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WATER SUPPLY AND WASTE WATER MANAGEMENT OF PUDUKKOTTAI MUNICIPALITY

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Abstract

The water supply and waste water management has been studied through the questionnaire system and official data of Pudukkottai Municipality. Over all satisfaction of the water supply to the public is satisfied in the consumer aspect. But as per the official records, the supply of water at the percapita requirement level was not met to the standards (90LPCD). Like wise drainage system also covered only 32% which means coverage of drain is not comleted yet. Since the UGD systeme is under project stage, disposal of waste water is not an organised manner. Hence some technicl interventions should be made to improve the quantity of water to meet out the LPCD level and to improve drainage system.

Key words: *Municipality, water supply, waste water, quality of water*

Introduction

Municipal governments in India have been in existence for many years. The first municipal corporation was created by a Royal Charter in Madras in 1688. Urban local government institutions/municipalities are constituted for the maintenance and planned development of urban areas. The objective is to ensure that suitable levels of infrastructure and services are available to the citizens. In many parts of India, the quality of life in urban areas is miserable and the citizens lead a difficult life. To overcome this problem, a series of reforms have been initiated by the Indian government to strengthen local-level governance. One of the most essential service delivery to public is water supply. The water should be supplied to all the public as per the norms specified by ISO both in quality and quantity aspects and the outcome of used water from household to be safely disposed of finally in to the river after giving essential treatment.

As per the available statistics, roughly 85 percent of India's urban population is being served with potable water supply. However, availability of water both in terms of its coverage as also quantity differs widely from one state to another. The notion that the water supply is more adequate in the larger cities is not supported by the data. In many of the cities, per capita levels are substantially below the average level. These are Hyderabad, Vishakhapatnam, Ahmedabad, Surat, Bangalore, Nagpur, Ludhiana, Jaipur, Coimbatore, Lucknow, Kanpur, being the lowest in Madras and Madurai.

Hence the important objective of this work is to describe water supply and waste water management of Pudukkottai Municipality. This assessment is based on data collected from public volunteers of Pudukkottai Municipality through questionnaire from public and official data collected from office records of pudukkottai municipality

Materials and methods

Collection of data

As per the recent census, 2011 Pudukkottai Municipality comprises 42 wards and extends over an area of 21.95 sq.km with an official population of 143748.

Primary data like questionnaire has been collected from consumers using random sampling method and 10 numbers from each ward of pudukkottai Municipality. Totally 420 questionnaire were collected for analyzing the water supply and waste water management services of pudukkottai municipality. The questionnaire comprises of personal data like age, sex, area, occupation etc and questions related to the water supply and waste water management.

Secondary data with regard to the water supply management, the official records like source of water supply, No. of households in the city with house service connection, existing drainage system, underground sewerage system etc. were collected for the period of five years from 2010 -15.

With the collected primary and secondary data tabulation was done. Suitable statistical tools like one way ANOVA was put to use in the required field to analyse the data.

Results

Source of water supply-

Major quantity of water to the Pudukottai town is supplied from River Cauvery, 86 km away from the town. A total of 9.44 Million Liters per day (MLD) of water is supplied by the two schemes from Pudukottai head works. While the municipal scheme supplies 1.84 MLD to the Pudukottai Town, the TWAD board scheme supplies 7.6 MLD to the town. Water is pumped through headwork located at Ammayapatti (9 Km) and transmitted to the Over Head Tanks (OHTs) / Ground Level Service Reservoirs (GLSRs), located at various places in the town.

Table 1 Source of water supply to Pudukkottai Municipality

Source	Supply (MLD)
Cauvery Combined water	7.6
Vellar Water supply	1.5
Local	0.34
Total	9.44

Number of water supply connection in the Pudukkottai Municipality

There are 16228 households in the city having individual water service connection. But there is an approximate number of households to the population is (5person/household) 28,750. This reveals that only 56% of households are having individual water supply connection. Also total supply of 9.44 MLD will yield 67 LPCD of water to the public against the customary demand of 90 LPCD which is needed for non UGD town.

Existing drainage system

There exist data from city development plan regarding a length of 116.75 km of open drain against both sides drain for total road length (180X2=360 Km) is at 32 % of coverage ratio. This results in accumulation of waste water generated by public in open land.

Underground sewerage system

The scheme of UGD is under process with an approximate budget of Rs. 81.16 crore and envisages to provide 20,000 connections is yet to be completed. On completion of the scheme the waste water accumulation in open land will be minimized.

Consumer appraisal regarding water supply

Out of 420 respondents, only 120 respondents are having individual water supply connection for their household and no one is having underground drainage connection. 75% of the consumer were satisfied for the wating period to obtain the water connection i.e < 30 days. Where as 25 % consumer were waited a long period of time about 1-3 months.(Figure .1) But all the respondent who is having connection satisfied with water supply, since the supply was regular in every day. Majority (62.5%) of the public receiving the water supply for one hour per day. About 37.5% of the consumer received 2 hours /day. (Figure.2). With regard to the quality of water supply, no consumer has given as very good. But $3/4^{th}$ of the respondents were given the score satisfied. Also $1/8^{th}$ of the respondents having water connection scored good and remaining $1/8^{th}$ of them were scored not satisfied for quality of water supply. (Figure. 3). Pudukkottai Municipality has given good service in the water supply to the public. Because only 15 respondent were made complaint regarding the water supply and rectification has been done for the 67 % of registered complaint with in 3 days.

Consumer appraisal regarding waste water management

No UGD exist in Pudukkottai Municipality. It is under proect level. According to the survey 40% of the public disposed of their waste water by means of open drain, 20% of them using garden, 10% consumer used septic tank and remaining 30% used open land . Figure 4 depicts the disposal of waste water by the public using different methods.

Figure 1 Waiting period for the connection

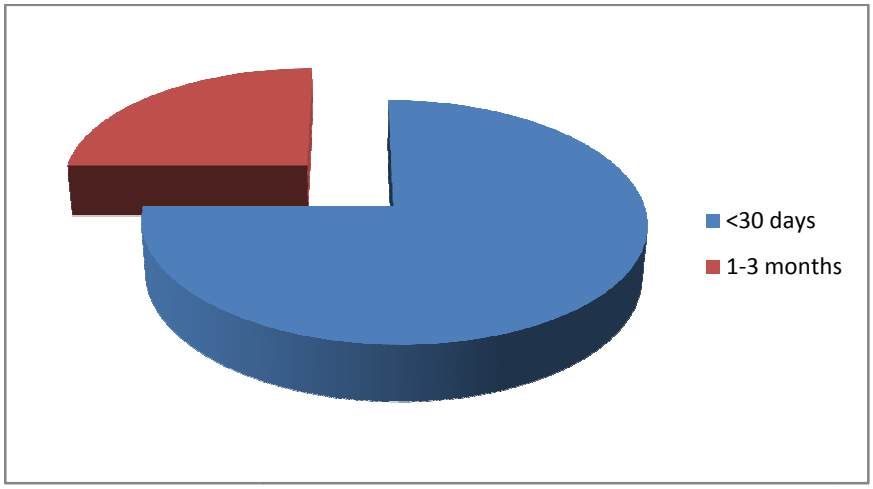


Figure 2 Duration of water supply

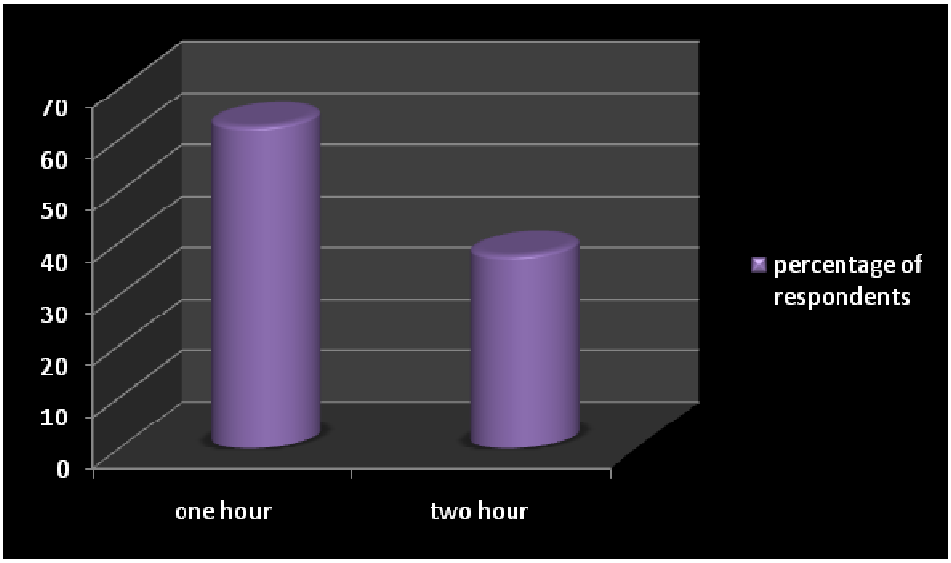
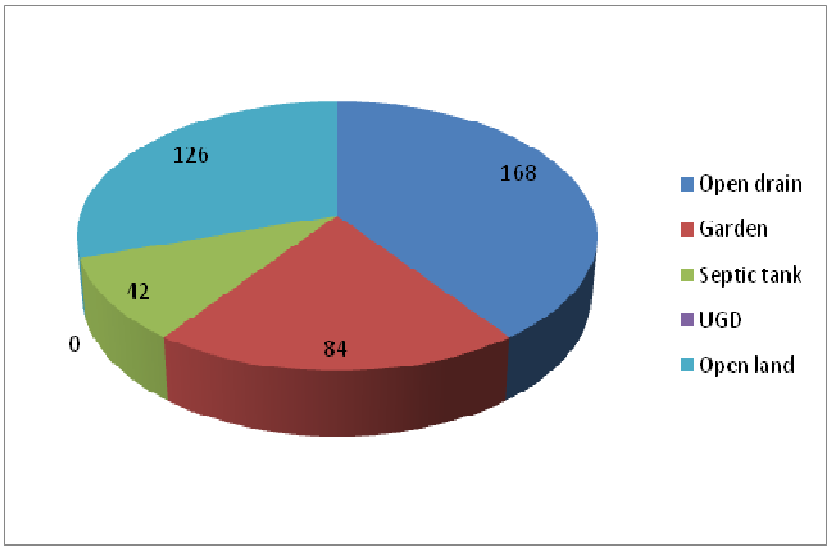


Figure 3 Quality of water supply

Figure 4 Method of disposal of waste water



(figures on the picture depicts the no. of respondents)

Discussions

In spite of the significance of water as an essential good for the survival of humankind, the overall situation of water supply especially in urban areas continues to be

unsatisfactory. Although a national policy to provide protected water to their citizens was initiated in the First Five Year Plan itself, a real emphasis to urban water supply was laid down in the beginning of Sixth Five Year Plan (1980-85) which coincided with the declaration of the International Drinking Water Decade Programme, (1981-90) under the National Master Plan of India.

In urban areas because of rapidly Industrialisation, Urbanisation and unplanned development of houses, building and commercial sectors raises big issues of mismanagement of water supply in a quantity and quality effectively. Because of lack of public private partnership, existing old infrastructures, and lack of awareness among the people there is a need to assess and evaluate the existing water management utilities of urban cities in the country. Water supply system in urban India suffers from a number of problems. There exists serious mismanagement in water supply system in urban India (Kundu 2003). Hence in this study water supply management by the municipality is considered to be analysed with different attributes like customer waiting time, quality of water supply, duration of water supply and rectification of complaint made by municipality.

As per the available statistics, roughly 85 percent of India's urban population is being served with potable water supply. However, availability of water both in terms of its coverage as also quantity differs widely from one state to another. The notion that the water supply is more adequate in the larger cities is not supported by the data. In many of the cities, per capita levels are substantially below the average level. These are Hyderabad, Vishakhapatnam, Ahmedabad, Surat, Bangalore, Nagpur, Ludhiana, Jaipur, Coimbatore, Lucknow, Kanpur, being the lowest in Madras and Madurai.

Pudukkottai Municipality has to take steps to meet out the standard LPCD for water supply. Only 67 LPCD is being provided to the public aginst the standard 90 LPCD.

It is usually argued that municipal bodies, primary agencies for water delivery systems in urban areas are facing severe financial crisis in managing water supply systems in their areas of operation.

Scaratti, et al., 2014 evaluated the municipal management of the three basic sanitation services (water supply, sanitary sewerage and solid waste) using Data Envelopment Analysis (DEA). Similarly in our study, questionnaire system was used to analyse water supply management. Over all higher percentage of consumer were satisfied with the municipality service regarding the water supply.

Waste water management

Generation of waste is defined as any unwanted material, linked to human activities, and refers to something that has been discarded, rejected, abandoned or released into the environment. However, the intrinsic value of waste as a resource or an

object for further utility may eventually become recognised as it is removed from the waste stream. The net result is to reduce the expenditure of waste disposal by meagre allocation of resources. If not managed properly, waste materials can have adverse impact on the environment, arising from contamination of soil, water or air and the spread of diseases through vectors thriving on waste, causing serious consequences for public health (Toxics Link, 2005).

The uncollected and undisposed waste can result in various kinds of diseases, and present serious health risks in the urban settlements. It contributes to the pollution of the entire environment - air, water and soil. A recent Statistics as reported in the NIUA study (1997) for the selected metro cities of India indicates a poor state of affairs in terms of collection efficiency of garbage.

Anna Gustavson, 2008 studied the Solid Waste Management in Kancheepuram district,Tamil Nadu state of India using the theoretical approach and empirical studies. He has approached scientifically and interview method.

In the Pudukkottai Municipality, there was no UGD system exist and hence the waste water has been disposed off on their own way of public. UGD needs to be completed as soon as possible to make the city very clean and hygienic.

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