
AN ANALYSIS ON SUPPLY OF WATER IN TAMIL NADU

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Article Particulars

Received: 12.6.2017

Accepted: 13.6.2017

Published: 19.6.2017

Abstract

The provision of clean drinking water has been given priority in the Constitution of India, with Article 47 conferring the duty of providing clean drinking water and improving public health standards to the State. The appropriate technology of water supply is affected by the geological, economical and cultural characteristics of the projected area. The first target of water supply technology is to fulfill the needs and reduce the potential of infectious diseases. The integrated development of waterworks is important not only in urban areas, but also in rural areas. After the development of the water supply facilities, the most important issue is the sustainability and to meet the increasing demand with growth of water supply services in order to encourage the willingness to pay of communities. The present paper aims to study about the performance, growth rate and expenditure pattern of water supply in rural and urban areas of Tamil Nadu.

Keywords: *Water supply in Tamil Nadu, Rural water supply and its status, Urban water supply and its status.*

Introduction

Water is one of the most basic needs for human health and survival, without water there would be no life in the earth. The government has undertaken various programmes since independence to provide safe drinking water to the rural masses. Till the 10th plan, an estimated total of Rs.1,105 billion spent on providing safe drinking water.

Access to water is a fundamental human right and essential to life, health and dignity (UNCESCR, 2003; UNGA, 2010). Timely and adequate provision of clean water services to uprooted people is particularly important, given the vulnerability of their situation. It is almost universally acknowledged that access to safe water is crucial in the prevention of disease. The totally dynamic ground water resource in Tamil Nadu is estimated to be around 27,346 mcm/year. The government has recommended that 15 per cent of this should be reserved for domestic user and a similar quantum for industrial use - leaving enough ground water reserves to meet any additional new demands. The Telugu - Ganga project will be soon supplying 10 tmc of water to Chennai. Various schemes are being planned to recycle water on a large scale and secondary treated sewage water will be made available in urban conglomerations for industrial use. Additionally, desalination plants along the coast are being established. Emphasis is being laid here on the harnessing of both conventional and nonconventional sources of energy. 88.5 percent households in rural India and 95.3 percent households in urban India had improved source of drinking water during 2012 where, the 'improved source' of drinking water includes: 'bottled water', 'piped water into dwelling', 'piped water to yard/plot', 'publictap/standpipe', 'tube well/borehole', 'protected well', 'protected spring', and 'rainwater collection'. 85.8 percent households in rural India and 89.6 percent households in urban India had sufficient drinking water (NSSO 69th round). One estimate for 2050 puts the total water requirement of the country at 1.45 billion cubic kilometres per year, for an estimated population of around 1.64 billion, which will thus lead to a decline in gross per capita availability from the 2001 level of 1,820 cubic metres per year to merely 1,140 cubic metres per year (Gupta and Deshpande,

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2004).Serving the world population with adequate drinking water is an important prerequisite, not only to hygienic safety, but to prosperity and political stability as well, and will foster the adaptive capacity of the societies in the developing countries and beyond. To avoid hygienic and political disasters impacting the world economy, investment in water supply must urgently be made. Whether the classical system of urban water supply and sanitation is appropriate to satisfy the needs of the developing world, however, and whether this system meets the general criteria of sustainability is questionable. The costs and the time needed for installation of sewers and wastewater treatment plants are tremendous. In water shortage areas, the amount of tap water required to transport pollutants to the treatment plant is hardly affordable.

The proportion of households having access to improved water sources in urban and rural areas of all over India is given below:

Table1: Proportion of Households Having Access to Improved Water Sources

Year	Urban	Rural	All India
1992-93	87.6%	60.9%	68.2%
1998-99	92.6%	72.3%	77.9%
2005-06	95%	84.5%	88%
2007-08	94.4%	79.6%	84.4%
2008-09	93.9%	90.4%	91.4%
2012	95.3%	88.5%	NA

Source: NFHS 1992-93, 1998-99 and 2005-06; DLHS 2007-08 and NSS Report No.535, 2008-09 and NSS 69th Round report, July-December 2012.

Profile &Water supply in Tamil Nadu

Tamil Nadu State is situated at the South Eastern extremity of the Indian Peninsula bounded on the north by Karnataka and Andhra Pradesh on the east by Bay of Bengal, on the South by the Indian Ocean and on the West by Kerala State. Tamil Nadu occupies about 4 per cent of the geographical area and 6.04 per cent of the population but the available water resources are only 3 per cent of that of the Country. The national decadal growth rate was 17.64 per cent and the growth rate between 2001 and 2011 for Tamil Nadu stood at 15.5 per cent. Tamil Nadu is one of the most urbanized States with 48.45 per cent of its population living in urban areas. The average rainfall is 925 mm against the average rainfall of 1170 mm of the Country. It varies from 1200 mm near coastal areas to 550 mm in inland area.

Tamil Nadu receives rainfall in the North east as well as south west monsoons. A variation in the monsoon has serious impact on the economic life and livelihood of its people especially in rural areas. Thus Tamil Nadu is a deficit state from the point of view of water resources both for irrigation and drinking water and is dependent on the monsoons very heavily. The task of providing safe drinking water and sanitation facilities for the rural areas in the State is the responsibility of the Department of Rural Development & Panchayat Raj and Tamil Nadu Water Supply & Drainage Board (TWAD). India's estimated total utilizable water is put at 1.12 billion cubic kilometres (MOWR, 1999), but most scientific assessments concur that total water requirement will outstrip supply in the future. Government responsibility for water is shared

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by four major Ministries, the Ministry of Water Resources (MOWR) that looks after irrigation and river waters, the Ministry of Environment and Forests (MOEF), responsible for forest development and management and water pollution, the Ministry of Rural Development (MORD) that oversees watershed development as well as rural drinking water supply, and the Ministry of Urban Development (MOUD), that looks at urban water supply. There is a similar division of responsibility at state-level, with Irrigation or Water Resources Departments responsible for major, medium and minor irrigation schemes and ground water development, Departments of Rural Development responsible for implementing watershed development programmes, Departments of Rural Water Supply or Public Health Engineering implementing rural water supply and sanitation programmes and Departments of Urban Development handling urban water supply issues.

Table2: Percentage Distribution of Slums in Tamil Nadu by Major Source of Drinking Water

Source	Notified Slums	Non-Notified Slum
Tap	67	81
Tube well	21	11
Well	2	4
Others	10	4
Total	100	100

Source: NSSO survey 58th round and 65th round (2008-09)

The above table clearly indicates that major source of drinking water is 67 taps under notified slums and 81 taps under non- notified slums in Tamil Nadu.

Objectives of study

1. To analyse the supply of water in Tamil Nadu during the period of 2001 to 2013.
2. To study the growth and expenditure of water supply in rural and urban areas of Tamil Nadu.

Data source and Material

The study is mainly based on secondary data and information. The information was collected from Government of India, NSSO, Drinking water, Sanitation, Hygiene and housing condition in India, 69th round, Tamil Nadu water Supply & Drainage Board and various published sources such as books, journals, government reports and publication, research articles, websites etc. The simple average growth rate is calculated for the present analysis.

Analysis and Discussion

Rural Water Supply and its Status

Drinking water is the least sizeable use of water compared to irrigation or industry and yet access continues to be a challenge, particularly to the excluded and marginalized, pointing to the larger problem of inappropriate and inequitable management. A critical problem is 'slippage', with habitation-level rural water supply coverage dropping from 94% in 2001 to 67% in 2009. The objective of providing Water Supply and Drainage facilities to rural and urban

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areas of Tamil Nadu other than Chennai Metropolitan Area is the main mandate of Tamil Nadu Water Supply and Drainage Board (TWAD). TWAD Board has built up its capacity and capability considerably in all sectors and is ensuring effective implementation of water supply and sewerage schemes. The activities of the TWAD board include Planning, Investigation, Design Implementation and Commission of Water Supply and Sewerage Schemes in rural and urban areas, Operation and Maintenance of Combined Water Supply Schemes, Water Quality Monitoring and Surveillance Programme, activities on sustainability of drinking water sources and Training and Capacity building as shown in given table.

Table3: Drinking Water - Status of in Rural Habitations As on 01-04-2013*

Status	Habitations	Percentage
Fully covered (40Ipcd** & above)	76704	78.13
Partially Covered (10-39 Ipcd**)	21475	21.87
Uncovered (0-9 Ipcd**)	Nil	Nil
Total	98179	100

Source: Tamil Nadu Water supply & Drainage Board, Chennai-5,*Status report as per updated YSR in IMIS website as on 1.04.13,** Ipcd: Litre per Capita per day.

The above table-3 explains the drinking water status of rural habitations in Tamil Nadu. The table clearly indicates the status of fully covered habitations is 76704 with 78.13 percent where as partially covered status is 21475 with a 21.87 percent. The total status of rural habitations are 98179 with 100 percent. The supply of water in rural habitations is fully covered which is good to see in records of Tamil Nadu. But in reality the supply of water in rural areas is a question. Most of the summer season, the women in rural areas of Tamil Nadu involves in strikes on the road with their empty pots . Tamil Nadu is facing a water deficit of 11%, says a report. This is bad news, coming as it does at the beginning of a torrid summer. While the current total water demand in the state, for domestic, irrigation, livestock and industrial needs, is 1,867.85 tmcft (thousand million cubic feet) a year, the total availability, from all resources, is only 1,681.78 tmcft. This deficit will rise to 17% by 2045, said the report, jointly prepared by several central and state government agencies, including Tamil Nadu's public works department and the Central Water Commission.(April 6 -2013 Times of India).

Table 4: Rural Water Supply Performance 2001-02 to 2012-13

Year	Habitations Benefitted	Expenditure (Rs. in crores)
2001-02	6865 (-)	439.87
2002-03	6628 (-3.4)	563.82
2003-04	6510 (-1.7)	484.08
2004-05	6520 (0.1)	451.93
2005-06	7540 (15.6)	526.66
2006-07	7742 (2.6)	555.75
2007-08	12549 (62)	749.69
2008-09	10255 (-18.2)	824.48
2009-10	8193 (-20.1)	872.02
2010-11	7004 (-14.5)	666.04
2011-12	6000 (-14.3)	735.74
2012-13	7203 (20.05)	1199.72

Source: Tamil Nadu Water supply & Drainage Board, Chennai-5
AGR (Average growth rate) is given in the brackets, manipulated by researcher.

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The above table- 4 explains the performance of rural water supply in Tamil Nadu during the period 2001-02 to 2012-13. The habitation benefitted in 2001-02 has been increased from 6865 in 2001-02 to 7203 in 2012-13. Expenditure is increased from 439.87 crores 2001-02 to 1199.72 crores in rural areas. The above table remains the Keynes psychological law of consumption. The expenditure increases with respect to consumption or the number of benefitted. The unknown variable or the omitted variable by Keynes is the depend ratio which is termed here as number of benefitted. The state domestic income increases over the year simultaneously the expenditure on social sector also increases which was clearly mentioned by the researcher by using the tamilnadustat.com data. The above table also explains the growth rate and expenditure during the period 2001-02 to 2012-13. The highest growth rate is in the year 2007-08 i.e., 62% with the expenditure of Rs.749.69 crores and lowest growth rate is in the year 2010-11 i.e., -14.5% with the expenditure of Rs666.04 crores in rural areas.

Urban Water Supply

Access to and provision of safe drinking water to every household in the ULBs has been one of the primary concerns of the Government. Ensuring equitable and adequate supply of drinking water and its effective delivery is a major challenge for the ULBs. The drinking water requirement of Chennai city is met by drawing water from the surface reservoirs around Chennai city- Poondi, Redhills, Cholavaram, Chembarambakkam and also from Veeranamlake in Cuddalore District. Water is also received from the Kandaleru reservoir under Krishna Water Supply Project. In addition to this, CMWSSB is drawing about 100 MLD of water from the Desalination Plant at Minjur constructed on a Design, Build, Own, Operate and Transfer (DBOOT) basis. At present, the Board supplies about 765 MLD (Million Litres per Day) to domestic consumers in the City area and about 65 MLD of water to bulk consumers such as adjacent local bodies and industries located in Chennai Metropolitan Area. CMWSSB is taking necessary action to streamline water supply facilities to the areas which have been recently included within the Chennai City Corporation limits.

Table 5: Urban Water supply performance 2001-02 to 2012-13

Year	No. of Urban Schemes Completed	Expenditure (Rs. in crores)
2001-02	62 (-)	154.63
2002-03	72 (16.1)	166.05
2003-04	60 (-16.6)	133.00
2004-05	55 (-8.3)	120.01
2005-06	77 (40)	125.38
2006-07	55 (-28.5)	81.16
2007-08	55 (0)	166.35
2008-09	50 (-9.0)	289.88
2009-10	50 (0)	153.69
2010-11	47 (-6)	101.53
2011-12	13 (-72.3)	86.50
2012-13	7 (-46.15)	15.77

Source: Tamil Nadu Water supply & Drainage Board, Chennai-5

AGR (Annual growth rate) is given in the brackets, manipulated by researcher

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The above table indicates the urban water supply performance in Tamil Nadu during the period 2001-02 to 2012-13. The number of urban schemes completed in 2001-02 is 63 whereas it reduces to 7 completed schemes in 2012-13. And also the expenditure is reducing from 154.63 crores in 2001-02 to 15.77 crores in 2012-13. The above table also indicates the growth rate and expenditure during the period 2001-02 to 2012-13. The highest growth rate is in the period 2005-06 i.e., 40% with the expenditure of Rs125.38 crores and lowest growth rate is in the period 2007-08 and 2008-09 i.e., zero percent with the expenditure of Rs166.35crores and 153.69crores in urban areas.

Status of Urban Water Supply

Water Supply is seen as a core service and coverage as measured by provision of protected water supply has been improved in the last 5 to 10 years. Water supply and demand in Chennai Urban Agglomeration is estimated at 1750 MLD and 2248 MLD in the Chennai Second Master Plan and the Chennai revised City Development Plan respectively. This gap between supply and demand requires a combination of conservative resource utilization with sustainable supply augmentation. Existing storage capacity of all water reservoirs is estimated at 11.057 TMC. Additional capacity of 4.2 TMC is envisaged through creation of new reservoirs and by deepening existing reservoirs. The table 2 provides the status of water supply in ULBs other than Chennai City. As can be seen, coverage of protected water supply has been extended to all cities with more than a third of ULBs having 'good' coverage.

**Table 6: Status of Water Supply in Urban Local Bodies
(Other than Chennai Corporation)**

Local Body	Good	Average	Poor	Total
Corporations	1	7	1	9
(Good > 110 LPCD, Average 70-109 LPCD, Poor – less than 70 LPCD)				
Municipalities				
(Good > 90 LPCD, Average 50-89 LPCD, Poor – less than 50 LPCD)	51	67	7	125
Town Panchayats				
(Good > 70 LPCD, Average 40-69 LPCD, Poor – less than 40 LPCD)	336	179	14	529

Source: Tamil Nadu Water Supply and Drainage Board

The above table explains the status of water supply in urban local bodies such as corporations, municipalities and town panchayats with good average and poor performance. The good status of corporations is 1, average is 7, poor is 9 and total is 9. The good status of municipalities is 51, average is 67, poor is 7 and total is 125. The good status of town Panchayat is 336. Average is 179, poor is 14 and total is 529. From the above analysis of this paper it has calculated that the performance of rural water supply is in upward trend with the increase in expenditure and the growth rate is also positive with increased expenditure. And the performance of urban water supply is reduced with the schemes and expenditure whereas the growth rate is also relatively linked with expenditure. The demand and supply of drinking

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water in rural is in equilibrium as per the secondary sources. In case of urban supply the demand and supply of drinking water is not in equilibrium.

Conclusion

In India, investments in community water supply and sanitation projects have increased steadily from the 1st plan to the 11th plan. It has concluded from the analysis that growth rate is positively linked with expenditure. However, the benefits in terms of reduction in expenditure and adequate supply have not been commensurate with the investments made. The provision of adequate water services is needed to meet the growing population so as to maintain the basic and healthy life. But the optimum benefit from water supply in rural and urban areas can only be achieved if communities and individuals are participated and change their attitudes by made aware of the links between hygiene practices, polluted water source, save water and disease. So further expenditure is needed and schemes should be properly implemented to solve the problems of water facilities in rural and urban areas

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