

Water Services Provision in Rapidly Urbanising Villages: A Comparison of Rural and Urban Governance in Mumbai and Chennai regions in India

Supplementary material

**Appendix A-1
Population and households in towns studied**

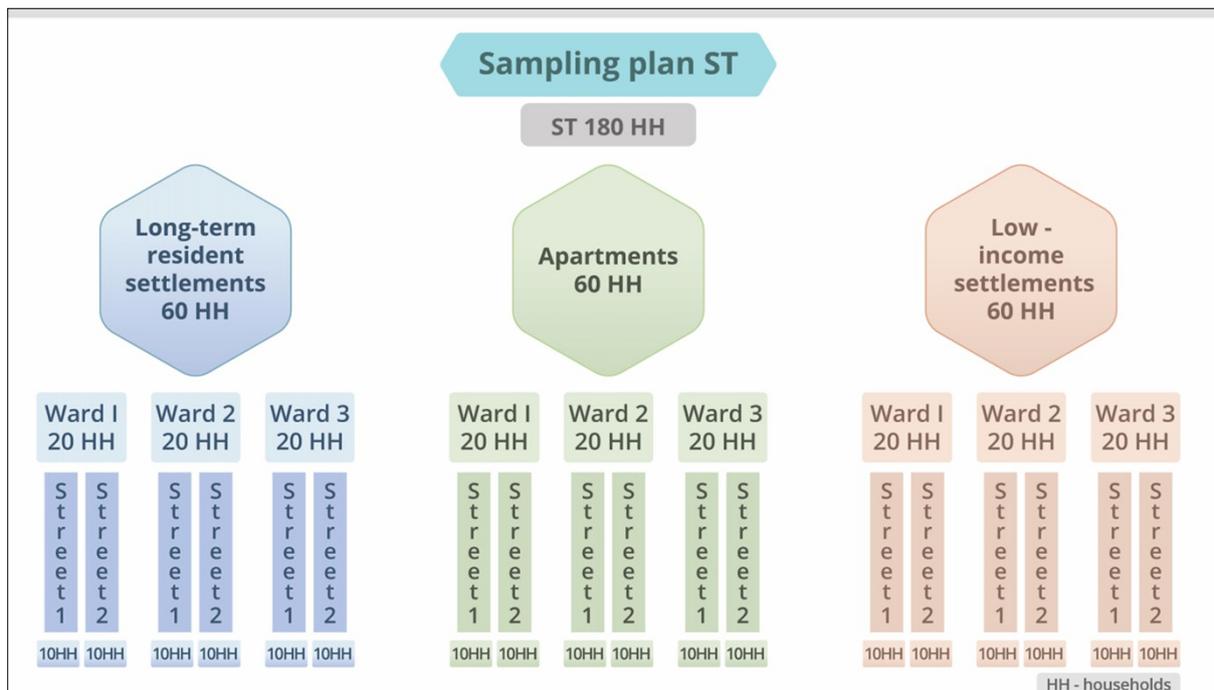
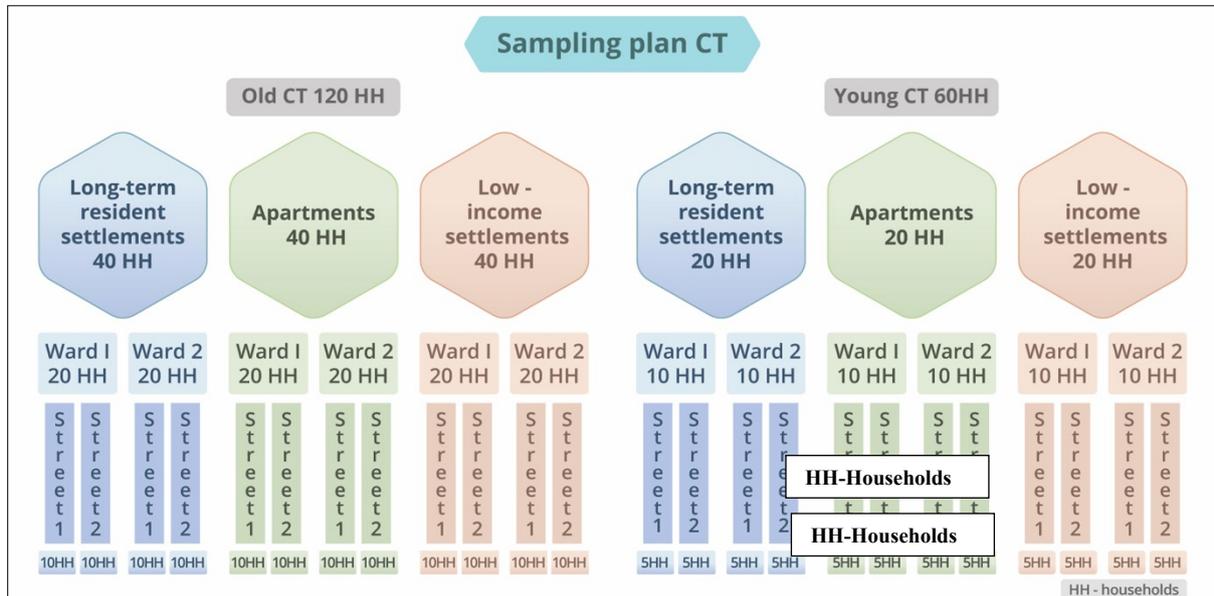
Town type	Population	Number of households
Mumbai Metropolitan region		
Old CT	12907	3190
Young CT	6588	1486
ST	709665	140035
Chennai Metropolitan region		
Old CT	16852	4384
Young CT	7610	1957
ST	722982	180000

Appendix A-2 Format to capture this information on the wards or zones and streets within them for each settlement type

Categorisation of ward CT/ST		
Category of respondent (Please tick in the relevant column)		
i.Elected representatives of local government		
ii.Official of the local government		
iii.Community leader		
Can you kindly categorise the wards in CT/ST into following clusters?		
Cluster	Wards	Can you please indicate the street within the ward where maximum apartments/long-term resident settlements/ low-income settlements can be seen?
Settlements with maximum apartments		
Long-term resident-dominated settlements		

Low-income settlements			

Appendix A-3 Sampling plan of CTs and ST



Appendix A-4 Definitions of Town types and Codes for Settlement types		
Definition of Town		
S.No.	Type of Town	Definition
1	Young Census town	<p>A village with (i) a minimum population of 5,000 persons; ii) 75 per cent and above of the male main working population engaged in non-agricultural pursuits; and; iii) a density of population of at least 400 persons per square kilometres, which was identified by the Census of India as a census town for the first time in the last held census in India in 2011.</p> <p>The source of this data on census towns in Tamil Nadu state is the Government of India, Office of the Registrar General and Census Commissioner, District Census Handbook, Kancheepuram district, Village and Town-wise Primary Census Abstract. https://censusindia.gov.in/nada/index.php/catalog/45355</p> <p>The source for the list of census towns in Maharashtra state is the Government of India, Office of the Registrar General and Census Commissioner, District Census Handbook, Thane district, Village and Town-wise Primary Census Abstract. https://censusindia.gov.in/nada/index.php/catalog/834</p>
2	Old Census town	<p>A village with (i) a minimum population of 5,000 persons; ii) 75 per cent and above of the male main working population engaged in non-agricultural pursuits; and; iii) a density of population of at least 400 persons per square kilometres, which was identified by the Census of India as a census town in census held in India in 2001 and was retained as a census town in the census held in 2011 also.</p> <p>The source of this data on census towns in Tamil Nadu state is the Government of India, Office of the Registrar General and Census Commissioner, District Census Handbook, Kancheepuram district, Village and Town-wise Primary Census Abstract. https://censusindia.gov.in/nada/index.php/catalog/45355</p> <p>The source for the list of census towns in Maharashtra state is the Government of India, Office of the Registrar General and Census Commissioner, District Census Handbook, Thane district, Village and Town-wise Primary Census Abstract. https://censusindia.gov.in/nada/index.php/catalog/834</p>
3	Statutory town	A statutory town is an administrative unit defined by statute as urban, such as a Municipal Corporation or Municipality.
S.No.	Type of settlement	Code
1	Apartment	Multi-storied buildings with several housing units, occupied

		by high and middle-income families. Those residing in the individual housing units may be owners or may be on lease.
2	Low-income settlement	Multi-storied buildings with several housing units, occupied by high and middle-income families. Those residing in the individual housing units may be owners or may be on lease. Cluster of several small housing units occupied by low-income households. Construction is mostly temporary or semi-permanent. Mostly, these settlements are found on government-owned common land and, sometimes, on privately owned land, paying rent.
3	Long-term resident settlements	Areas occupied by the long-term residents, who have been living in the town for several generations, are identified by the key informants in the town, namely elected representatives and officials of local governments, and community leaders. These settlements include independent houses of varying sizes and comprise all income groups.

Appendix A-5 Household survey schedule

Q1 Introduction: Enumerator to read the statement before asking questions. I am working with Devinsights Pvt Limited in connection with research work being conducted by Ms Renjitha Maniyil Haridasan, a PhD student at Cranfield University, UK. This is a household survey being conducted as a part of her PhD research work. The aim of the survey is to gather data that can help with understanding the drinking water services in the households in this town. I would like you to give me some time to answer the questions in this survey. Your household has been chosen randomly for this survey. You may associate with this survey on a voluntary basis and may opt out of this exercise at any point during the survey and until the student starts analysing this data, which may commence by last week of April 2024. You may also not respond to a question or some questions if you wish. Your personal details and responses will be kept confidential. You will not be identified or identifiable in the report and publications that will result from this study. Do you wish to participate in the survey? If yes, please give your consent in the consent form provided. (If no, the interviewer may proceed to the next household)

yes

No

Q2 Name of the surveyor

Q3 Enter a date:

Q4 Can the surveyor please get the points below reviewed by the respondent from the household surveyed and record his/her responses?

Q5 I confirm that I have been provided with an information sheet explaining the above research project, and I have had the opportunity to ask questions about the project.

yes

no

Q6 I understand that my participation is voluntary and that I am free to withdraw my participation until data analysis begins, which is likely to begin by mid-April 2024, without there being any negative consequences. In addition, should I not wish to answer any question

or questions, I am free to decline. If, for any reason, I want to withdraw, I will email the lead researcher, Renjitha Maniyil Haridasan at renjitha.haridasan@cranfield.ac.uk.

yes

no

Q7 I have been provided with the document which carries the contact details of the lead researcher

yes

no

Q8 I understand that my responses to the survey will be securely stored on the Cranfield University network. Anonymised responses will be created by removing or replacing

Q11 I understand that the data collected from me will be stored by Cranfield University and could potentially be used in relevant future research by the relevant research team—but this data will remain anonymous when uploaded to the university's storage system.

yes

no

Q12 I agree to take part in the survey conducted as part of this research project

yes

no

Skip To: End of Survey If I agree to take part in the survey conducted as part of this research project = No

Q13 Signature of the surveyor

Q14 Name of the town

Q15 Please mention the type of cluster?

Long-term resident settlements

Low-income settlements

Apartments

Q16 Ward number

Q17 What is the name of the street or road?

Display This Question:

If Please mention the type of cluster? = Apartments

Q18 Survey number of the apartment given by the surveyor

Q19 Gender of the respondent

- Female
 - Male
 - Any other, please specify
-

Q20 Number of resident members in the household

Q21 Social category to which members of household belongs to

- Scheduled caste
- Scheduled tribe
- Other backward caste
- General category
- Don't know
- Don't want to reveal

Q22 Main occupation of the primary bread winner of the household

- Self-employed professional
- Farming
- Own business
- Daily wage employee
- Salaried employee
- Others, please specify _____

Q23 What is the nature of accommodation?

- Independent house
- Multi-storied apartment

Q24 Type of house

- Permanent structure
- Temporary structure

Q25 Type of accommodation

- Own accommodation
- Rented accommodation

Q26 Average monthly expenditure of the household (in INR):

Q27 Monthly income of the household (INR)

Q28 Do you have a ration card?

- yes
- no

Display This Question:

If Do you have a ration card? = Yes

Q29 What type of ration card do you have?

- Yellow
- White
- Saffron
- Can buy all stuff from ration shop using card(PHHAAAY)
- Can buy all stuff from ration shop except rice using card(NPHH)
- Can buy only sugar or rice from ration shop using card(NPHHS)
- Card serves as an identity proof and can't purchase anything from ration shop (NPHHNC)

Display This Question:

If What is the nature of accommodation? = Multi-storied apartment

Q30 Who manages the water supply in the apartment?

- Resident association directly or through staff engaged
- Builder of the apartment directly or through staff engaged
- Individual household

Display This Question:

If Who manages the water supply in the apartment? = Resident association directly or through staff engaged

Or Who manages the water supply in the apartment? = Builder of the apartment directly or through staff engaged

Q31 As instructed, the surveyor is to ensure that they have collected data in the prescribed format from the staff engaged in managing the water supply or an office bearer of the resident association or the builder, as the case may be, before proceeding with the household survey in apartments.

Q32 The surveyor will not be able to review the responses given so far later. Kindly review before proceeding further. Further, the review of responses to be given hereafter is also not possible. So kindly choose the options carefully.

Q33 Is the principal water source members of the household access for meeting the household requirements (drinking, cooking, washing, cleaning, and bathing needs) an unimproved source? (if yes, please indicate the unimproved source -unprotected dug well/drinking water directly from rivers, lakes, ponds, and streams in the text box)

- yes _____
- no

Display This Question:

If Is the principal water source members of the household access for meeting the household requireme... = No

Q34 Where does the principal source of water lie?

- Within the household premises
- Outside household premises

Display This Question:

If Where does the principal source of water lie? = Within the household premises

Q35 What is the principal water source within the household premises?

- Piped water supply in households
- Protected dug well from which water is manually collected using containers like
- buckets
- Boreholes with handpumps
- Boreholes with motorised pumps
- Rainwater harvesting
- Tanker truck
- Protected dug well from which water is lifted to a tank using a motorised pump
- others, please specify _____

Display This Question:

If Where does the principal source of water lie? = Outside household premises

Q36 What is the principal water source outside the household premises?

- Public tap/ standpipe
- Borehole with motorised pumps
- Boreholes with hand pumps
- Protected dug well from which water is manually collected
- Tanker truck
- Rainwater harvesting
- Piped water supply from neighbour
- others, please specify _____

Display This Question:

If What is the principal water source within the household premises? = Piped water supply in households

Q37 Who supplies piped water to households?

- Municipal Corporation

- Panchayat or local village government
 - Household access through unauthorised water connection
 - Residents association of the multi-storied apartment
 - Private builder of the multi-storied apartment
 - Any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = Protected dug well from which water is manually collected using containers like buckets

Q38 Who manages the protected dug well within household premises where water is manually collected?

- Household
 - any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = Boreholes with motorised pumps

Q39 Who manages the boreholes fitted with motorised pumps within household premises?

- Household
 - any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = Rainwater harvesting

Q40 Who manages the rainwater harvesting units within household premises?

- Household
 - any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = Boreholes with handpumps

Q41 Who manages the boreholes fitted with hand pumps in household premises?

- Household
 - any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = Protected dug well from which water is lifted to a tank using a motorised pump

Q42 Who manages the protected dug well fitted with a motorised pump?

- Household
 - any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = Tanker truck

Q43 Who arranges the supply through tanker truck within the premises?

- Municipal Corporation
 - Panchayat
 - Resident association
 - Household
 - Builder of the apartment
 - Private individual
 - any other, please specify
-

Display This Question:

If What is the principal water source within the household premises? = others, please specify

Q44 Who manages the 'other water source' available within the premises?

- Household
 - any other, please specify
-

Display This Question:

If What is the principal water source outside the household premises? = Public tap/ standpipe

Q45 Who manages and supplies water through public tap or stand pipe?

- Municipal Corporation
- Panchayat

Display This Question:

If What is the principal water source outside the household premises? = Borehole with motorised pumps

Q46 Who manages the supply from boreholes with motorised pumps outside household premises?

- Municipal Corporation
 - Panchayat or local village government
 - Residents in the area
 - Builder of the apartment
 - any other, please specify
-

Display This Question:

If What is the principal water source outside the household premises? = Protected dug well from which water is manually collected

Q47 Who manages the supply from the protected dug well outside the household premises?

- Municipal Corporation
 - Panchayat or local village government
 - Residents in the area
 - Builder of the apartment
 - any other, please specify
-

Display This Question:

If What is the principal water source outside the household premises? = Boreholes with hand pumps

Q48 Who manages the supply from boreholes with hand pumps outside household premises?

- Municipal Corporation
- Panchayat or local village government
- any other, please specify

Display This Question:

If What is the principal water source outside the household premises? = Tanker truck

Q49 Who arranges water supply through tanker trucks ?

- Municipal Corporation
 - Panchayat or local village government
 - Residents in the area
 - Builder of the apartment
 - Non-governmental organisation
 - Private individual
 - any other, please specify
-

Display This Question:

If What is the principal water source outside the household premises? = Rainwater harvesting

Q50 Who manages water supply from rainwater harvesting units?

- Municipal Corporation
 - Panchayat or local village government
 - Non-governmental organisation
 - Other government departments
 - any other, please specify
-

Display This Question:

If What is the principal water source outside the household premises? = others, please specify

Q51 Who manages and supplies water from the 'other principal water source' outside the premises?

- Municipal Corporation
 - Panchayat or local village government
 - Residents in the area
 - Private individuals
 - Any other, please specify
-

Display This Question:

If Where does the principal source of water lie? = Outside household premises

Q52 How long does it take to collect water from the principal source? (Please indicate the time taken to access the source and collect water, including travel time in minutes)

Q53 Does the household fetch water using containers?

- Yes
- No

Display This Question:

If Does the household fetch water using containers? = Yes

Q54 Who generally fetches water ?

- Female members of the household
- Male members of the household
- Others
- Who ever is free

Display This Question:

If Does the household fetch water using containers? = Yes

Q55 What is the size of the container the household uses to fetch water at home (in litres)?

Display This Question:

If Does the household fetch water using containers? = Yes

Q56 How many such water containers does the household need daily to meet drinking, cooking, bathing, washing and cleaning needs?

Display This Question:

If Does the household fetch water using containers? = Yes

Q57 How many such water containers does the household get daily from the principal source to meet these needs?

Q58 Does the household get sufficient quantity of water to meet household requirements from the principal source?

- yes
- no

Display This Question:

If What is the principal water source within the household premises? = Piped water supply in households

Q59 Does the household use any motorised pump to lift water from the public piped water network?

- yes
- no

Q60 Does the household have a water storage facility?

- yes
- no

Skip To: End of Block If Does the household have a water storage facility? = No

Display This Question:

If Does the household have a water storage facility? = Yes

Q61 Please record the details of the storage facility and its volume in litres

- Roof top tank _____
- Underground storage facility (sump) outside the house _____
- Storage tanks within the house _____
- Plastic drums _____
- others, please specify _____
- Common storage facility for all households in the apartment _____

Display This Question:

If Does the household have a water storage facility? = Yes

Q62 How long does it take to fill the storage facility using the principal source? (in minutes)

Display This Question:

If Does the household have a water storage facility? = Yes

Q63 How many days household can manage with the stored water once filled?

Display This Question:

If Does the household have a water storage facility? = Yes

Q64 Does the storage facility regularly get filled up from the principal source's supply?

- yes
- no

Display This Question:

If Does the storage facility regularly get filled up from the principal source's supply? = no

Q65 What proportion of the storage facility regularly gets filled up from the principal source's supply?

- Three-fourths of the volume
- Half the volume
- One-fourth the volume
- Less than one-fourth

Q66 Does the household get the required quantity of water from the principal source whenever needed?

- yes
- no

Display This Question:

If Does the household get the required quantity of water from the principal source whenever needed? = no

Q67 Does the household get water from the principal source daily for fixed hours?

- yes

no

Display This Question:

If Does the household get water from the principal source daily for fixed hours? = No

Q68 If not daily, does the household get water from the principal source on fixed days in a week and fixed hours on those days?

yes

no

Q69 How frequently do you get water from principal source?

daily

alternate days

once in three days

once in four days

once in five days

weekly once

irregular supply

Q70 How many days did the household receive water from the principal source in the last seven days?

Q71 What is the average number of hours water is supplied in a day from the principal source?

Q72 What is the average number of hours water was supplied in a day in the last week from the principal source?

Q73 Number of times water supply was broken down in the last month

Q74 Number of times water supply was broken down in the last week

Q75 Please indicate the average time within which supply is restored after a breakdown

- minutes _____
- hours _____
- days _____

Q76 Does the household treat the water from the principal source to make it safer to drink?

- yes
- no

Display This Question:

If Does the household treat the water from the principal source to make it safer to drink? = Yes

Q77 Why does the household have to treat water from the principal source?

- Unpleasant smell
- Unpleasant taste
- Sediments in water
- Discoloration
- Unsure of the quality of water
- All households treat so I also treat
- Any other, please specify

Display This Question:

If Does the household treat the water from the principal source to make it safer to drink? = Yes

Q78 Please indicate the treatment method adopted by the household

- Boil the water
- Sieve the water using cloth
- Allow collected water to settle
- Filter the water using a machine
- Add bleach or chlorine tablets

any other, please specify

Q79 Does the household need to pay a water tariff to access the principal source?

- yes
- no
- don't know

Skip To: Q85 If Does the household need to pay a water tariff to access the principal source? = No

Skip To: Q85 If Does the household need to pay a water tariff to access the principal source? = Don't know

Display This Question:

If Does the household need to pay a water tariff to access the principal source? = Yes

Q80 How frequently does the household need to pay tariff for water from the principal source?

- Monthly
- Quarterly
- Half-yearly
- Annually
- any other, please specify

- Don't know

Display This Question:

If Does the household need to pay a water tariff to access the principal source? = Yes

Q81 Does the household pay the tariff regularly?

- yes
- no
- don't know

Display This Question:

If Does the household pay the tariff regularly? = No

Q82 Why doesn't the household pay tariffs regularly?

- not satisfied with the service
- there is no compulsion to pay

- online tariff payment system does not work properly
 - Officials responsible for user fee recovery do not come and collect regularly
 - forgot to pay
 - lack of financial resources
 - any other, please specify
-

Display This Question:

If Does the household need to pay a water tariff to access the principal source? = Yes

Q83 Do you know what is the tariff to be paid?

- yes
- no

Display This Question:

If Do you know what is the tariff to be paid? = Yes

Q84 How much do you pay (monthly or quarterly or half-yearly as the case may be)? (in INR)

Q85 Does the household need to make other payments to access the principal source?

- yes
- no
- don't know

Display This Question:

If Does the household need to make other payments to access the principal source? = Yes

Q86 How frequently does the household need to pay to access the principal source?

- Daily
- Weekly
- Monthly
- Quarterly
- Half-yearly

- Annually
 - Any other, please specify
-

- Don't know

Display This Question:

If Does the household need to make other payments to access the principal source? = Yes

Q87 How much does the household pay (daily, weekly or monthly, as the case may be)? (in INR)

Display This Question:

If What is the nature of accommodation? = Multi-storied apartment

Q88 Does the household pay a maintenance fee?

- yes
- no
- don't know

Display This Question:

If Does the household pay a maintenance fee? = Yes

Q89 How frequently does the household need to pay maintenance fees?

- Monthly
 - Quarterly
 - Half-yearly
 - Annually
 - Any other, please specify
-

- Don't know

Display This Question:

If Does the household pay a maintenance fee? = Yes

Q90 Do you know what is the maintenance fees to be paid?

- yes
- no

Display This Question:

If Do you know what is the maintenance fees to be paid? = Yes

Q91 What is the maintenance fee paid by the household (monthly or quarterly or half-yearly or annually as the case may be)? (in INR)

Q92 Does the household purchase bottled water to meet drinking and cooking water needs?

- yes
- no

Display This Question:

If Does the household purchase bottled water to meet drinking and cooking water needs? = Yes

Q93 Does the household purchase bottled water throughout the year?

- Yes throughout the year
- only in rainy season
- only during summers
- Only when there is a breakdown in supply from the source used for drinking
- and cooking

Display This Question:

If Does the household purchase bottled water to meet drinking and cooking water needs? = Yes

Q94 Why does the household purchase bottled water for drinking and cooking needs?

- the taste of the water from the principal sources is unacceptable
- the smell of the water from the principal sources is unacceptable
- the colour of the water from the principal sources is unacceptable
- the water supplied from the principal source contains sediments
- supply from the principal source is not regular

- Unsure of the quality of water supplied
 - Most households purchase so I also buy
 - Any other, please specify
-

Display This Question:

If Does the household purchase bottled water to meet drinking and cooking water needs? = Yes

Q95 What is the volume of the bottle the household usually purchases?

- 20 litres
 - 25 litres
 - 5 litres
 - Any other, please specify
-

Display This Question:

If Does the household purchase bottled water to meet drinking and cooking water needs? = Yes

Q96 What is the cost of one such bottle? (in INR)

Display This Question:

If Does the household purchase bottled water to meet drinking and cooking water needs? = Yes

Q97 How many such bottles are purchased in a week?

Q98 Does the household regularly use any other supplementary source to meet daily water needs?

- yes
- no

Skip To: End of Block If Does the household regularly use any other supplementary source to meet daily water needs? = No

Display This Question:

If Does the household regularly use any other supplementary source to meet daily water needs? = Yes

Q99 Why should the household access any other supplementary source?

- inadequate quantity of water from principal source
 - irregular supply from principal source
 - poor quality of principal source
 - principal source is unaffordable
 - Any other reason, please specify
-

Display This Question:

If Does the household regularly use any other supplementary source to meet daily water needs? = Yes

Q100 Please indicate the major use of supplementary source

- Drinking and cooking purposes
- Other household requirements
- Both

Display This Question:

If Does the household regularly use any other supplementary source to meet daily water needs? = Yes

Q101 What is the supplementary source used by household?

- Public taps/standpipes
 - Protected dug well
 - Boreholes with handpumps
 - Boreholes with motorised pumps
 - Rainwater harvested
 - Tanker trucks
 - Piped water supply in households
 - Piped water supply from neighbours
 - An unimproved source including open well, lakes, rivers, lakes, ponds and streams
 - Any other, please specify
-

Display This Question:

If Does the household regularly use any other supplementary source to meet daily water needs? = Yes

Q102 Who manages the supply from the supplementary source accessed by the household?

- Municipal Corporation
 - Panchayat or local village government
 - Household
 - Resident association
 - Non-government organisation
 - Builder of the group housing project
 - Private individual
 - Any other, please specify
-

Display This Question:

If Does the household regularly use any other supplementary source to meet daily water needs? = Yes

Q103 How frequently do you access water from the supplementary source?

- Daily
- Alternate days
- Once in three days
- Once in four days
- Once in five days
- Weekly once

Display This Question:

If Does the household regularly use any other supplementary source to meet daily water needs? = Yes

Q104 Does the household need to pay a tariff for the supplementary source?

- Yes
- No
- Don't know

Display This Question:

If Does the household need to pay a tariff for the supplementary source? = Yes

Q105 How frequently does the household need to pay the tariff to access the supplementary source?

- Monthly
 - Quarterly
 - Half-yearly
 - Whenever accessed
 - any other, please specify
-

Don't know

Display This Question:

If Does the household need to pay a tariff for the supplementary source? = Yes

Q106 Do you know the tariff to be paid for the supplementary source?

- yes
- no

Display This Question:

If Do you know the tariff to be paid for the supplementary source? = Yes

Q107 How much does the household pay as tariff for the water from the supplementary source? (monthly, quarterly, half-yearly as the case may be in INR)

Display This Question:

If Does the household need to pay a tariff for the supplementary source? = Yes

Q108 Does the household pay the tariff regularly?

- yes
- no
- don't know

Display This Question:

If Does the household pay the tariff regularly? = No

Q109 Why does not the household pay the tariff regularly?

- Not satisfied with the service
 - No compulsion to pay
 - Forgot to pay
 - Officials responsible for user fee recovery do not regularly come and collect
 - Online tariff collection system does not work regularly
 - Lack of financial resources
 - any other , please specify
-

Display This Question:

If Does the household need to pay a tariff for the supplementary source? = No

Q110 Does the household need to make other payments to access the supplementary source?

- yes
- no
- don't know

Display This Question:

If Does the household need to make other payments to access the supplementary source? = Yes

Q111 How frequently does the household need to pay for the supplementary source ?

- Daily
 - Weekly
 - Monthly
 - quarterly
 - half-yearly
 - Whenever accessed
 - any other, please specify
-
- Don't know

Display This Question:

If Does the household need to make other payments to access the supplementary source? = Yes

Q112 How much does the household pay for water from the supplementary source? (daily, weekly or monthly, as the case may be in INR)

Q113 Does the household access a different water source other than the principal source in rainy season?

- yes
- no

Skip To: Q118 If Does the household access a different water source other than the principal source in rainy season? = no

Display This Question:

If Does the household access a different water source other than the principal source in rainy season? = yes

Q114 Why should the household access any other source in the rainy season?

- Irregular supply from main sources
- Inadequate quantity from main sources
- Poor quality of water from main source
- Frequent breakdowns
- Any other, please specify
-

Q115 Is the water source accessed by members of the household for meeting the household requirements (drinking, cooking, washing, cleaning, and bathing) in rainy season an unimproved source? (if yes, please indicate unimproved source -unprotected dug well/drinking water directly from rivers, lakes, ponds, and streams in the text box)

- yes _____
- no

Skip To: Q118 If Is the water source accessed by members of the household for meeting the household requirements (... = Yes

Display This Question:

If Is the water source accessed by members of the household for meeting the household requirements (... = No

Q116 What is the main water source accessed in the rainy season?

- Piped water supply at households
 - Public piped water standposts
 - Borehole with motorised pumps
 - Boreholes with handpumps
 - Protected dug well from water is collected manually or pumped to an overhead tank for supply
 - Tanker truck
 - Rainwater harvesting
 - Piped water supply from neighbours
 - Any other, please specify
-

Display This Question:

If Is the water source accessed by members of the household for meeting the household requirements (... = No

Q117 Who manages the supply from the source accessed in the rainy season?

- Municipal Corporation
 - Panchayat or local village government
 - Resident association
 - Household
 - Non-governmental organisations
 - Private individuals
 - Any other, please specify
-

Q118 Does the household access a different water source other than the principal source in summer season?

- yes
- no

Display This Question:

If Does the household access a different water source other than the principal source in summer season? = Yes

Q119 Why should the household access any other source in the summer season?

- Irregular supply from main sources
 - Inadequate quantity from main sources
 - Poor quality of water from main source
 - Any other, please specify
-

Display This Question:

If Does the household access a different water source other than the principal source in summer season? = Yes

Q120 Is the water source accessed by members of the household for meeting the household requirements (drinking, cooking, washing, cleaning, and bathing) in summer season an unimproved source? (if yes, please indicate unimproved source -unprotected dug well/drinking water directly from rivers, lakes, ponds, and streams in the text box)

- yes _____
- no

Skip To: End of Block If Is the water source accessed by members of the household for meeting the household requirements (... = Yes

Display This Question:

If Is the water source accessed by members of the household for meeting the household requirements (... = No

Q121 What is the main water source accessed in the summer season?

- Piped water supply at households
- Public piped water standposts
- Borehole with motorised pumps
- Boreholes with handpumps
- Protected dug well from water is collected manually or pumped to an overhead tank for supply
- Tanker truck

- Rainwater harvesting
 - Piped water supply from neighbours
 - Any other, please specify
-

Display This Question:

If Is the water source accessed by members of the household for meeting the household requirements (... = No

Q122 Who manages the supply from the source accessed in the summer season?

Appendix A-6 Cross tabulation of nominal variables versus types of towns in Chennai Metropolitan Region

Variable	Type of town								
	Old CT			ST			Young CT		
	Observed count	Expected count	% within type of town	Observed count	Expected count	% within type of town	Observed count	Expected count	% within type of town

- Municipal Corporation
 - Panchayat or local village government
 - Resident association
 - Household
 - Non-governmental organisations
 - Private individuals
 - Any other, please specify
-

Q123 Remarks of Surveyor, if any

Q124 Are you sure you want to submit? If not, please go back.

Accessibility of source	Outside household premises	23	17.4	19.3%	13	26	7.3%	16	8.6	27.1%
	Within household premises	96	101.6	80.7%	165	152	92.7%	43	50.4	72.9%
Appendix A-7 Cross tabulation of nominal variables versus types of towns in Mumbai Metropolitan Region										
Availability of sufficient quantity of water for household	no							2	2.2	3.4%
		Type of town								
		Old CT			ST			Young CT		
Variable		Observed count	Expected count	% within type of town	Observed count	Expected count	% within type of town	Observed count	Expected count	% within type of town
Accessibility of source	Outside household premises	34	24.1	26.0%	11	32.6	6.2%	23	11.2	37.7%
		12	14	10.1%	20	21	11.2%	10	6.96	16.9%
	Within household premises	97	106.9	74.0%	166	144.4	93.8%	38	49.8	62.3%
Availability of sufficient quantity of water for household needs	no	107	105	88.4%	158	157	88.8%	149	52.04	83.1%
		14	18.8	10.7%	28	25.4	15.8%	11	8.8	18.0%

	yes	117	112.2	89.3%	149	151.6	84.2%	50	52.2	82.0%
Appendix A-8 Cross tabulation of nominal variables versus types of settlements in Chennai Metropolitan Region										
of required			128.9	97.1%	139	107.9	22.0%	15	13.1	24.6%
quantity whenever needed		Type of settlements								
	yes	Apartments			Long-term settlements			Low-income settlements		
Variable		Observed count	Expected count	% within type of settlement	Observed count	Expected count	% within type of settlement	Observed count	Expected count	% within type of settlement
Accessibility of source	Outside household premises	0	17.1	0	24	17.7	19.8%	28	17.2	23.7%
	Within household premises	117	99.9	100%	97	103.3	80.2%	90	100.8	76.3%

Availability of sufficient quantity of water for household needs	no	1	4.3	0.9%	1	4.4	0.8%	11	4.3	9.3%
	yes	116	112.7	99.1%	120	116.6	99.2%	107	113.7	90.7%

Appendix A-9 Cross tabulation of nominal variables versus types of settlements in Mumbai Metropolitan Region

Availability of required quantity whenever		Type of settlements										
		Apartments			Long-term settlements			Low-income settlements			type of settlement	
Variable	no	Observed count	Expected count	% within type of settlement	Observed count	Expected count	% within type of settlement	Observed count	Expected count	% within type of settlement		%
				115	103.2	98.3%	105	106.7	86.8%	94	104.1	
Accessibility of source	Outside household premises	2	14.4	2.6%	10	27.5	6.7%	56	26.2	39.4%		
	Within household premises	76	63.6	97.4%	139	121.5	93.3%	86	115.8	60.6%		
Availability of sufficient quantity of water for household needs	no	8	11.2	10.3%	13	21.4	8.7%	32	20.4	22.5%		

	yes	70	66.8	89.7%	136	127.6	91.3%	110	121.6	77.5%
Availability of required quantity whenever needed	no	8	16.7	10.3%	25	31.9	16.8%	46	30.4	32.4%
	yes	78	61.3	89.7%	124	117.1	83.2%	96	111.6	67.6%