



WATER SUPPLY AND HOUSEHOLD WATER EXPENDITURE IN CHENNAI – A LITERATURE STUDY

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Abstract:

One of the major problem in Chennai metropolitan area is water scarcity which comprises water strain, water dearth and water disaster. Natural reasons and human causes may also play a major role in water scarcity problem. This paper discusses two important issues: The first one relates to the role of water supply in fulfilling the water requirements of households in cities. Chennai facing severe problems to delivery of water supply because of limited availability of water resources. The second one studies the link between the level of household expenditure to the different income categories on water and health in Chennai areas.

Keywords: Chennai, water supply, household water expenditure, awareness on water health.

Introduction:

Due to rapid urbanization, especially in developing countries such as India, has affected the availability and quality of groundwater is contaminated, its quality cannot be restored by stopping the pollutants from the source. The common pollutants of groundwater are discharge of agricultural, domestic, and industrial waste, pesticides, etc., which leads to water-borne diseases. Water-diseases may be of microbial origin such as diarrhea, dysentery, cholera and typhoid and chemical origin such as fluorosis and methemoglobinemia, therefore, in order to consume the quality water people need to spend more on water supply as other household expenditure, such as: food, clothing, housing (rent), energy, transport, etc., A significant number of people purchase water from private and public water suppliers and that they incur a sizeable expenditure on water purchases; some of these households are also willing to pay additional amounts for improved water supply from public and private sources for their health benefits. The results suggest that improvements in water supply would significantly increase the welfare of the people. This is clearly a public health risk that must be addressed along with the issue of water service affordability.

In years to come, water, the need of life, is possibly to pose greatest challenge on account of its increased demand with population rise, migration of people, economic development, and shirking supplies due to over exploitation and pollution. In India, with development, the demand of water is increasing both in urban and rural areas. This may crease increased tension and dispute between these areas for sharing and command of water resources. The emerging scarcity of water has also raised a host of issues related to sustainability of present kind of economic development, sustains water supply, equity and social justice, pricing, governance and management.

Access to drinking water as well as total and per capita household expenditures on water shows an association with household income, economic conditions of the household and location. Families without a household water supply system spent a considerable amount of time getting water. For poorer families, this implies additional costs. Low-income families that lack a household water supply spend as much money on water as do families with between incomes. Access to household water disinfection method is very limited among poor families due to its relatively high cost, which results in poorer drinking water quality in the lower-income population.

The main vision of 'water for people' is, "A clean and healthy world; a world in which every person has safe and adequate water and sanitation and lives in a hygienic environment" by the year 2025. The household is recognized as the prime catalyst for changing the existing water supply and sanitation conditions, whereby change demanded and achieved at the household leads to extended cooperation and action involving communities, local authorities, NGOs (non-governmental organizations), government and the international community.

Objectives

- 1 To study the role and importance Chennai Metro water supplier in fulfilling the water needs of the households in study areas.
- 2 To study the needs of household water expenditure and its impact on their health.

Methodology:

The study is mainly descriptive in nature. Secondary data are used for the purpose of the study. The data was collected from websites, various articles and journals.

Role of Chennai Metro Water Supply Board:

CMWSB's Mission is to enhance the health and quality of life of the citizens of Chennai by providing them with adequate supply of clean and good quality water at a reasonable price. Chennai Metro Water Board is the responsible authority for the planning, establishment, operation and maintenance creation of the required infrastructure and implementation of prospective plans to meet the requirements of the water supply and within the metropolitan area of Chennai for the present and future.

Operations and Maintenance of Water Supply:

The City's water supply has been reorganised due to the continuous failure of the monsoon in the years 2012 - 2014. Presently, the Board is supplying 540 MLD (Million litres per day) of water to Chennai city. Various projects have been taken up by CMWSSB to provide comprehensive water supply services to the city's newly added areas.

CMWSSB operates water treatment plants at Kilpauk, Redhills, Chembarambakkam, Surapattu, Vadakuthu and desalination plants at Kattupalli-Minjur and Nemmeli for providing safe and potable water to the city.

Since in 1978, the Board's water supply operations have seen a manifold increase.

Description	In 1978	In 2015
Operational area (sq.km)	174	426
Population (in lakh)	28.60	71.88
Water Supply (MLD)	240	540
Length of water mains(Km)	1,250	6,520
Distribution stations	3	74
Water treatment capacity	182	1,494
No. of consumers	1,16,000	6,61,405

The total revenue expenditure for the year 2014-15 is estimated at `987.26 crore. The total income of the Board is estimated at `497.53 Cr. Of this, the income from Water and Sewerage Taxes is `119.10 crore, water and sewerage charges is `335.65 crore and other income is `42.78 crore. The Government of Tamil Nadu provides grants to the Board for purchase of desalinated water and other purposes. CMWSSB received a sum of `227.80 crore as grant during the year 2014-15.

Functions of CMWSB:

Promoting and securing the planned development of water supply.

1. Efficient operation maintenance and regulation of the water supply in Chennai.
2. Preparing the immediate and long-term measures to meet the future demands of water supply in Chennai
3. At present it serves a population of about 60 Lakhs mostly in the Chennai City Area. The Chennai Metropolitan Water Supply has taken significant initiatives to supply adequate quantity of water with good quality and also to redress the grievances of the citizens within the minimum time possible.

Challenges:

The availability of surface water is mainly dependent on the monsoon. Failure of monsoons leads to acute shortages in reservoir levels and affects water supply to Chennai city. The non-availability of perennial rivers near Chennai adds to the challenge.

The gap between demand and supply of usage of water got increased and the reasons are: (1) The ever- burgeoning population.

(2) The raise in per capita consumption of water. It has been estimated that the demand increases up to 76% to 114% of the usage of water in future 2050.

The 3 components which challenge the supply side of present and future demand are:

1. Creating new potential for enhancing supply
2. Achieving equitable distribution
3. Meeting the needs of sustainable development

And the challenges posed by demand-side solution are:

1. Creating new technologies for reducing water demand.
2. Bringing about changes in the societal mindset about water usage.
3. Initiating and enforcing water-related structural reforms.

To bind the gap between demand and supply management a balanced water management approach, involving fundamental changes in policies, practices, performance, and public behavior is required.

Steps Taken to meet the present water crisis:

1. Immediate measures to attend to the day-to-day needs and long-term measures for a permanent solution to the water problem facing Chennai city.
2. To install additional stationary tanks for defective streets and erection of additional filling points have also been taken up to streamline and quicken mobile water supply. In about 100 locations where the urban poor live, bore wells with pumping arrangements and storage tanks are being provided for supplying water for non-drinking purposes.

The Government has accorded priority for the provision and access to safe and adequate drinking water to every household in the Urban Local Bodies. In order to improve the water supply situation, the government has taken up various water supply projects availing financial assistance from various external agencies such as Japan International Cooperation Agency (JICA), German Development Bank (KfW), World Bank and under various schemes such as Integrated Urban Development Mission (IUDM) and JnNURM. These schemes are being implemented by ULBs and in some cases by the para-statal agencies like Tamil Nadu Water Supply and Drainage Board (TWAD) and the Chennai Metropolitan Water Supply and Sewerage Board (CMWSSB). In the year 2011, a total of 1567.10 MLD of water has been supplied to all ULBs at an average rate of 93 LPCD. In the year 2016, after the 19 implementation of several water supply schemes under TNUDP-III, JnNURM, KfW, JICA, IUDM, IGFF etc., the supply level has been increased to 1862.05 MLD at an average rate of 111.47 LPCD.

Household Expenditure on Water and Health

Easily access to safe, reliable, affordable, and continuous water supply is essential for drinking, cooking, and personal hygiene is prerequisite for health. An inadequate water supply—whether as a result of poor access or quality, low reliability, high cost, or difficulty of management—is associated with significant health risks. These health risks are experienced most strongly by the poorest nations, and the poorest households within nations. A good water supply is necessary for good sanitation and hygiene, and to underpin livelihoods, nutrition, and economic growth.

Depending on income and perceived health risks, households often take steps to deal with water quality, specially, with regard to water for human consumption (drinking and cooking). Households residing within Chennai city, in general, spend more on quantity and quality, but not on time. Water supply will mainly affect the ‘quantity’ costs. However, for the poorest households, main expenditure is on time spent collecting water. The main policy issue, therefore, appears to be how the time taken for collecting water can be decreased, for instance, by increasing the number of sources available to the poor. With regard to water quality, giving access to more efficient fuels such as cooking gas may influence household decision to boil water. This relates to water quality as a link to health burden and capability deprivation of the poor.

Water health believes that everyone deserves safe, pure and affordable drinking water regardless of their geographical location or economic situation. Yet, for several decades, about a billion people in developing countries have not had a safe and sustainable water supply. It has been estimated that a minimum of 7.5 liters of water per person per day is required in the home for

drinking, preparing food, and personal hygiene, the most basic requirements for water; at least 50 liters per person per day is needed to ensure all personal hygiene, food hygiene, domestic cleaning, and laundry needs. Around 25% of the total water demand in the city is being met by the private sector. Overall, there exists an inherent water scarcity in the city, and the private water market plays a significant role in reducing it – even though the higher prices and poor quality of the water delivered by these private vendors remain serious concerns.

A poor water supply impacts health by causing acute infectious diarrhea, repeat or chronic diarrhea episodes, and non-diarrheal disease, which can arise from chemical species such as arsenic and fluoride. It can also affect health by limiting productivity and the maintenance of personal hygiene. Finally, improvements in water supply are essential prerequisites for improved personal and home hygiene and to enable sanitation facilities to be kept clean. Consequently, the direct health effect of improved water supply is likely to be extended by its indirect effects on sanitation and hygiene.

The most troubling domestic water supply issues for policy-makers are access and health. Nearly one billion people in the world are without clean drinking-water. Providing easier access to safe drinking-water significantly improves health conditions. Personal hygiene increases when water availability rises above 50 liters per day (which generally means that it must be delivered to the house or yard). An estimated 1.7 billion persons contend with inadequate sanitation facilities. The lack of sewage collection and treatment is a major source of surface and groundwater pollution. Continuing to cope with current demand, plus augmenting the supply for future demand, has become a real challenge to urban water supply authorities. This challenge is exacerbated by various supply-side and demand-side factors, such as ever increasing scarcity of water caused by depletion and degradation of water resources, unequal distribution of rainfall due to climate variation, steep increase in water demand due to rapid urbanization and high income elasticity of demand for water among the growing rich, low willingness to pay for poor-quality supply, and increased scarcity of budgetary resources and other institutional and political factors.

Human health and habitant and also for all purposes is mainly based on the consuming safe water as because many deadly diseases are separated due to poor/contaminated water. Quality water supply shows that in many parts of Chennai city are free from contamination and pollutants.

Conclusion:

This study reveals that in many of the urban areas in India, households are satisfied neither with the quantity and quality of water from public sources nor with the quality of service delivered by the government agencies. The households' dissatisfaction leads to a vicious circle: "poor quality service – low preference – low willingness to pay – low capital formation – poor quality service". The vicious circle perpetuates the government failure in the urban water sector. A key to breaking this circle is to provide better-quality service to consumers and charge water tariffs equivalent to households' marginal willingness to pay.

Therefore, argue in this paper is concluded that, In the future, it is not only important to establish more and more sources for water supply but also to look at the objective of supplying quality water. Thus the "proper water management would bring down diseases and make life livable". If the government is supplying improved water means, the general health of people will improve. Because of improved health, there will be an increase in the productivity and financial conditions of the people.

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