unplanned areas (Rs. 500), independent houses in planned areas (Rs. 467) and flats in planned areas (Rs. 382).

Table 3.27 Do you have an electricity connection?

Market segments	Attribute	Percentage
Bungalows	Yes	100
Independent houses in planned areas	Yes	100
Flats in planned areas	Yes	100
Independent houses in unplanned areas	Yes	100
Flats in unplanned areas	Yes	100
Slums with some water supply coverage	Yes	82
	No	18
Slums with no water supply coverage	Yes	67
	No	33

3.11 Estimated Average Monthly Household Income

This study has estimated the average monthly income of the households in the different market segments based on the average household expenditure on housing. The household income is estimated by assuming that the housing expenditure constitutes 20 % of household income (see Table 3.28). Slums with water supply coverage represent the low income settlements with an estimated monthly household income of about Rs 2,000. Slums with no water supply coverage constitute the poor and the below poverty line population with an estimated monthly household income of about Rs 600.

Table 3.28: Calculation of average household income

Typology	Average housing expenditure (20% of income)	House hold monthly income
Bungalows	2353	11765
Independent houses in planned areas	1567	7833
Independent houses in unplanned areas	925	4625
Flats in planned areas	2016	10078
Flats in unplanned areas	2236	11180
Slums having some water supply coverage	423	2113
Slums having some water supply coverage	121	605

3.12 Competitor Analysis

Borewells are the major competitors to the utility water services, particularly when the latter is plagued by various problems such as long delays in getting connections, high costs of connections and poor quality of water services in terms of frequency, quantity and quality. In terms of costs, borewells require more or less equal costs to the utility water supply, which at present is about Rs. 15, 000 a year. Due to this cost parity between the two competitive services, households prefer borewells to piped supply. However, high levels of salinity and depletion of ground water level is causing insecurity and increased concern in considering borewells as an alternative and viable option in the future. As a result, households have started treating borewells as a complement to utility water services. Moreover, tenants often tend to prefer utility water to borewells and landlords are forced to take note of this fact. All these factors are leading to a high demand for water connections. Many of the borewell owners may prefer to treat a water connection as a major source of water supply, relegating borewells to a supplementary position. Improved water supply delivery may further enhance the

demand for water services in the future and people may be willing to pay higher levels of tariffs for such a service.

3.13 PEST Analysis

In order to have a good understanding of the 'environment' of improving water services, it is useful to undertake a 'PEST' analysis considering the influence of political, environment, social and technical factors. A summary of an analysis for Guntur is set out below.

3.13.1 Political Analysis

- The decisions of the GMC are governed more by the political factors rather than the economic factors. GMC is a local-self government body headed by a municipal council constituting people's representatives. GMC is not a commercial entity with a stated profitability objective. It is also not an exclusive water utility but a municipal corporation having delivery of water services as one of its many functions. These factors could act as constraints in developing financially viable options.
- However, GMC is one of the progressive municipalities that has undertaken a number of reforms for improving its efficiency and financial viability. The political representatives are aware of the need for commercialisation and customer orientation in the effective delivery of services. This could act as a positive factor.
- There is a tendency among the public, particularly the poor and low income communities, to treat water as a free social good. In recent times, a change in perceptions has been observed and people, particularly those belonging to middle and high income sections are willing to pay high amounts for improvements in service levels. This change has come about due to the understanding of high coping costs incurred by them.
- Some politicians are reluctant to increase tariffs due to the fear of losing the confidence of the public and, consequently, their political office. Thus, there is a lack of willingness to charge from the political establishment.

3.13.2 Environmental Analysis

- The distribution and transmission facilities in Guntur are quite old and pass through open drainage channels causing serious contamination problems.
- Only 25% of Guntur is covered by an under ground drainage system. Given this there is an environmental risk in providing a conventional water distribution network in areas that are not connected to a waste-water collection system.

3.13.3 Social Analysis

- A significant number of illegal connections exist in Guntur on account of which the GMC is losing substantial revenues.
- The existing charges for individual piped connections are high and are acting as an entry barrier.
- There is a wide spread use of illegal motors or hand pumps directly connected to pipelines for drawing water due to poor pressure. This is causing serious imbalances in the existing distribution system.
- A significant proportion of slum and low-income communities receive free water through public stand posts and municipal tankers. This has given rise to people living in these sectors to think that water should be provided free of charge.
- Enforcing payment for water through disconnection, particularly for the domestic sector, is socially and politically unacceptable.

3.13.4 Technological Analysis

- Guntur is constrained by the lack of availability of an adequate water source that can be supplied at reasonable cost. As a result, the GMC requires huge capital investments for developing a water source. Energy costs constitute a significant proportion of the operating costs.
- The water distribution system is quite old and results in significant physical losses. The Unaccounted for Water (UFW) in Guntur is estimated at 40% of water production.
- The ground water in Guntur has a high fluoride content and is not fit for human consumption.

3.14 SWOT Analysis of Guntur Municipal Corporation

Based on the consumer surveys and utility data the following strengths, weaknesses, opportunities and threats have been identified.

Strengths

- Corporation status headed by IAS rank Commissioner
- Good image as a performing Agency
- Access to international funding
- Availability of technical and qualified man power
- Well laid out organisational structure
- Continuous and smooth flow of communication
- Good transport facilities

- Good database through computer section and GIS section
- Central location
- Good infrastructure – land and buildings
- Availability of a public grievance cell

Weaknesses

- No separate organisation or even department for provision and maintenance of water supply
- Unmetered connections for domestic use
- Low tariff rate on a flat rate basis
- Tariff decision based on political consideration
- No separate system of billing and collections for water supply
- Poor financial accounting – accounting based on non-commercial accounting method.
- Under utilisation of existing capacity for water supply
- Limited number of connections on a quota basis
- Non-availability of good water source near by
- Poor quality of ground water
- Large quantity of unaccounted physical losses
- Supply of water at very low pressure

Opportunities

- Large demand for piped water supply in view of growing population
- Availability of advanced technology and application of GIS
- Global and national agencies like DFID and HUDCO supporting the developmental activity in the city.
- High level of community participation
- Rapid educational and economic development of the city
- City well connected by rail and road to the capital of the state and other surrounding cities.
- Willingness to pay a reasonable tariff for water, particularly by those households living in posh colonies and flats.

Threats

- Rapid growth of the city in a haphazard manner in all directions
- High transit population
- Frequent interruption of power supply, break down of machines and motors and leakage of piping affecting the frequency and quality of water supply
- High and illegal use of hand pumps by consumers for drawing of water
- Unauthorised and illegal water connections.
- Rapid growth of slums.
- Limited scope for expansion of distribution systems
- Political interference
- Non-availability of ready water source to meet the growing demand
- Threat of depletion of ground water table.

Such PEST and SWOT analyses can be used to inform both strategic plans and investment planning for improved service provision.

4. Where does GMC want to be?

4.1 Proposed and Feasible Options

It is proposed to offer different service options at different prices, to various market segments from the menu of options. The proposed service options (as part of the consumer and willingness to pay surveys) offer varying levels of service with different management and payment systems, as is described below.

Category 1: People who live in Bungalows, Independent Houses and Flats

Three levels of service (service levels 1, 2 and 3) were offered to households who live in a bungalow or independent house or flat in a planned area. A bungalow is a house constructed with permanent building materials having a garden or large vacant space with relatively large built-up area or rooms. An independent house is a house constructed with permanent building materials having little or no vacant space with relatively less built-up area located in or closer to the central part of the city. Flats are located in multi-storied apartments in or closer to central part of the city.

Service level 1: Clean piped water through individual connection with adequate pressure with a continuous 12 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure to be able to reach a roof tank (1st floor) with a continuous 12- hour water supply.

The proposed price range is Rs 1100/- to Rs 1500/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 2: Clean piped water through individual connection with adequate pressure with 8 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure to be able to reach a roof tank (1st floor) for 8- hours, on a rationing basis in the morning and evening everyday.

The proposed price range is Rs 900/- to Rs 1100/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 3: Clean piped water through individual connection with adequate pressure with 4 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure for 4- hours, on a rationing basis at suitable times in the morning and evening everyday.

The proposed price range is Rs 600/- to Rs 900/- per month (based on discussions with and calculations made by the GMC engineers).

Category 2: People who live in Independent Houses and Flats in Unplanned Areas.

Five levels of service (service levels 4, 5, 6, 7 and 8) were offered to households who live in an independent house or flat in an unplanned area.. An independent house is a house constructed with permanent building materials having little or no vacant space with relatively less built-up area located in an unplanned area or periphery of the city. Flats are located in multi-storied apartments in the periphery or outer part of the city.

Service level 4: Clean piped water through individual connection with adequate pressure with a continuous 12 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure to be able to reach a roof tank (1st floor) with a continuous 12- hour water supply.

The proposed price range is Rs 1100/- to Rs 1500/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 5: Clean piped water through individual connection with adequate pressure with 8 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure to be able to reach a roof tank (1st floor) for 8- hours, on a rationing basis in the morning and evening everyday.

The proposed price range is Rs 900/- to Rs 1100/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 6: Clean piped water through individual connection with adequate pressure with 4 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure for 4- hours, on a rationing basis at suitable times in the morning and evening everyday.

The proposed price range is Rs 600/- to Rs 900/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 7: Clean adequate water for daily use through tanker services along with bottled 20 litre potable water.

It is proposed to supply good quality adequate water for daily use through a tanker service along with bottled 20 litre potable water at a convenient time in a reliable manner every day.

The proposed price range is Rs 1100/- to Rs 1500/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 8: Private management of water distribution system and supply of water for at least two hours per day in unconnected areas.

It is proposed to entrust the responsibility of constructing and managing the distribution network to a private agency in areas that are not connected to GMC mainline distribution system which can provide good quality potable water with adequate pressure for at least two hours per day.

Category 3: People who live in Slums/Informal Settlements With or Without Water Supply Coverage.

Six levels of service (service levels 9, 10, 11, 12, 13 and 14) were offered to households who live in slums and informal settlements with or without water supply coverage. A slum is a spontaneous and unplanned settlement of low-income people without proper and adequate physical infrastructure. The houses in slums are constructed with temporary building materials. They may also lack the title of ownership to land and housing. Slums having water supply coverage are those closer to the city, connected to the water supply network and are granted land tenureship rights. Slums without water supply coverage are those located in the fringe or periphery, not connected to the water supply network and often lack land tenureship rights.

Service level 9: Clean piped water through individual connection with adequate pressure with 2 – hour water supply.

It is proposed to supply good quality piped water through the customers' individual house connection with adequate pressure for 2- hours, on a rationing basis at suitable times in the morning and evening everyday.

The proposed price range is Rs 300/- to Rs 600/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 10: Clean piped water through group connection (8-10 households) with adequate pressure with 2 – hour water supply.

It is proposed to supply good quality piped water through a group connection for a group of 8 to 10 households located at a convenient distance with adequate

pressure for 2- hours, on a rationing basis at suitable times in the morning and evening everyday.

The proposed price range is Rs 300/- to Rs 600/- per month for the entire group (based on discussions with and calculations made by the GMC engineers).

Service level 11: Community managed ground tank connected to municipal line with one hour supply.

It is proposed that the GMC builds a community ground tank with several taps connected to municipal line and managed by a community group, that can provide adequate water at a convenient time in a reliable manner for at last one hour every day.

The proposed price range is Rs 100/- to Rs 250/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 12: Community managed ground tank connected to tanker service with one hour supply.

It is proposed that GMC builds a community ground tank with several taps connected to tanker service and managed by a community group, that can provide adequate water at a convenient time in a reliable manner for at last one hour every day.

The proposed price range is Rs 100/- to Rs 250/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 13: Public stand post/Public borehole managed by a private vendor.

It is proposed that GMC auctions Public stand post/Public borehole tenders to a private vendor who provides treated water with an assured quantity of 10 jerrycans/buckets, each having 20 litre capacity at a convenient time in a reliable manner.

The proposed price range is Rs 50 to Rs 200/- per month (based on discussions with and calculations made by the GMC engineers).

Service level 14: Ground tank connected to a open well

It is proposed that GMC acquires open wells on lease and provides treated water by connecting it to a ground tank with several taps with an assured quantity of 10 jerrycans/buckets per day, each having 20 litre capacity at a convenient time in a reliable manner.

The proposed price range is Rs 50 to Rs 200/- per month (based on discussions with and calculations made by the GMC engineers).

4.2 Willingness To Pay (WTP) for Selected Options

4.2.1 WTP results overview

The aim of the draft Strategic marketing plan (SMP) is to offer feasible service options, to obtain amounts that people are willing to pay and then to select the most popular service levels. The rationale is to give people what is possible, what they want and what they are willing to pay for.

The contingent valuation method (CVM) was used to estimate the amount of money that households were willing to pay for various service options. Different service options were offered to respondents according to their market segments and their willingness to pay was obtained. Market segmentation was done on the basis of type of dwelling. The 300 households interviewed were spread over three geographical locations in Guntur and represented all seven market segments. Respondents were requested to state the amount of money they are willing to pay for the stated service option.

The results of the willingness to pay studies reveal that the customers are willing to pay substantial amounts for improved water services. Willingness to pay levels is much higher than the existing utility water tariffs. In addition, respondents were willing to pay for service levels higher than the existing utility water tariffs. The results are tabulated in sections 4.2.2 to 4.2.8 (see Tables 4.1 to 4.14). Although the WTP among the households in slums with water supply coverage was low at Rs 100, it is much higher than the present tariff levels. As expected, the WTP was the lowest among those living slums with no water supply coverage but equals the existing tariff rates.

An important outcome of the WTP studies in Guntur is that although the WTP levels for improved services are quite high and households are not keen for opting the highest service level, i.e., 12-hour continuous supply. The majority of the households in all market segments preferred the option offering a 4- hour continuous supply with adequate pressure. Despite there being a substantial difference in the service level between a 12 and 4 hour supply, there was no significance difference in the WTP for the respective options. *The WTP for a 4 hour supply is four to five times the existing tariff levels.* Given the poor level of services presently offered by the GMC, people consider a 4 hour supply of good quality water with adequate pressure as a substantial improvement and are happy to pay substantially for this.

Households felt it unnecessary to have more than a 4 hours supply as they felt it would lead to wastage of water. There are also doubts among the households regarding the ability of the utility to provide water for such a long duration given the present status of water services. People have indicated high WTP because they are aware of the coping costs for alternative sources, particularly borewells, and are willing to transfer the savings from the alternative sources to the improved service levels.

4.2.2 Bidding Game Results: Bungalows

Table 4.1: Bungalows: Preferences for different service levels

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
1. 12 hour supply	32	64	18	36
2. 8 hour supply	33	66	17	34
3. 4 hour supply	42	84	8	16

Table 4.2: Willingness to pay (WTP) results for bungalows

WTP (Rs.)	Service Level 1		Service Level 2		Service Level 3	
	Number	Percentage	Number	Percentage	Number	Percentage
1000 - 1099	4	12.5	2	6.1	1	2.4
800 - 899			1	3.0		
700 - 799					1	2.4
600 - 699	2	6.3	1	3.0	3	7.0
500 - 599	4	12.5	4	12.1	2	4.0
400 - 499	5	15.6	8	24.2	8	19.8
300 - 399	2	6.3	3	9.1	7	16.7
200 - 299	5	15.6	3	9.1	7	16.7
100 - 199	9	28.1	10	30.3	13	31.0
< 100	1	3.1	1	3.0		
TOTAL	32	100.0	33	100.0	42	100.0
MEAN WTP (Rs.)	416		386		348	

4.2.3 Bidding Game Results: Independent Houses in Planned Areas

Table 4.3 Independent houses: references for different service levels

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
1. 12 hour supply	11	22	39	78
2. 8 hour supply	25	50	25	50
3. 4 hour supply	44	88	6	12

Table 4.4 Willingness to pay (WTP) results for independent houses

WTP (Rs.)	Service Level 1		Service Level 2		Service Level 3	
	Number	Percentage	Number	Percentage	Number	Percentage
600 - 699	2	18.2	2	8.0	2	4.5
500 - 599			2	8.0	2	4.5
400 - 499					1	2.3
300 - 399	1	9.1	6	24.0	8	18.2
200 - 299	5	45.4	7	28.0	12	27.3
100 - 199	1	9.1	6	24.0	13	29.5
< 100	2	18.2	2	8.0	6	13.6
TOTAL	11	100.0	25	100.0	44	100.0
Mean WTP (Rs.)	286		290		248	

4.2.4 Bidding Game Results: Flats in Planned Areas

Table 4.5 Flats - preferences for different service levels

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
1. 12 hour supply	10	40	15	60
2. 8 hour supply	13	52	12	48
3. 4 hour supply	17	68	8	32

Table 4.6 Willingness to pay (WTP) results for flats

WTP (Rs.)	Service Level 1		Service Level 2		Service Level 3	
	Number	Percentage	Number	Percentage	Number	Percentage
900 - 999	1	10.0	1	7.7		
800 - 899	1	10.0	1	7.7		
600 - 699					2	11.8
500 - 599	3	30.0	3	23.1	3	17.6
400 - 499	2	20.0	4	30.8	6	35.3
300 - 399	2	20.0	2	15.4	2	11.8
200 - 299	1	10.0	2	15.4	3	17.6
TOTAL	10	100.0	13	100.0	17	100.0
Mean WTP (Rs.)	530		496		418	

4.2.5 Bidding Game Results: Independent Houses in Unplanned Areas

Table 4.7 Preferences in independent houses in unplanned areas

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
4. 12 hour supply	6	12.2	43	42.2
5. 8 hour supply	9	18.4	40	39.2
6. 4 hour supply	30	61.2	19	18.6

Table 4.8 WTP results for independent houses in unplanned areas

WTP (Rs.)	Service Level 4		Service Level 5		Service Level 6	
	Number	Percentage	Number	Percentage	Number	Percentage
300 – 399	1	16.7	1	11.1	1	3.3
200 - 299	4	66.7	4	44.4	11	36.7
100 - 199			3	33.3	10	33.3
< 100	1	16.7	1	11.1	8	26.7
TOTAL	6	100.0	9	100.0	30	100.0
Mean WTP (Rs.)	233		206		167	

4.2.6 Bidding Game Results: Flats in Unplanned Areas

Table 4.9 Preferences in flats in unplanned areas

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
4. 12 hour supply	7	28	18	72
5. 8 hour supply	7	28	18	72
6. 4 hour supply	24	96	1	4

Table 4.10 WTP results in flats in unplanned areas

WTP (Rs.)	Service Level 4		Service Level 5		Service Level 6	
	Number	Percentage	Number	Percentage	Number	Percentage
1000 - 1099	2	28.6	2	28.6		
900 - 999	2	28.6	2	28.6		
800 - 899					1	4.2
600 - 699	1	14.3	1	14.3	6	25.0
400 - 499					4	16.7
300 - 399	1	14.3	1	14.3	10	41.7
200 - 299	1	14.3	1	14.3	3	12.5
TOTAL	7	100.0	7	100.0	24	100.0
Mean WTP (Rs.)	750		750		450	

4.2.7 Bidding Game: Informal Settlements Having Some Piped Water

Table 4.11 Preferences in informal settlements having some water

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
9. Individual connection with 2 hours supply	40	51.9	37	48.1
10. Group connection with 2 hours supply	31	40.3	46	59.7
11. Community managed water tank with 1 hour supply	23	29.9	54	70.1
12. Community managed water tank filled by tanker with 1 hour supply	14	18.2	63	81.8
13. Public SP or public borehole managed by private vendor	5	6.5	72	93.5
14. Ground water tank with several taps connected to open well.	2	2.6	75	97.4

Table 4.12 WTP results in informal settlements having some water

WTP (Rs.)	Service Level 9		Service Level 10		Service Level 11	
	Number	Percentage	Number	Percentage	Number	Percentage
300 – 399	3	7.5				
200 - 299	12	30.0	1	3.2		
100 - 199	18	45.0	3	9.7	5	21.7
< 100	7	17.5	27	87.1	18	78.3
TOTAL	40	100.0	31	100.0	23	100.0
Mean WTP (Rs.)	178		66		72	
WTP (Rs.)	Service Level 12					
	Number	Percentage				
300 – 399						
200 - 299						
100 - 199	3	21.4				
< 100	11	78.6				
TOTAL	14	100.0				
Mean WTP (Rs.)	71					

4.2.8 Bidding Game Results: Informal Settlements Having No Water Supply Coverage

Table 4.13 Preferences in informal settlements with no piped water

Service Level	Preferred		Not preferred	
	Number	Percentage	Number	Percentage
9. Individual connection with 2 hours supply	5	20.8	19	79.2
10. Group connection with 2 hours supply	16	66.7	8	33.3
11. Community managed water tank with 1 hour supply	4	16.7	20	83.3
12. Community managed water tank filled by tanker with 1 hour supply	5	20.8	19	79.2
13. Public SP or public borehole managed by private vendor	1	4.2	23	95.8

Table 4.14 WTP results in informal settlements with no piped water

WTP (Rs.)	Service Level 9		Service Level 10		Service Level 11	
	Number	Percentage	Number	Percentage	Number	Percentage
200 - 299	1	20.0				
< 100	4	80.0	16	100.0	4	100.0
TOTAL	5	100.0	16	100.0	4	100.0
Mean WTP (Rs.)	90		50		50	
WTP (Rs.)	Service Level 12					
	Number	Percentage				
200 - 299						
< 100	5	100.0				
TOTAL	5	100.0				
Mean WTP (Rs.)	50					

4.3 WTP Based on Affordability

This study has attempted to estimate how much different households in different market segments can afford to spend on water services, with the help of an estimated average monthly household income. It is normally assumed that 5% of household income can be allocated towards water charges, although there are many cases where people pay a significantly higher of their income. The estimated WTP figure for water based on affordability was the highest in case of bungalows at Rs 588 followed by flats in unplanned areas at Rs 559 and flats in planned areas at Rs 504. The estimated WTP figures for water based on affordability in the case of independent houses in planned and unplanned areas stood at Rs 392 and Rs 231 respectively.

Table 4.15 Water supply WTP based on affordability

Market segments	WTP for water based on affordability in Rs per month
Bungalows	588
Independent houses in planned areas	392
Independent houses in unplanned areas	231
Flats in planned areas	504
Flats in unplanned areas	559
Slums having some water supply coverage	106
Slums having some water supply coverage	30

It can be seen that the WTP figures based on affordability are much lower than the WTP figures quoted by the households during the willingness to pay study (tables 4.1 to 4.14). This demonstrates the importance of a good water supply to Guntur residents and their high willingness to pay for adequate and reliable services, which is further supported by the high coping costs people currently pay for alternatively water sources (refer to section 3.9).

4.4 Options for Enhancing Water Supply in Guntur

4.4.1 Details of Existing Protected Water Supply Schemes

- Vengalayapalem water supply scheme commenced during 1905 with a designed capacity of 0.5 MGD (million gallons per day).
- Sangam Jagarlamudi water supply scheme with Kommamuru canal as source was commenced with 4 MGD in 1958 and further 2 MGD plant was constructed and commissioned in 1976 (Total installed capacity: 4+2=6 MGD)
- Takkalapadu water supply scheme with Krishna River as source was commissioned in 1990 with a capacity of 10 MGD.

However, only 12 MGD is being supplied because of ageing of the old Sangam Jagarlamudi Scheme. Unless the water supply is improved by at least another 10 MGD in next 2 to 3 years there will be severe water supply shortages.

4.4.2 Option I: Augmentation of water supply by additional 10 MGD

It is proposed to construct a new 10 MGD plant adjacent to the existing 10 MGD plant at Takkalapadu Head Water Works site. Along with the new plant, the connected items like raw water gravity mains, pump sets, pump houses, clear water feeder mains, E.L.S.R.s etc. have been proposed.

The total cost of the new 10 MGD works has been calculated at Rs.36.06 crores. After completion of the project 35,000 additional connections can be made and the following revenues may be earned (see Table 4.16).

Table 4.16 Revenue earned from additional 10 MGD water supply

	Donation	Deposits (Rs in Crores)
12,000 OYT connections	Rs.10, 500	12.60
17,000 General connections	Rs.6, 000	10.20
4000 Commercial connections	Rs.42, 000	16.80
2000 Industrial connections	Rs.63, 000	12.60
	Total	Rs.52.20 crores

In addition, the Corporation is taking steps to undertake a water audit of the protected water generated and protected water distributed to the zonal reservoirs so that distribution losses can be reduced to a minimum.

The Corporation is also planning to provide water meters to its more affluent consumers living in posh colonies who have a plinth area of 250 Sq. yards or more .. GMC will be able to meter at least 8000 customers (out of 33,250) under this scheme (see Table 4.17). This in turn should bring in additional revenue for GMC at a rate of Rs. 500/- per month per consumer, creating a yearly income of Rs. 8000 x 500 x 12 = 4.48 crores, even with the existing water supply in place.

After completion of the Augmentation scheme the Corporation is expecting another 10,000 connections of this type to be made, out of a total of 35,000 connections that are proposed with the new scheme.

Table 4.17 Additional revenues after augmentation scheme

		Total No. of connections	Connections to be metered	Amount per annum in crores
A.	Old Scheme (Existing)	33250	8000	4.48
B.	New scheme (Augmented)	35000	10000	6.00

The Corporation will be in a comfortable position after the completion of the proposed scheme and implementation of the above reforms. This will enable GMC to repay instalments for the loans (from banks/FIs) it will have to take out for the proposed scheme.

4.4.3 Option II – Water Supply Improvement for the Existing System

The total designed capacity of the existing water supply system is 16.5 MGD. At present only 12.5 MGD of water is supplied to the public due to the decrease in pumping capacity of the pump sets and other mechanisms in the system. Hence, there is an urgent need to improve the capacity of the components to the designed capacity by improving the efficiency of pump sets and by modernising the present equipment.

The total estimated cost of various components for the improvement of the existing water supply from 12.5 MGD to 16.5 MGD works out to Rs.412.00 lakhs.

Cost Benefit Analysis

After completion of the improvements to the present components an additional 16,200 HSCs (individual connections) can be given. An amount of Rs.1600 lakhs (Rs.16 crores) will be generated through connection charges. The Corporation will get Rs.359.64 lakhs as additional revenue and the expenditure for the maintenance of the scheme, amenities, electrical charges, etc. will be about Rs.206.25 lakhs, resulting in a net additional revenue of Rs.153.39 lakhs. Thus, the loan will be repaid within four years with the additional water tax revenue.

4.5 Where does GMC want to be – next steps?

Clearly further work is required on developing investment options for Guntur water services, but it is clear that there is tremendous potential for improving services and increasing revenues. But water tariff increases will be necessary for the sustainable management of continually improving services. Willingness to pay survey results such as those contained in this publication can provide a good basis for advocating tariff increases.

The demand (willingness to pay and affordability) for various service options amongst each consumer group is valuable information that can inform decisions about the projected take-up of service options and hence assist with finalising future investment plans aimed at improving services to all consumer groups. This document does not consider these issues further, but for guidance on how these steps can be undertaken and how the proposed investment planning can be implemented along with the associated institutional changes, refer to the series of publications on 'Serving all urban consumers', which are on the WEDC web-site (www.lboro.ac.uk/wedc/projects/psd/).

5. Conclusions: Marketing approaches in Guntur & Rajhamundry

Guntur and Rajhamundry are two cities in Andhra Pradesh, India that have used marketing approaches for improving access to water services particularly to the poor. The low income groups in these cities depend mainly on free public stand posts provided by the respective Municipal Corporations for potable water. The water supplied through these public stand posts is quite inadequate to cover the needs of the majority of the households.

Interestingly, a significant proportion of the poor have expressed the willingness to take individual connections and were prepared to pay the required monthly charges. However, they were discouraged by the previous policy of the Corporations which demanded a one time connection fee (also called donation) in the range of Rs 5000-7000 (\$ 100 – \$ 130) for providing a household water supply connection. Though the Government of India provided for a subsidy of Rs 1500-2000 under the National Slum Development Programme for providing individual connections to the poor, the Municipal Corporations were not willing to extend this benefit due to the erroneous assumption that they will not be able to recover capital costs if they lower the connection charges. As a result, many poor households were excluded from pipe water services. This has resulted in a proliferation of illegal connections.

However, during sustained interactions with the Corporations, the leadership of these Municipal Corporations have realised the need to increase the coverage of water services to the poor through innovative approaches including the marketing approaches. Studies have also highlighted the fact that the poor are willing to pay user fees for water but were not allowed to enter the “shop” (system). In the last one year, the leadership has made significant efforts to remove this entry barrier. They have not only lowered the connection charges as prescribed by the Government of India NSDP programme, but also allowed the poor to pay these one time charges in two to three instalments. They have also reduced or waived the associated supervision charges for executing the work. The Mayors and Commissioners have visited several slums, conducted public meetings and issued on the spot connection notices to the willing households. As a result of these sustained efforts, the number of poor households having individual connections has significantly gone up in these cities in the past one year. In addition, poor households were also encouraged to form a group of 6-8 to access a single connection to reduce the burden of connection and tariff charges.

The experiences of Guntur and Rajhamundry from India demonstrate that the city governments are becoming aware of and willing to adopt marketing approaches to increase water services particularly to the poor.

6. References

Coates, S., Sansom, K.R., Kayaga, S.M., , Srinivas Chary, A. Narender and Njiru, C., and. (2004) *Serving All Urban Consumers: A marketing approach to water services in low and middle-income countries. Book 3- PREPP – Utility consultation with the urban poor*, WEDC, Loughborough University, UK.

Collingnon B., M.Vezina, 'Independent water and sanitation providers in African Cities' Water and Sanitation Program, April 2000

Heskett, James L. (1986) *Managing in the service economy*; Harvard business school press, Boston, Massachusetts, ISBN 0-87584-130-9.

Njiru, C. and Sansom, K.R., (2001) "Strategic Marketing Plan for Water Services in Mombasa and Coast Region of Kenya", *An output of the research project entitled "Pricing and Service Differentiation of Water and Sanitation Services for the Poor*, WEDC, UK

Sansom, K.R., Kayaga, S.M., Franceys, R.W.A.F, Njiru, C., Coates, S. and Chary, S. (2004) *Serving All Urban Consumers: A marketing approach to water services in low and middle-income countries. Book 1 – Guidance for government's enabling role*, WEDC, Loughborough University, UK.

Sansom, K.R., Franceys, R., Njiru, C., Kayaga, S., Coates, S. and Chary, S.J. (2004) *Serving All Urban Consumers: A marketing approach to water services in low and middle-income countries. Book 2 – Guidance notes for managers*. WEDC, Loughborough University, UK.