

CHAPTER 12

WATER SUPPLY

Availability of potable water has become the major concern of all communities in the whole world. Availability of drinking water, good sanitation and pollution free environment are the three essential factors of a healthy society. Generally, health and sanitation are linked to safe drinking water. Pollution of the existing water courses is a major problem in the global context.

The chapter analyses the existing status and development issues of provision of drinking water in the Corporation area.

12.1 EXISTING STATUS

Kannur Municipal Corporation and Kerala Water Authority are the statutory authorities in charge of supplying and maintaining water supply facilities in the Corporation area. The supply of potable water including planning, design, construction, implementation and management are coordinated by these two authorities.

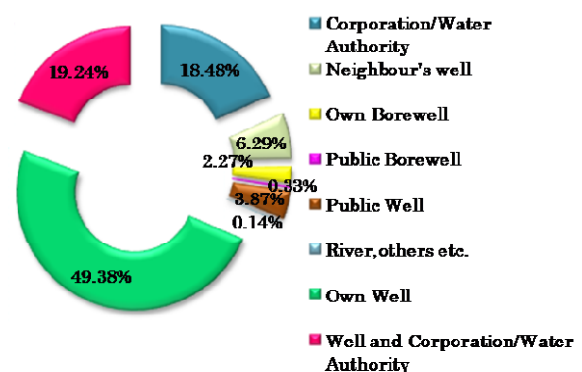
The total water consumption of a city comprises the domestic and non domestic consumption, including the water requirement for industrial,

commercial and institutional uses, fire fighting, hospitals, hotels, theatres etc.

12.2 SOURCES OF WATER SUPPLY

As per socio economic survey conducted in 2018, the sources of water for domestic use are shown in Figure.12.1. All the settlements in the Corporation mainly depend on the ground water extracted through wells, tube wells as the source of water for meeting their daily needs. In addition they depend on pipe water supply by Kerala Water Authority and Kannur Municipal Corporation especially when wells dry up.

From the graph, it is clear that the principal sources of water for domestic



Source: Socio Economic Survey, 2018

Figure. 12.1 Sources of water supply



Pazhassi Dam

use are open wells that is; about 51.65% of the households in Kannur depends only on own sources like well (49.38%) and bore well (2.27%) for water. About 19.24% of the households have two sources both own well and water supplied by the Kerala water authority. About 6.29% of people depend on neighbours well for their daily needs. Users of public wells (3.87%) and public bore well (0.33%) constitute 4.20% of the households. About 18.48% people depend only on Corporation or Kerala Water Authority. Very less percentage of households use river as their source of water (0.14%).

The major rivers flowing through the Corporation area are Kanampuzha, Kakkad puzha and Kattampally puzha (Varamkadavu and Pullooppikadavu). Thottada Puzha, Ayyarath Puzha (Nadal Puzha) are other minor rivers. Anakulam, Chettyarkulam, Valiyakulam are important ponds in the Corporation area.

Pazhassi Canal; a major canal is mainly flowing through Puzhathi, Elayavur and Chelora zones of the planning area. It comes under Pazhassi Irrigation Project (PIP) in the Valappattanam River. Other ditches and canals flowing are Andathodu, Padannathodu, Ammayithodu, Valiyathodu, Chelravayalthodu, Macheryvayalthodu and Athirakam Canal etc.

For public water supply system, the main source is the Pazhassi reservoir in Valappattanam River at Veliyambra; 40 km away from the city and was introduced in Kannur City in 1971. The yield from this source is 30 MLD which is about 129 LPCD. Among this, 20MLD is distributed for Kannur Corporation area and 10 MLD is for three adjoining Panchayats Chirakkal, Azheekkod and Valappattanam.

12.3 TREATMENT, STORAGE AND DISTRIBUTION

The intake well as the booster station along with the 30 MLD Water Treatment Plant is located near Chavasseri Paramba. The filtration is done by means of conventional rapid sand filtering system and the disinfection by gas chlorination. The treated water is conveyed through gravity from the treatment plant sump to the Overhead Storage Reservoir (OHSR) tank through DI pipes. The existing asbestos cement pipelines

Table. 12.1 Details of public distribution system in the Corporation area

Sl. No.	Zone/Area of coverage	Source	No. of houses covered/No. of connections	Capacity of OHSR (LL)	Total quantity supplied per day	Quality of water
1	Elayavoor Zonal Area	Elayavoor OHSR (Overhead Storage Reservoir)	4353	8	8	Properly treated
2		Mele Chevva OHSR		28	28	„
3	Kannur Municipality	Thanna OHSR	11858	40	40	„
4		Kasankkotta OHSR		2.25	2.25	„
5		Sangeetha Theatre OHSR		16	16	„
6		Kodapparamba OHSR		10	10	„
7	Puzhadi Zonal Area	Kakkad OHSR	3600	2.5	2.5	„
8		Payangōdanpara OHSR		1.5	1.5	„
9	Pallikkunnu Zonal Area	Pallikkunnu OHSR	2415	4.5	4.5	„
10		JICA OHSR		25	25	„
11		ChakkattilPeedika OHSR		3	3	„
12	Edakkad Zonal Area	Chala GSLR (Ground Level)	3968	4	4	„
13		Vattakulam OHSR		8.5	8.5	„
14	Chelora Zonal Area	Varam OHSR	1322	6.33	6.33	„
15		Chelora OHSR		7.95	7.95	„

from the reservoir at the Pazhassi project site to the town are also replaced by new Ductile Iron (DI) pipe as a part of safety. In Kannur Municipal Corporation area, the replacement works have been already completed. There are two shifts in six hours for water supply in the planning area. The details of public distribution system in the Corporation area are shown in Table.12.1.

As per the table, Kerala Water authority covers all the six zones under Kerala Water Supply Scheme. To meet the gap in the present demand, water is to be conveyed from transmission main of the new JICA (Japan International Cooperation Agency) Pattuvam scheme having 90 MLD supply; 10 MLD is supplied for Kannur Corporation and for that, feeder lines have been laid up to the proposed OHSR at Jail compound

Pallikkunnu near Post Office. The tank has a capacity of 24 LL and is constructed near the old tank and supply is done for both Palikkunnu and Puzhathi (12 LL each). Under the scheme, supply will be shared between the existing consumers as well as the new beneficiaries. The application process is going on so that the updated number of beneficiaries is yet to be determined.

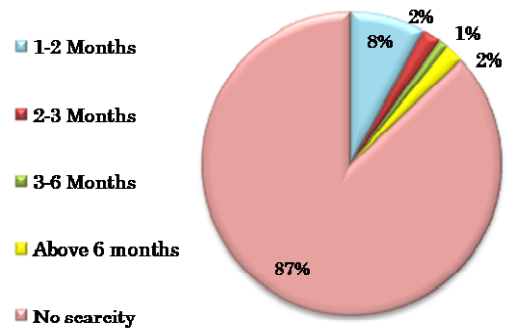
Other than these systems, there are two OHSR tanks each having 25000 L capacities for the colonies Kunnunkai Ambedkar Colony, Poilmotta Ambedkar Colony, Padannathode Chalad Colony with wells as the source. Bleaching is the only treatment carried out there. During summer seasons, there are some issues regarding water scarcity.

During dry months Kannur Municipal Corporation itself provide tanker water to Sangeetha, Thana, Kasankotta, Kodaparamba regions of the Corporation and the neighbouring regions like Chala, Avera and Vattakulam.

12.4 WATER SCARCITY

The Figure.12.2 shows the details of water scarcity in the Corporation area as per the socio-economic survey. The graph reveals that 87% of the population do not face scarcity of drinking water. About 8% population suffers 1-2 months scarcity and 2% population suffers 2-3 months. About

1% population suffers 3-6 months scarcity and 2% population suffers more than 6 months scarcity. Generally about 13% people are facing different types of scarcity.



Source: Socio Economic Survey, 2018
Figure 12.2 Details of Water Scarcity

The public water distribution in Kannur zone is about 8 hrs per day; morning 5 am to 9 am and evening 8 pm to 12 pm. The geography of the zone is in such a way that there are undulations from zero to thirty meter height. The old water supply distribution network laid years back was not able to cover some elevated areas and the scarcity of water occurs in several areas. Kakkad, Thilleri, S N Park, Kodaparamba, Talap, Uppaala Valappu, Doby Lane, Cantonment, Kasanakotta Kunnu, Jannath Nagar and Ayikkara are the places facing severe scarcity of drinking water in Kannur Zone. Salinity issues occur in Kakkad region.

In Pallikkunnu zone, the water supply is done once in two days (4 hrs) and the scarcity of water occurs in

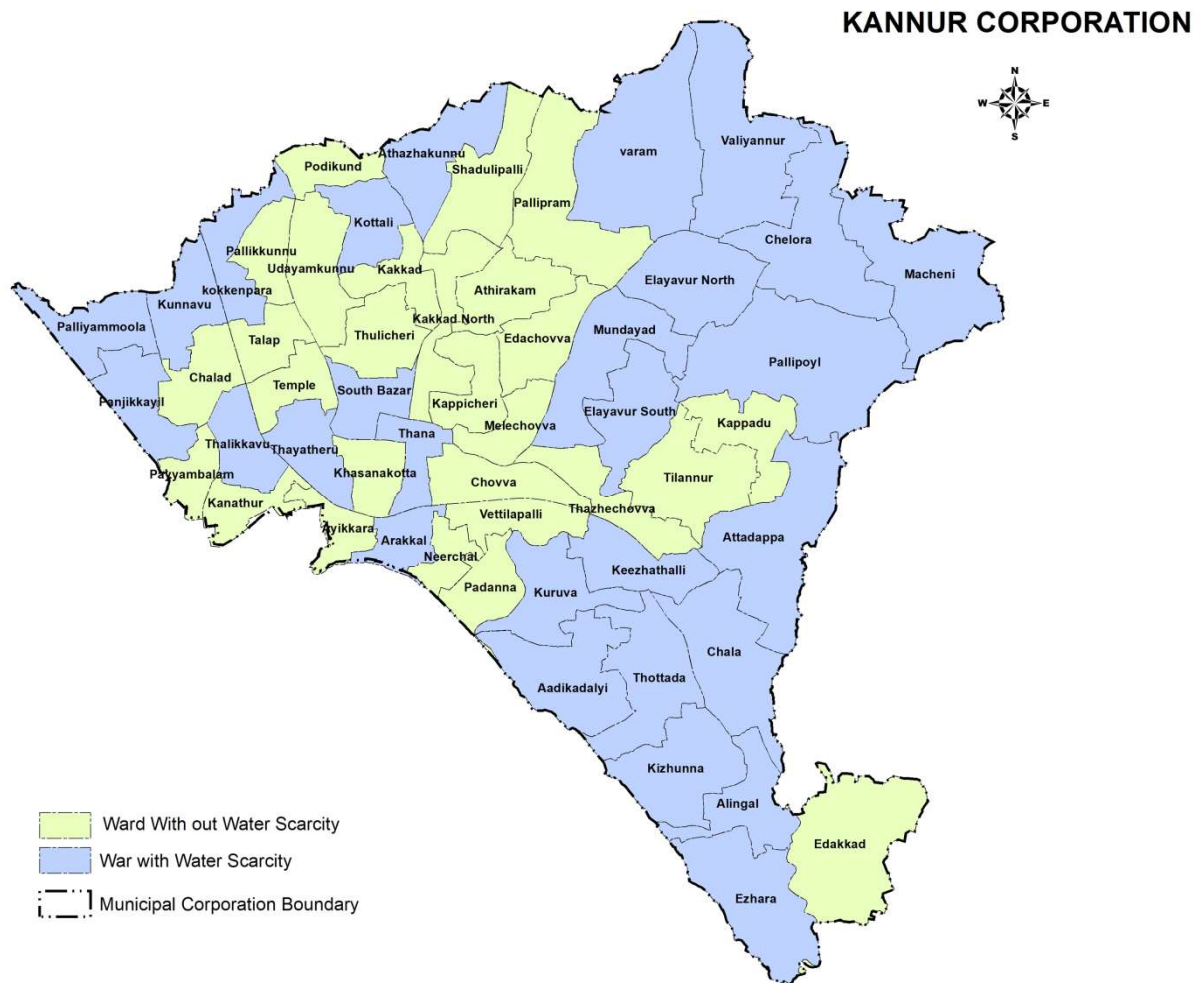


Figure 12.3. Wards facing water scarcity in the city

many parts of the zone such as Chalad, Manal, Kokkenpara, Kunnavu, Pallymoola etc. The issue of salinity also occurs in these areas. In Podikkund Laksham Veedu Colony, the one and only available well is contaminated resulting in scarcity of water. Even though Chelora region is having 24 hrs of water supply, Thankenkunnu, Puliyanchal, Muttolnpara, Vellappara, Varam Kadavu, Chalil Motta of the Chelora zone are facing water scarcity. The salinity issues are there in Varam region.

In Edakkad zone, supply is done once in two days (4 hrs). Chalakunnu Laksham Veedu colony, Attadappa Nalamkutti Kettakalkila as well as the high laying areas of the zone faces scarcity.

In Puzhathi zone, water supply is done for 4 hrs daily. But Podikkund Poyil Valappu, Salem nursery school region and Pullooppi Kadavu also faces water scarcity. Among these, Pullooppi area is having salinity issues. There exists scarcity in high lying areas of Puzhathi zone.

In Elayavoor zone, water supply is done for 4 hrs. In addition to all these, the antiquated network systems cause leakage of water and affect the quality of available water. It also adversely affects the efficiency of the existing water supply network which can also lead to scarcity. The wards facing water scarcity are shown in Figure.12.3.

12.5 ONGOING SCHEMES

• Japan International Cooperation Agency (JICA) Sponsored Water Supply Scheme (JICA Pattuvam Scheme)

Japan International Cooperation Agency (JICA) was launched in 2006 under Kerala Water Authority (KWA). The total envisaged capacity is 90 MLD. The source of the project is the reservoir of the Pazhassi irrigation project; the Pazhassi Reservoir with water treatment plant located nearby. This project is in advanced stage of completion and is expected to be commissioned shortly. The project also aims at augmentation and rehabilitation of the existing system. Under this project, reservoirs have been newly constructed for the towns like Pattuvam, Kurumathur, Panniyur, Kuttiyeri, Koovery, Mattul, Kadannappally, Panappuzha, Pariyaram, Ezhome, Kallyasseri, Pappinissery, Cherukunnu, and Kannapuram villages as well as Taliparamba municipality. The

responsibility of augmentation, implementation, operation and maintenance including cost recovery are dealt by Kerala Water Authority. Now, it is decided to supply 10 MLD of water for Kannur Corporation area and for that, feeder lines being laid up to the proposed OHSR at Jail compound Pallikkunnu near Post Office. From the newly constructed tank which is having a capacity of 24 LL and 12 LL of water is supplied for Palikkunnu and Puzhathi zones each. Under the scheme, supply will be done both for the existing consumers as well as the new beneficiaries.

• AMRUT (Atal Mission for Rejuvenation and Urban Transformation)

Under AMRUT Scheme, the following projects have been proposed:

1. Rehabilitation of existing old network, valves, house service connection and inter connections with existing lines and providing flow metres etc. including road reformation charges. By this, the per capita supply may increase from 90 LPCD to 150 LPCD.
2. Enhancement of treatment plant from 30 MLD to 40 MLD including modernisation of existing treatment plant which is expected to increase the per capita supply from 90 LPCD to 100 LPCD.

Laying of gravity main from JICA

Table.12.2 Details of water supply schemes in the Corporation area

Sl. No	Name of Scheme	Zone	Source of water	Implementing Agency	Pump set	Treatment system	Duration of distribution	Availability during summer	No. of beneficiary units				No. of public taps
									Domestic	Non domestic	Special	Industry	
1	Kannur Water Supply Scheme Kannur	1,2,3,4,5 & 6	4	1	1	1	1	1	9665	2236	54	25	448
2	WSS to VaramThakkali peedika	4	1	1	1	2	1	1					
3	ARWSS to Edakkad	1	4	1	1	1	3	1	4528	202	62	4	197
4	WSS to Edakkad zone2 Kosormoola	2	1&4	1	1	2	1	1&2					
5	WSS to Elayavoor	-	4	1	1	1	1	1	4289	350	43	5	111
6	RWSS to Poyilmotta Ambedkar colony	3	1	1	1	2	2	2	40				19
7	RWSS to Padannathode	2	1	1	1	2	2	2	40				10
8	WSS to Puzhathi (Payangodanpara&Pallikkunnu Tank supply)	3	4	1	1	1	2	1	3661	296	30	2	150
9	WSS to Pallikkunnu (Pallikkunnu Tank &Chakkattil peedika tank Supply)	2	4	1	1	1	2	1	2544	188	8	3	112
10	WSS to Anjarakkandi Peralassery& adjoining	4	4	1	1	1	2	1	3150	8	121	3	135

Zone: Kannur-1, Pallikkunnu-2, Puzhathi-3, Chelora-4, Edakkad -5, Elayavur- 6

Source of water: Well- 1; Borewell- 2; Pond- 3; River- 4; Rain harvest- 5; Others- 6

Implementing agency: KWA-1,Local body-2,Govt Agencies-3,Private Agencies-4, Others-4

Pump set: Electric- 1; Non Electric- 2; No- 3

Reason for not working: Work not completed- 1; Work not started- 2; Maintenance needed- 3; Non availability of water- 4; Lack of Electric connection- 4; Others- 5

Reason for incomplection: Lack of sufficient fund- 1; Work stopped by contractor- 2; Public protest- 3; Non availability of water- 4; Project abandoned- 5; others- 6

Treatment system: Available-1, not available-2

Duration of distribution: Daily 24 hours- 1; Daily few hours- 2; Alternate days- 3; One or two days in a week- 4; Now and then-5

Availability during summer: Adequate-1, Inadequate-2

1. Project at Mangattuparamba to Pallikkunnu OHSR of capacity 24 LL for Pallikunnu and Puzhathi providing house connection and inter connection with existing line.
2. Laying Conveyance main/pumping main from Melechovva to OHSR at Edakkad including supply erection of pump sets.

This scheme also decided to construct a 14 LL Capacity OHSR at Thottada of Edakkad Zone in the planning area and the works are completed. Laying of new distribution line and providing new service connections at Elayavoor and Edakkad Zones are also completed.

The details of public water distribution in the planning area are given in the Table.12.2. From that, it is clear that there exist 10 different schemes for public water distribution in the planning area among which only one is covered for all the six zones; Kannur water supply scheme.

scarcity of fund as well as water are

some important reasons for the delay in progress. Only 40% of the schemes are providing 24 hours of water distribution and others have intermittent supply. About 40% of the schemes are not having any treatment system thus the quality of the water in such cases are doubtful.

12.6 POTENTIALS AND PROBLEMS

Under AMRUT scheme, there are so many proposals like rehabilitation of existing old network, valves, house service connection and inter connections with existing lines and providing flow metres etc. including road reformation charges, all of which may increase the per capita supply from 90 LPCD to 150 LPCD. Enhancement of treatment plant from 30 MLD to 40 MLD including modernisation of existing treatment plant which may yield an increase in the per capita supply from 90 LPCD to 100 LPCD. Other schemes under

AMRUT are laying of gravity main from JICA project at Mangattuparamba to Pallikkunnu OHSR of capacity 24 LL for Pallikunnu and Puzhathi providing house connection and inter connection with existing line, laying conveyance main/pumping main from Melechoova to OHSR at Edakkad including supply erection of pump sets, construction of a 14 LL capacity OHSR at Thottada of Edakkad Zone, laying of new distribution line and providing new service connections at Elayavoor and Edakkad Zones etc.

Kannur Municipal Corporation itself provide tanker water to Sangeetha, Thana, Kasankotta, Kodaparamba regions of the Corporation area and the neighbouring regions like Chala, Avera and Vattakulam. If these provisions are increased to higher regions as well as places affected by water scarcity due to salinity it will solve most of the drinking water issues in Corporation.

In Kannur Corporation area, ground water is the principal sources of water for domestic use. Those without well mainly depend on Kerala Water Authority. The major source of public water supply in the planning area is the Valappatanam River and Pazhassi reservoir.

The Kannur water supply scheme, which is outdated, needs rehabilitation of transmission lines and

strengthening of under sized mains. Inadequate main supply and outdated distribution network are the major problems. Still there are so many regions those require sufficient water supply lines. Thus a well-designed distribution network is to be established urgently to cope with the increasing demand. Palliyamoola, Kunnavu, Elayavoor South, Keezhunna, Thayatheru, Thottada, Ezhara, Vaaram, Elayavoor north, Valiyannoor, Chelora, Panhikkayil, Keezhuthalli, Macheri, Attadappa, Adikadalayi, Chala, Thana, Kuruva, Araykkal, Alinkeel are the wards facing lack of sufficient pipeline facilities. The extension of existing network based on demands without strengthening transmission mains render the distribution network unbalanced.

Another issue the Corporation area is facing is that the available and potential sources are not protected. Most of the wells area are bacteriologically polluted and also found to have faecal contamination. The protection as well as recharge of wells is required. The public wells in the wards of Kokkenpara, Thalikkavu, Athazhakkunnu, Kottali, South bazar, Pallippoyil, Araykkal require artificial recharge immediately.

Krishna Menon College area as well as some parts of Puzhathi zone is located at elevated position and is facing water scarcity. Varam region is having salinity issues in drinking

water. In Elayavoor zone, the very old network systems cause leakage of water and affect the quality of available water as well as the efficiency of the existing water supply network. It leads to scarcity. Leakage issues are also there in several places. So in order to avoid such issues, rearrangement of the distribution network is necessary and the old and damaged AC pipeline in the system has to be replaced with D.I. pipes completely.

Present water tariff is not enough to maintain the scheme. Lack of efficient cost recovery approaches add on to the financial burden. Lack of effective communication and complaint redressing system affects the efficiency of the system.

Legal provisions to establish availability of water supply facility while giving development or building permits, are not in place at present. So demand for water supplying after completion of the project cannot be met. The new buildings in will have to depend on unhygienic sources. Hence regulations to ensure availability of drinking water for major projects from public or private water supply system before granting building permits are to be framed.

Conservation of all existing water sources like ponds and setting up independent water supply schemes would address the water shortage at micro level.

12.7 INFERENCE

The existing water supply network in Kannur Corporation area is insufficient. Inadequate main supply and out dated distribution network are the major problems faced by the planning area. There are so many wards those mainly requiring artificial recharge immediately. Also, there exists scarcity of drinking water in several elevated regions like Krishna Menon College area as well as some parts of Puzhathi zone.

In addition to these, the antiquated network system causes leakage of water and affects the quality of water available. Necessary remedial measures are to be adopted by the authority to provide treated water for domestic uses. The continuous checking of the old pipe network connections is to be done to avoid leakage as they affect the quality of available water as well as the efficiency of the existing water supply network which can also lead to scarcity. The tanker lorry supply is to be increased to higher regions as well as places where water scarcity is affected due to salinity. Proper ground water storage facilities, well water recharging, renovations of ponds or other natural bodies should be done. The idea and relevance of water conservation is to be conveyed properly to the people as we are facing the occurrence of flood in the last two years.

Identification of new sources like desalination plants for use in areas like coastal belts can be explored. Rain water harvesting in all public buildings as well as all large scale building projects has immense potential in the planning area, which shall be compulsorily explored on an urgent basis using policy and

enforcement measures. GIS Mapping of Water Supply utility, proper Energy Audit studies, automation of cost recovery mechanisms, Water Quality monitoring using latest equipment, communication strategy development and online complaint registration facilities etc. would help improve the efficiency of the system.

