Chapter 9

Municipal Services
MUNICIPAL SERVICES IN KANPUR

9.1 INTRODUCTION

In the city of Kanpur, the growth (about 35 percent) in terms of population from the years between 1991-2001 has ended up putting tremendous pressure over the urban infrastructure for example the water supply, the sewerage, the solid waste, etc. Now the responsibility for providing the water supply and the sanitation rests entirely with the state government and with specifically the municipal government. The City of Kanpur’s Jal Sansthan (KJS) is that which deals with the water supply and the sewerage system while the Kanpur Nagar Nigam is one that deals with the social infrastructures such as the Education, the Health and the Medical services.

This particular chapter focuses on the present status, the gaps and the future requirement for the basic civic services as well as focuses on the strategies and the investment that is required by the different agencies in order to go ahead and meet the gap.

1.2 WATERSUPPLYSYSTEM IN KANPUR

The city of Kanpur is the one of the most important of industrial cities in Uttar Pradesh (India) and it is located on the right of the bank of the river Ganga which is flat alluvial plain. This forms the crucial watersupply system for Uttar Pradesh. Here the major works in Kanpur are those that are carried out by the UUPJN while the entire operation and the thorough maintenance is one that is entirely carried out by the Jal Sansth of Kanpur.

9.2.1 KANPUR JALSANSTHAN
In the year 1975, the Kanpur Jal Sansthan (KJS) was first constituted as a specialized body right under the famous U.P. Water Supply as well as Sewerage Act. It was loaded with the task of operation as well as maintenance of the water supply and the sewerage system. Prior to the creation of the KJS, the Watersupply and the sewerage services happened to be looked after none other than by the Municipal Corporation. Kanpur’s Jal Sansthan happens to be centralized. Kanpur city has been divided into about four service districts. These are the city service, the west service, the south service and the east service. The district for the entire management of the water supply system. As many as six Zones exist to manage the system of water supply. Each of these zones is headed by one Executive Engineer. This person is responsible for the drawing and the disbursing of power; he is responsible for the Water Supply and the Sewerage as well as for the collection of revenue.

9.2.2 FEATURES OF KANPUR WATER SUPPLY

The system of piped water supply in Kanpur City was begun in the early 19th century. As many as several hundred gallons on a daily basis serve a population of two hundred thousand. The system was initiated with just three settling tanks, about 5 Slow Sand Filters, 2 Clear Water Reservoirs with a steam operated and filtered plants for water pumping.

9.2.3 WATER PURIFICATION MEASURES

The old and the Conventional methods for water purification, such coagulation, steady filtration as well as disinfection happen to be used in order to treat the surface water retrieved from Ganges and the Ganges Canal. The process of coagulation ensures that raw water is first treated with some Alumina Ferric in order to let all colloidal impurities get entirely precipitated and settled down then finally drained as sludge. As many as sixteen Slow Sand and about 30 of Rapid Gravity Filters are used by KJS.

The filtration rate in the slow sand filters is one that is comparatively quite low. This came to 9-11 litres per square foot per hour, which now has
gradually decreased given the increase in the head loss. Right after attaining one head loss of about normally 36 inches \([21]\), this filter is closed. The periodical recouping for the sand gets done. Such filters are never functioning owing to the need for any rehabilitation.

The Rapid Gravity Filters ensure that filtration rate is a lot higher in comparison to the slow sand filters. Normally 400 to about 550 liters per square foot by an hourly rate get met. However, the two conventionally used Rapid Gravity Filters now have been converted and are bituminous coal- as well as sand dual media. Following filtration the water turns very clear apparently however it might contain some pathogenic impurities. In order to remove such impurities, the chlorine is always used in an adequate manner.

9.2.4 CURRENT SCENARIO

9.2.4.1 SOURCE OF WATER SUPPLY

The most important source of the surface water in as far as Kanpur is concerned is that which comes from the catchments of the following:

- The Ganga River
- The Pandu River

The flow of water in the Ganges River normally varies between about 72.6 m³/s to about 8,860 m³/s. Once the tapping of water from the upper and the lower Ganges canals is done, the water flow of about 6 m³/shappens to be maintained right in the Ganges that is situated in proximity to Kanpur.

![Flow of Funds for Municipal Services](image)

**Fig. 9.1 Flow of Funds for Municipal Services**
<table>
<thead>
<tr>
<th>COMPONENT</th>
<th>TASKS TO BE CARRIED OUT IN ANALYSIS</th>
<th>DATA COLLECTION (SOURCE)</th>
<th>LEVEL OF ANALYSIS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical and Social</td>
<td>1. Physical Infrastructure Facilities: Water supply, Drainage, Sewerage, Solid Waste Disposal, Electricity, Telephones etc. (Existing Network/Distribution, Supply, Demand, Adequacy, Ongoing and Proposed Programmes)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Infrastructure</td>
<td></td>
<td></td>
<td>City / Town / Ward</td>
</tr>
</tbody>
</table>
9.2.4.2 SERVICECOVERAGE IN KANPUR

The water supply requirement in Kanpur is 600 MLD however only 385 MLD worth the potable water gets supplied. Total water supply from the treatment plants in Kanpur is approximately 255 mld water and about 130 mld of water gets drawn from the groundwater that comprises of about 80 mld from the tube wells and about 50 mld from the hand pumps thus making an entire present water supply worth 385 mld. Additionally there are several large private borewells that are located in the residential and the industrial area that are unaccounted for.

The present status of water supply source and capacity of KJS is given in Table 9.1. below:

Table 9.1 Source and Supply of Water

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ganga Channel at 310</td>
<td>210</td>
<td>Contaminated; Need treatment.</td>
<td></td>
</tr>
<tr>
<td>Lower Ganga Canal 130</td>
<td>45</td>
<td>Contaminated; Need treatment.</td>
<td></td>
</tr>
<tr>
<td>2. Other Sources</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tube-wells-135 110</td>
<td>80</td>
<td>Good for use</td>
<td></td>
</tr>
<tr>
<td>Hand Pumps-9830 50</td>
<td>50</td>
<td>Good for use</td>
<td></td>
</tr>
<tr>
<td>Total 600 mld.</td>
<td>385 mld.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
9.2.4.3 HOUSE TO HOUSE CONNECTIONS

There are about 2.84 lakh assesses followed by 4.2 lakh properties in the city of Kanpur. However, the whole coverage of the KJS amounts to just 1.8 lakh connections. Such an amount is terribly inadequate, especially considering the fact that the whole distribution network actually covers about 80% of the whole city area. In Kanpur, the total metered connections in the residential areas come to 1,77,009 while the un-metered residential and commercial and industrial connections come to 1500 in number.

9.2.4.4 DISTRIBUTION AND STORAGE CAPACITIES TODAY

The Surface water supply in Kanpur is from all the different intakes gets treated at the famous Benajhabar Treatment Works. It is from here that the water is then supplied to as many as twenty eight zonal pumping stations.

<table>
<thead>
<tr>
<th>Location</th>
<th>Installed Capacity</th>
<th>Running Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benajhaber</td>
<td>310 mld</td>
<td>210 mld</td>
</tr>
<tr>
<td>Gujaini (established in 2005)</td>
<td>30 mld</td>
<td>20 mld</td>
</tr>
<tr>
<td>Ganga Barrage (established in 2005)</td>
<td>200 mld</td>
<td>25 mld</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>540 mld</strong></td>
<td><strong>255 mld</strong></td>
</tr>
</tbody>
</table>

9.2.4.5 UNACCOUNTED SERVICE LEVELS

The entire supply per capita comes to ninety two liters per capita on a daily basis with the current population standing at twenty seven hundred thousand people. Such an amount is a lot less than the prescribed per capita consumption. The present supply of water is at 30 percent owing to the old and leaky pipelines. One of the most significant drawbacks of the city of Kanpur’s water supply happens to be the massive amount of water wastage as well as the negligible revenue collection methods from the public utilities such as fire...
lighting and parks as well as the stand posts that consume as much as ten percent of the water.

Table 9.3 Future Requirement and strategies

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2016</th>
<th>2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated Population in Lakhs</td>
<td>27.00</td>
<td>34.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Demand for Water Supply mld</td>
<td>464</td>
<td>585</td>
<td>860</td>
</tr>
</tbody>
</table>

9.2.5 STAKEHOLDER’S CONSULTATIONS

The discussions with Kanpur stakeholders reveal that Kanpur water supply in the inner core area might be a lot less than 92 lpcd, all the pipes over there are leaky with a rise in the supply of contaminated water. One can never consider it unusual to see that water supply in such areas by the local community is based on tubewells and handpumps. The MLAs and the corporators have gone ahead and spent all their discretionary funds for setting up all such localized schemes. Also, there is an unequal distribution with regard to available water in Kanpur city. An assessment of the consumers by the KJS and the KNN comes to 2.84 Lakhs. Out of this number just 1.8 lakhs happen to be present and connected. The water meters are usually either never installed or never working. As a result, the total supply of water can never be measured from the point of view of the user. Water pressure in Kanpur never gets maintained in a uniform manner across the city. This happens largely because of the old and leaky pipes and also due to the ad hoc style of giving connections from the water main lines and not first checking the feasibility and the availability of water. All existing locations of water treatment plants in Kanpur are not inter-connected, while there is a huge disparity in the supply/demand position when it comes to various localities. All of the clear water reservoirs which are located at Benajhaber are known to have a storage capacity of about 35 ml (million litres). Kanpur’s citizens complain of an unreliability when it comes to supply hours. This is quite erratic. Consumers are often forced to spend their own water which is sourced from hand pumps or from the tube wells.
9.2.6 KEY ISSUES

1. The service level existing in the city of Kanpur is about 90 lpcd.

2. All the indicators of water supply suggest that service level is a lot beneath the minimum prescribed norm that amounts to 172 lpcd. Such is the case in spite of the fact that there is a sufficient intake as well as treatment capacity as far as Kanpur is concerned.

3. The Kanpur water supply system when it comes to the inner core area happens to be very old. As a result, there is acute scarcity of water in all the core areas like the Chamanganj, the Baeongamjek, etc. that is from where the KJS has been facing complaints for quite some time no. According to estimates about 30 percent of the water gets lost in distribution owing to the old system. There is therefore a need for the loss of water to be rehabilitated in the core areas of Kanpur.

4. There are quite a number of complaints about consumers always getting dirty, contaminated water to drink and use. Consequently, a lot of people are not in favor of using such water.

5. The supply of water per gross capita comes to 135 lpcd; in spite of this however the equitable distribution happens to be an issue that needs to get examined after which corrective measures have got to be taken for rectifying the situation.

6. If the total installed capacity that comes to 540 mld gets to be fully utilized, then the supply from the waterworks alone can give the service level of about 199 kpd an amount which is much above the level that is prescribed as a minimum.

7. It has been observed that water supply gets limited to only 5 hours in day owing to the inadequate storage forms and pressure forms.
8. Previously, there would be a shortage of water right at the intake in Bhaironghat, and a process of dredging was conducted to bring the flow of the Ganges River towards the city. Presently, with the barrage construction, the priorities have completely changed and in order to maintain the water level at the Barrage, the downflow of the river gets reduced, as a result of which all the pumps don't work in perfect manner at Bhaironghat.

9. The reduced availability of water in Bhaironghat shall end up reducing the supply of water at the Behajhaber water works, this will need to be supplemented right from the Lower Ganges Canal, that can supply as much as 130 mld.

10. For the purpose of ensuring better quality of raw water, a pipe line of a proper size has been suggested for being laid down in order for drawing water away from the lower part of the Ganges Canal located at the Armapore estate. The Bejahaber water works shall keep on functioning only if some proper provisions get made for drawing raw water away from both the Bhaironghat pumping station and the lower Ganga Canal. The raw water pipes shall also stop the pollution of the raw water that flows in an open canal right through the city area.
9.2.7 STRATEGY FOR IMPROVING WATERSUPPLY

9.2.7.1 INTAKE AND TREATMENT

Additional units of about 200 MLD are required for constructing and for the commission as well as an enhancement in the watersupply, and it is expected for this demand to be met by the year 2016.

The treatment plant of 200 MLD situated at the Ganga Barrage never gets utilized to the extent of as much as 175 MLD. However, the inner core area of Kanpur is faced with a shortage of water. For meeting this shortage water has to be laid down from the Barragesite to the area of Benajhaber. There is a need for an estimate for the laying of a conduit pipe line along with one pumping station located at the Armapore estate to be immediately drawn.