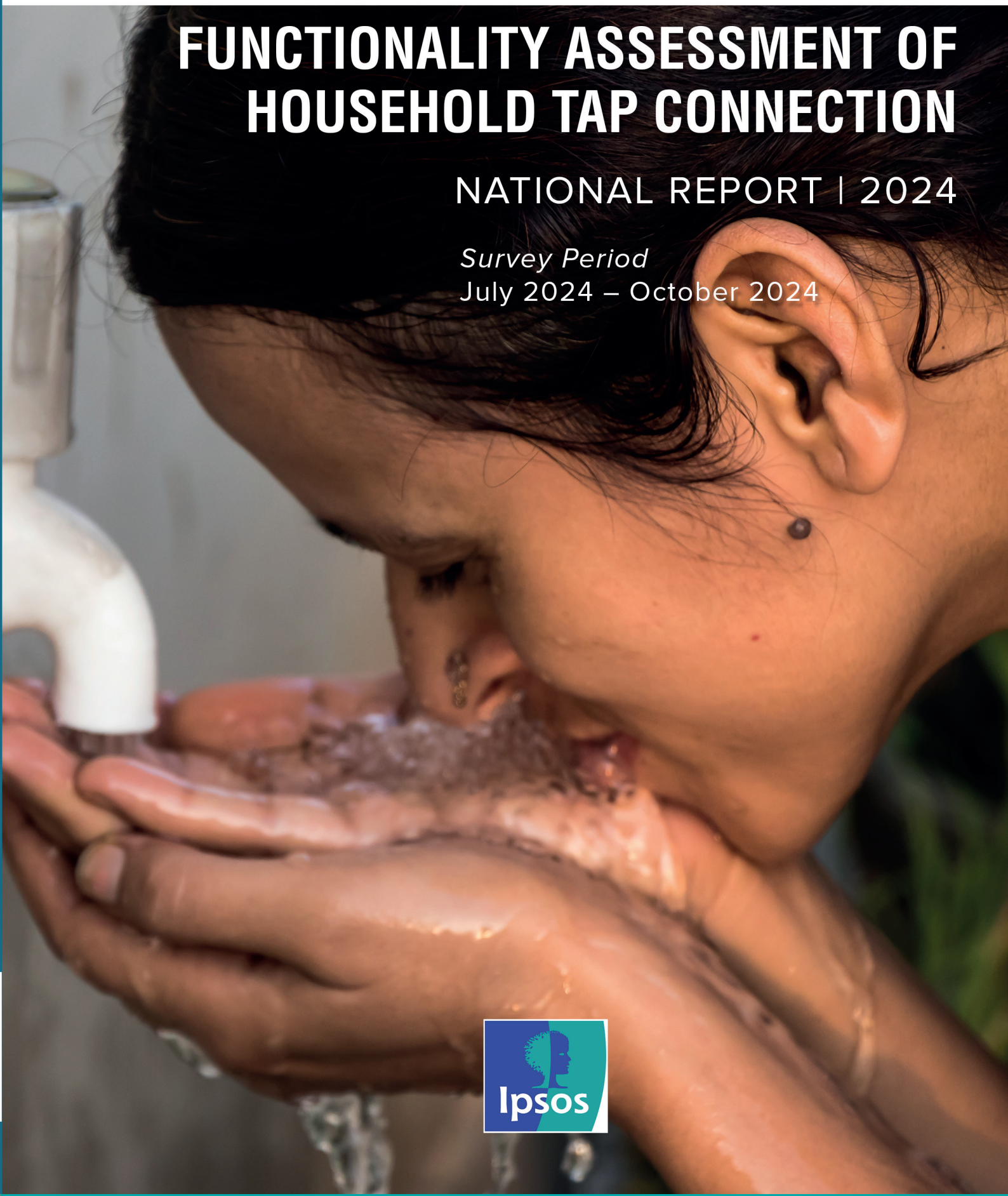
पेयजल एवं स्वच्छता विभाग
जल शक्ति मंत्रालय
DEPARTMENT OF DRINKING WATER AND SANITATION
MINISTRY OF JAL SHAKTI
सत्यमेव जयते

Har Ghar Jal
Jal Jeevan Mission

FUNCTIONALITY ASSESSMENT OF HOUSEHOLD TAP CONNECTION

NATIONAL REPORT | 2024

Survey Period
July 2024 – October 2024



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FOREWORD

The Jal Jeevan Mission (JJM) embodies a revolutionary step towards sustainable development, dedicated to revolutionizing the way water is delivered to rural households across India. Launched by the Hon'ble Prime Minister on August 15th, 2019, JJM aspires to provide Functional Household Tap Connections (FHTC) to all rural households by 2024, ensuring that every household receives water supply directly from the tap. Reflecting this commitment, the Department of Drinking Water and Sanitation (DDWS) under the Ministry of Jal Shakti has embarked on the journey of tracking the functionality and efficacy of these connections since 2020.

The 2024 functionality assessment marks the third iteration of this vital evaluation. Conducted independently, this nationwide survey covered 19,812 Har Ghar Jal (HGJ) Villages and 2,37,608 households spread across 761 rural districts in 34 states and union territories, ensuring a comprehensive view of the initiative's current status. Employing a cross-sectional research design, this assessment included a well-selected sample drawn through population proportionate to size (PPS) methodology, focusing solely on villages with piped water schemes.

Unlike previous assessments, this report stands unique owing to its specific criteria:

1. This report covers only Har Ghar Jal Villages (i.e., villages reported 100% availability of tap connections on the IMIS of the Jal Jeevan Mission).
2. The survey conducted in 2022 was mostly in dry season spanning between February to April 2022, whereas the survey conducted in 2024 coincided with the monsoon period spanning between July to October 2024, leading to disruptions due to floods and waterlogging in several states.
3. In the 2022 round of the assessment, the quality of water was tested in State-owned NABL- accredited labs, whereas in 2024 survey the water samples were tested in a third-party NABL - accredited private labs to improve reliability.

It should be noted that this report is not directly comparable with previous rounds of functionality assessments due to the varying methodological, temporal, and environmental circumstances that might have been encountered on the ground. As such, the report must be interpreted in this context.

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Abbreviations

CAPI	Computer-Assisted Personal Interviewing
DDWS	Department of Drinking Water and Sanitation
D&NH and D&D	Dadar & Nagar Haveli and Daman & Diu
FHTC	Functional Household Tap Connection
FTK	Field Test Kit
GP	Gram Panchayat
HH	Household
HGJ	Har Ghar Jal
JJM	Jal Jeevan Mission
LPCD	Liters per Capita per Day
Mg	Milligram
MoE	Margin of Error
MVS	Multi-village Scheme
NABL	National Accreditation Board for Laboratories
O&M	Operation and Maintenance
PPS	Population Proportionate to Size
PWS	Piped Water Supply
SVS	Single Village Scheme
ToT	Training of Trainers
TN	Tamil Nadu
UP	Uttar Pradesh
UT	Union Territories
VWSC	Village Water and Sanitation Committee

Glossary

Water Sources – Sources which are available for drinking and domestic use - Groundwater (open well, borewell, tubewell, handpump, etc.)/ surface water (spring, check dam, river, lake, pond, reservoir, etc.)/rainwater.

Har Ghar Jal Village – A village with 100% households having provision of functional tap connections & reported on IMIS.

Quality of water at public institutions – The quality of water at public institutions has been considered as water of prescribed quality if the E.Coli and total coliform are absent and PH and Chlorine level are within permissible limit.

Working Tap Connection – If household has received water through tap connection in last one week.

Regularity of Water Supply at Household Level – If a household receives water as per the schedule.

Regularity of Water Supply at Village Level – Regularity of water at village level is considered when a village receives water for 12 months or daily basis.

Adequate water supply – 55 liters per capita per day (LPCD) is the service level for tap water connections in rural households in India as per the Jal Jeevan Mission (JJM) operational guidelines.

Functional Scheme – The PWS Scheme which has been found functional on the day of survey is considered as functional scheme.

Public Institutions – The public institutions in the survey include Anganwadi Centre (AWC), Health Facilities, Schools.

Functional Household Tap Connection (FHTC) – A tap connection to a rural household has been considered as functional household tap connections if the household is receiving water in adequate quantity of prescribed quality with regular supply.

Households with their own arrangement within premises – If the household has reported that the main source of drinking water is piped into house/dwelling or piped into yard, compound, plot or the household is having tubewell/borewell within premise, the household has been considered having their own arrangement within premises.

Non PWS Sources – A water sources has been considered as non PWS Sources if that water source is other than piped water source and being used by a group of people in the village for example, handpump, wells etc.

Water Quality Parameters – Acceptable and Permissible Limits.

Sl. No.	Parameter	Unit	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1	Turbidity	NTU	1	5
2	Total Hardness	mg/L	200	600
3	Total Alkalinity	mg/L	200	600
4	Chloride	mg/L	250	1000
5	Ammonia	mg/L	0.5	No relaxation
6	Sulphate	mg/L	200	400
7	Total Dissolved Solids	mg/L	500	2000
8	Total coliform bacteria	Shall not be detectable in 100 ml sample		
9	E.coli bacteria	Shall not be detectable in 100 ml sample		
10	Residual chlorine (On site)	Mg/L	0.2	1
11	pH (On site)	..	6.5	8.5
12	Iron	mg/L	1	No relaxation
13	Nitrate	mg/L	45	No relaxation
14	Fluoride	mg/L	1	1.5
15	Arsenic (in hotspots)	mg/L	0.01	No relaxation

Executive Summary

Jal Jeevan Mission (JJM) was launched by the Hon'ble Prime Minister of India on August 15th, 2019, with the vision of ensuring safe and adequate drinking water regularly through individual household tap connections to every rural households in India by 2024. Department of Drinking Water and Sanitation (DDWS), under the Ministry of Jal Shakti has been conducting the functionality assessment of tap connection since 2020 and has been taking mid-course measures. The 2024 assessment marks the third round of the functionality assessment.

Assessment Design and Components

The 2024 Functionality assessment was conducted through an independent nationwide survey across 19,812 Har Ghar Jal (HGJ) Villages, covering 2,37,608 households in 761 rural districts across 34 States and Union Territories (excluding Delhi and Chandigarh). The assessment followed a cross-section research design wherein, all villages having a piped water scheme (PWS) with 20 or more household tap connections were identified from the Integrated Monitoring Information System (IMIS) data as part of the sample frame. Using the sampling method -population proportionate to size (PPS) a sample of 19,812 HGJ villages was selected.

The assessment included two components – a) village-level interviews with Sarpanch or any GP member or members of the village water, and sanitation committees (VWSCs) and b) household (HH) interviews with an adult. Measurement of water quantity and water quality was also done in at least 2 household per source in the village. On-site testing of water quality was done for - pH. Water samples from households were collected and sent to the third party NABL - accredited labs (off-site) for testing. The samples collected from households were tested for microbiological parameters. Water samples were also collected from sources and sent to the third party NABL - accredited lab for testing. The samples collected at the source were tested for chemical parameters. Appropriate temperature control was ensured while transporting the water samples. Ipsos Research Private Limited had on-boarded a third party NABL - accredited laboratory - **ITC Lab** for conducting the water quality tests.

During the survey it was found that the tap water connection was not available in 411 villages and those villages were removed from the analysis. Hence, the base for analysis is 19,401 Villages and 2,32,691 Households.

The findings reported here are the weighted percentage estimates for household, village level, and public institution level data.


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CHAPTER

National Factsheet

CHAPTER 1

National Factsheet

User Satisfaction	INDIA
User Satisfaction on Quantity of Water Supplied	83.1%
User Satisfaction on Quality of Water Supplied	92.4%
User Satisfaction on Pressure of water supplied	83.5%

Functionality Assessment of Household tap Connections: Har Ghar Jal Survey	INDIA
Availability of Tap Water Connection at Households. (Excluding Private tap connection)	98.1%
Availability of Working Tap Water Connection at Households	86.5%
Regularity of Water Supplied at Households (as per schedule)	83.6%
Quantity of Water Supplied at Households (≥55 LPCD)	80.2%
Quality of Water Supplied at Households (percentage of sample passed)	76.0%
Functionality status of Households Tap Connection	76.0%

Village-Level Findings	INDIA
Availability of piped water schemes in villages	98.8%
Availability of functional schemes in the villages on the day of survey	84.8%
Institutional Management: Availability of VWSC/Paani Samiti at village level	55.2%
Availability of Skilled manpower in the village for O&M	58.1%
Availability of FTKs (Field Test Kit) in the Village	27.2%
Household satisfaction with Grievance Redressal Mechanism	82.9%
Households having seen signage and IEC messages for water conservation	62.4%
Water Disinfection Mechanism: Availability of chlorination mechanism in the village	70.3%

Assessment of Tap Connection at Public Institutions	INDIA
Availability of tap connection at public institutions	68.0%
Quality of Water Supplied at Public Institutions (percentage of sample passed)	72.8%

Challenges Identified

- **Quality Concerns:** Although user satisfaction with water quality is high, laboratory tests indicate microbiological contamination in some areas.
- **Service Disruptions:** Common causes of non-functioning tap connections included pump failures (29.6%), damaged pipelines (31.9%), and electricity issues (8.5%).

Values are indicated and should be taken as per our survey result

2
CHAPTER

Overview of Rural Water Supply in India

CHAPTER 2

Overview of Rural Water Supply in India

Access to clean and adequate drinking water is essential for public health and socio-economic development. In rural India, ensuring a reliable and safe water supply has been a persistent challenge due to geographical diversity, population growth, and varying climatic conditions.. In pre-Independent India, water management systems and structures were sufficient to meet the needs of the small population. Local communities utilized traditional knowledge and wisdom to design their own systems, adapting to various soil and climate conditions. However, with population growth, changes in rainfall patterns, and reduced storage capacity, water scarcity challenges have become increasingly severe.

The rural population of India comprises more around 19,34,19,393 households spread in 5,81,458 villages[1]. Providing drinking water to such a large population is an enormous challenge. Further, the country is also characterised by non-uniformity in level of awareness, socio-economic development, education, poverty, practices and rituals which add to the complexity of providing water.

The government has undertaken various programmes since independence to ensure universal access to safe drinking water to the rural masses and the State Governments have also initiated rural water supply programs to ensure safe drinking water for rural populations. JJM is a paradigm shift, focusing not just on infrastructure creation but on **sustained functionality, water quality, and community ownership** to ensure long-term water security in rural areas.

2.1. Genesis and Journey of Rural Water Supply in India

The provision of clean drinking water has been a national priority since India's independence. Article 47 of the Indian Constitution mandates the state to ensure public health and provide safe drinking water. Rural water supply (RWS) programs in have evolved since 1949 as mentioned below.[2]

Post Independence, over the decades, various initiatives and policy measures have been implemented to enhance rural water supply, as outlined below:

1949 In the early years following India's independence, the Environment Hygiene Committee in 1949 advised that a safe water supply should aim to reach 90% of the country's population within a span of 40 years.

1 JJM Dashboard

2 Hutchings,P.,Franceys,R.,Mekala,S.,Smits,S.,&James,A.J.(2016),. Revisiting the history, concept and typologies of community engagement for rural drinking water supply in India, International Journal of Water Resources Development, 33(1), 152-169

1950	The Constitution of India designated water resources as a matter under State jurisdiction, ensuring citizens' entitlement to safe drinking water.
1969	The National Rural Drinking Water Supply Program was launched with UNICEF assistance, leading to an expenditure of Rs.254.90 crore, the drilling of 1.2 million bore wells, and the implementation of 17,000 piped water supply schemes.
1972–73	The Accelerated Rural Water Supply Programme (ARWSP) was introduced to expedite the drinking water coverage.
1981	India, as a participant in the International Drinking Water Supply and Sanitation Decade, formed a national Apex Committee to develop policies.
1986	The National Drinking Water Mission (NDWM) was established, and in 1987, the Ministry of Water Resources created the inaugural National Water Policy.
1991	The National Drinking Water Mission (NDWM) was rebranded as the Rajiv Gandhi National Drinking Water Mission (RGNDWM).
1994	The 73rd Constitutional Amendment transferred the responsibility of rural water supply management to Panchayati Raj Institutions (PRIs), promoting local governance and community participation.
1999	To ensure the sustainability of systems, measures were undertaken to embed community involvement in executing rural drinking water supply schemes via sector reform. This reform marked a shift from a 'Government- oriented, supply-driven approach' to a 'People-oriented, demand-responsive approach.' The government's role was redefined from being a provider to a facilitator. Under this reform, the government funded 90% of the infrastructure, while the community was expected to contribute the remaining 10% towards infrastructure costs and cover 100% of the operation and maintenance expenses. Sector reform projects were piloted in 67 districts nationwide.
2002	Sector reform was scaled up nationwide as Swajaldhara, and the National Water Policy was revised, prioritizing under-served villages. India committed to the Millennium Development Goals to level up the proportion of people with sustainable access to safe drinking water and basic sanitation.
2004	This year marked as year of consolidation, where all drinking water programs were merged under RGNDWM.
2005	The Bharat Nirman Programme was initiated to enhance infrastructure in rural areas. One of the target of this program was to supply drinking water to 55,069 uncovered habitations, including those impacted by poor water quality and habitations that had regressed, based on a 2003 survey, within a five-year period
2007	The Swajaldhara Scheme, funding patterns underwent changes, altering the previous 90:10 central-community share to a 50:50 centre-state share, with community contributions becoming optional.
2009	The Accelerated Rural Water Supply Programme was transformed into the National Rural Drinking Water Programme (NRDWP), focusing significantly on sustainable water availability in terms of safety, sufficiency, convenience, affordability, and fairness. It also embraced a decentralized strategy that includes participation from Panchayati Raj Institutions (PRIs) and community organizations.

2019 The Government of India approved the restructuring and integration of the ongoing National Rural Drinking Water Programme (NRDWP) into a new initiative called the Jal Jeevan Mission (JJM) in 2019. The aim of JJM is to deliver functional household tap connections (FHTC) to every rural household by 2024, ensuring a service level of 55 litres per capita per day (lpcd).

2.2. Origin and Overview of Jal Jeevan Mission

The Jal Jeevan Mission's goal is to aid and empower States and Union Territories (UTs) by helping them design a collaborative rural water supply approach to ensure long-term access to safe drinking water for every rural household and public institution, such as Gram Panchayat buildings, schools, Anganwadi centres, and health and wellness centres. The mission supports the construction of water supply infrastructure to provide every rural household with a Functional Tap Connection (FHTC) by 2024, ensuring the availability of adequate, quality water regularly. It encourages States and UTs to prioritize their drinking water security and guides Gram Panchayats and rural communities to independently plan, implement, manage, own, and maintain their in-village water supply systems. Furthermore, the mission promotes the development of strong institutions focused on service delivery and financial sustainability through a utility-driven approach. It emphasizes stakeholder capacity building and community awareness of water's importance for life quality improvement. Additionally, the mission facilitates financial support mobilization for States and UTs to execute the initiative.[3]

The mission aligns with the broader goal of improving public health, reducing the drudgery of fetching water (especially for women and children), and ensuring long-term water security in rural India.This mission focuses on ensuring access to clean and safe tap water supply, meeting a minimum service level of 55 litres per capita per day (LPCD) in accordance with the quality standards set by the Bureau of Indian Standards (BIS 10500). The mission is being implemented by the Department of Drinking Water and Sanitation (DDWS), Ministry of Jal Shakti. The Jal Jeevan Mission is a significant stride towards enhancing the quality of life in rural areas, as it not only ensures access to a necessity like clean water but also employs data-driven mechanisms to facilitate efficient planning, monitoring, and decision-making for continued progress.

3 https://ejalshakti.gov.in/jjmreport/JJMIndia.aspx

Figure 1: **The Broad Objective of Jal Jeevan Mission are:**

1. To provide FHTC to every rural household
2. To prioritize provision of FHTCs in quality affected areas, villages in drought prone and desert areas, Sansad Adarsh Gram Yojana (SAGY) villages, etc
3. To provide functional tap connection to Schools, Anganwadi centres, GP buildings, Health centres, wellness centres and community buildings
4. To promote and ensure voluntary ownership among local community by way of contribution in cash, kind and/ or labour and voluntary labour (shramdaan)
5. To assist in ensuring sustainability of water supply system, i.e. water source, water supply infrastructure, and funds for regular O&M
6. To empower and develop human resource in the sector such that the demands of construction, plumbing, electrical, water quality management, water treatment, catchment protection, O&M, etc. are taken care of in short and long term
7. To bring awareness on various aspects and significance of safe drinking water and involvement of stakeholders in manner that make water everyone's business

2.3. Background and Scope of the Study

Department of Drinking Water and Sanitation (DDWS) has been conducting a functionality assessment survey since 2020. In the year 2024, the department onboarded Ipsos Research Private Limited to conduct the third round of FHTC survey, for which the data collection on the field was carried out between July 2024 to October 2024. This survey included functionality assessment of households as well as public institutions such as schools, Anganwadi centres, public health centres and schools. The study contributes to the broader goal of ensuring a reliable and accessible water supply for communities while promoting sustainable and effective program implementation. The scope of the survey was as follows:

Figure 2: Scope of the Study

Large scale survey of households for functionality assessment of tap connection

On-ground assessment of indicators of Jal Jeevan Mission via sample survey in Households

Testing of water samples in third party NABL - accredited labs for water quality parameters

Measuring quantity of water supplied through bucket method, in the surveyed households

3
CHAPTER

Survey Methodology

CHAPTER 3

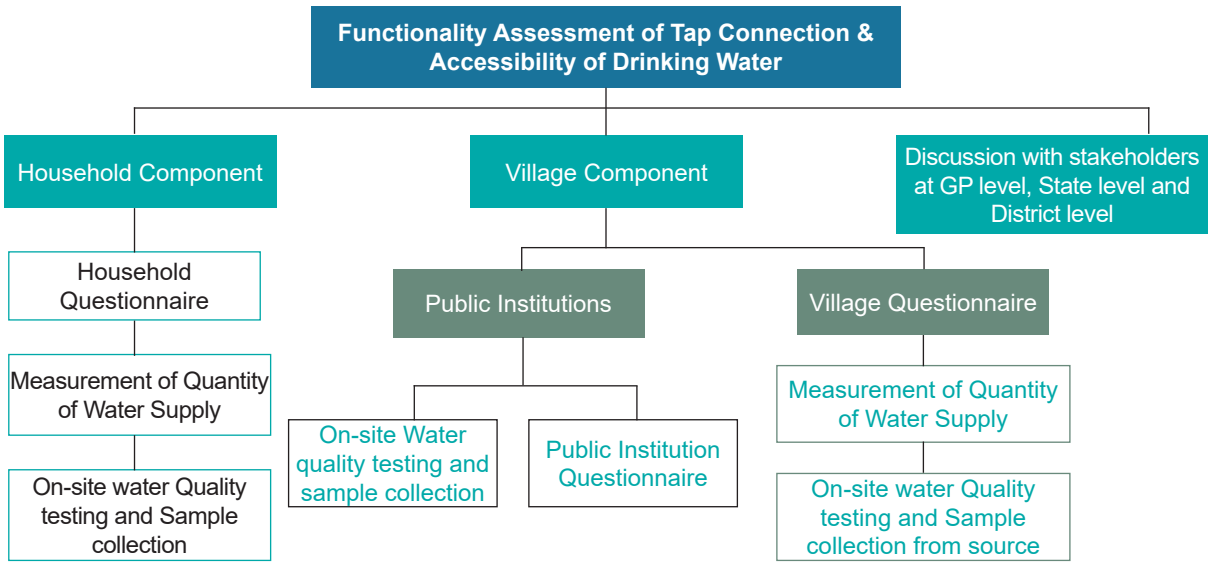
Survey Methodology

The assessment followed a structured methodology to ensure a comprehensive, data-driven, and unbiased evaluation of the availability, adequacy, regularity, and quality of piped water supply in rural households. A cross-section research design was used for this study. Quantitative data was collected from sampled villages in 761 districts across 34 States and UTs (excluding Delhi and Chandigarh as they do not have any villages). In each of the sampled village, 12 households were sampled at village level to achieve the desired sample at the district level. Moreover, all public institutions [i.e., Anganwadi Center (AWC), School, Health Centre] in the village were covered.

Water sample was collected from all PWS Source/Scheme in each sampled village and was tested for chemical parameters in NABL - accredited labs. Water sample was also collected from two households per scheme/source in each village. Water sample was collected from all public institutions (i.e., AWC, School, Health Centre) in each sampled village. These water samples were tested in the NABL-accredited lab for microbiological parameters.

A Technical Committee(TC)[4] was formed by the Department of Drinking Water and Sanitation (DDWS) to provide guidance to the overall research team. The technical committee (TC) provided advice and approvals on the overall sample and research design, questionnaires for the survey, and the reports. (Approval of TC is placed at Annexture – 3)

Figure 3: Components of the Survey



4 Members of technical advisory committee comprises of members from DDWS, MoSPI and UNICEF

3.1. Sampling Design

The household sample size was estimated at district level, at 90% confidence level (CI) and 5% margin of error (MoE).

Methodology followed for sampling of Har Ghar Jal (HGJ) Villages for Functionality Assessment

As per the scope of work, which was approved by the technical committee (TC), 18000±10% villages were supposed to be survey from the Har Ghar Jal strata. It was required to distribute these villages to all the States as per the proportions of their respective HGJ Household available on the IMIS portal of Jal Jeevan Mission. The sampled villages to be covered in the State was further distributed to all the districts in the State as per the proportions of their respective HGJ Household available on the IMIS portal of JJM for the State. For generating district level estimates with reliable precision at least 23 villages were surveyed in each district. To ensure that we had a statistically representative sample at district level, at least 273 households (90% confidence interval and 5% margin of error) was sampled. This meant we needed to cover approximately 23 villages (considering 12 households to be covered in each village) in each district. Hence, if in any district the number of villages allocated was less than 23 (basis the proportion of the household) then the number of villages to be sampled was increase to 23. In case the number of villages in a district was less than 23 then all available villages were surveyed. Based on allocation if done by population in some districts, if done by population the number of villages allocated were more than 23 (to max of 201 village in the district), and this was adjusted by capping the number of villages to be taken from any district to 40. The adjustment was done to ensure that total sample of HGJ villages was approximately equal to 18000 (±10%). After the total sample of HGJ villages to be survey was decided at district level, the sampled villages at district level were further distributed into following three categories (based on HGJ population) of villages in each district proportionately, the number of villages of these categories of villages available in a district.

a. C1 category: Includes villages with population of fewer than 1000 individuals

b. C2 category: Includes villages with a population ranging from 1000 to 5000 individuals

c. C3 category: Includes villages with a population exceeding 5000 individuals

Post allocation of the sample villages in the district, we arrived at the final number of HGJ villages to be covered in each State. While selecting the villages in the district, simple random sampling without replacement (SRSWOR) technique was used.

The final sampling of HGJ Villages was done from a sampling frame of 2,17,312 HGJ villages listed in the IMIS of JJM (DDWS) as on 1st May 2024. Villages with less than 20 households were excluded from the sampling frame. The sampling was done using a macro-based algorithm in SPSS covering all the criteria of selections and exclusions mentioned above. Using this method 19,812 HGJ Villages were sampled for the survey and 2,37,608 households were sampled for the interviews.

There was technical committee that guided on the sampling. The minutes of the approval on the sampling process is placed at the annexure 1.

The villages were sampled using SRSWOR and is statistically robust at 90% confidence interval and 5% margin of error for district level representation. Using the sampling size formula of unlimited population (which is used when the population is more than 50,000) we get 273 as the desired number of sample per district. It is to be noted that in few villages number of household were less than 12 and in such cases all household in that village were sampled.

$$CI = \hat{p} \pm z \times \sqrt{\frac{p(1-p)}{n}}$$

Where

z is z score
p̂ is the population proportion
n and **n**' are sample size
N is the population size

The table represent the sample distribution of Har Ghar Jal villages:

Table 1: Sample Distribution of Har Ghar Jal Villages

State	Number of Districts	Number of Village
	761	19812
Andaman & Nicobar Islands	3	69
Andhra Pradesh	26	631
Arunachal Pradesh	25	575
Assam	35	796
Bihar	38	1476
Chhattisgarh	33	677
D&NH and D&D	3	49
Goa	2	56
Gujarat	33	1239
Haryana	22	780
Himachal Pradesh	12	348
Jammu & Kashmir	20	411
Jharkhand	24	557
Karnataka	31	747
Kerala	14	106
Ladakh	2	47
Lakshadweep	1	4
Madhya Pradesh	52	1271
Maharashtra	34	1042
Manipur	16	187
Meghalaya	12	279
Mizoram	11	256
Nagaland	16	367
Odisha	30	771

State	Number of Districts	Number of Village
Puducherry	2	47
Punjab	23	752
Rajasthan	48	1019
Sikkim	6	90
Tamil Nadu	37	1083
Telangana	32	987
Tripura	8	53
Uttar Pradesh	75	2208
Uttarakhand	13	308
West Bengal	22	524

In each village 12 households were selected using simple random sampling method and any adult member of the household was interviewed. Apart from the household interview water samples were also collected from the household for checking if they were free from contamination. The samples were tested in the third party NABL - accredited laboratories.

The Ministry of Jal Shakti onboarded a third-party survey agency through open tendering, Ipsos Research Private Limited to conduct the nationwide survey, where the data was collected in the field from **July to October 2024.**

3.1.1. Selection of Household and Public Institute

12 households were randomly selected in each sampled village ensuring sample spread over all hamlet/habitations and having proper representation of the village. The field survey team adopted the following methodology for sampling the household in the village.

Household Sampling Methodology

Household level interviews in HGJ villages

Step 1: With the help of the Sarpanch/ village representatives a rough sketch of the layout map was prepared (Details mentioned in *Step 4 of village level activities)*.

Step 2: The total number of households in each hamlets / habitation was captured.

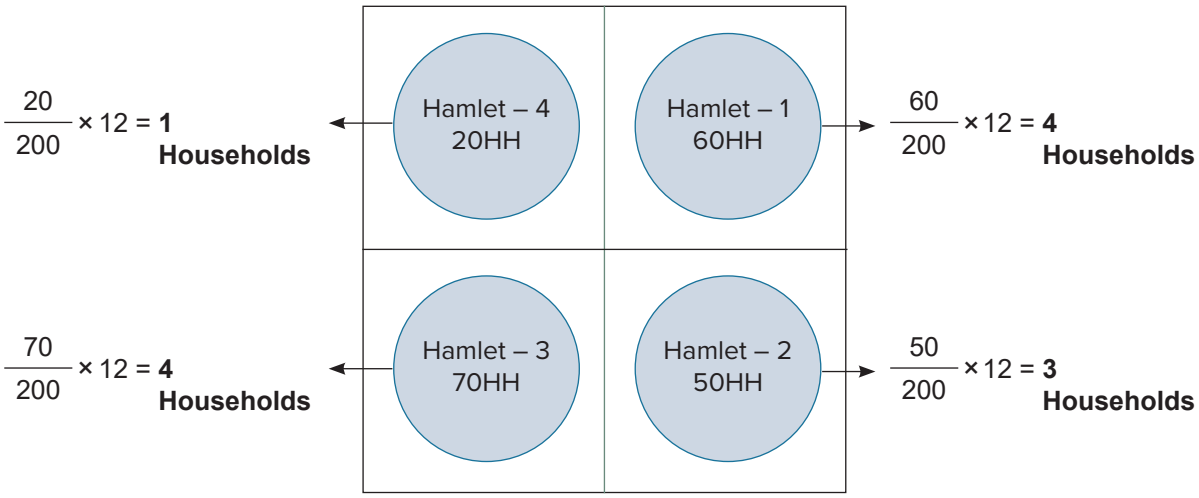
Step 3: Basis the total number of households in each hamlets / habitation, the number of households to be covered in hamlet / habitation was decided using the following method.

i. The total number of households in the village (i.e., sum of all households in all hamlets/ habitations) was calculated.

ii. Number of sampled households to be covered in each hamlets / habitation was determined using the following formula.

$$= \frac{\text{Number of households in hamlets/ habitations}}{\text{Total number of households in the village}} \times \textbf{12 Sample households to be covered in the village}$$

Illustration for the same is shown in the diagram below:



Step 4: Selection of households: Starting from the north east corner of the hamlet/habitation a household was selected randomly and then using the right hand rule method the interviewer selected the next household, using the sample interval calculated for that hamlet/habitation. Geographical spread was maintained while selecting households in the hamlet/ habitation. This ensured sample spread and proper representation.

Please Note: Ipsos team ensured, as far as possible that all hamlets/ habitations was covered in the survey.

Village having households with private/personal tap connection (HGJ Village as per IMIS)

Scenario 1: In case some households had their own (private/personal) arrangements for drinking water such as Boring / tube bell etc and if these households were very few in numbers (less than 10% of total households in the village). During random walk if these households get selected then the assessor skipped this households and selected the next which had tap connection.

Scenario 2: In case more than 10% households (of total households in the village) had their own (private/personal) arrangements for drinking water such as Boring / tube bell etc. Then we ensured that the households were drawn in the proportion of coverage in the village. During random walk if these households got selected then the assessor covered the household as per the proportion decided.

Scenario 3: In case entire village had no household tap connection then we tried to take a signoff in written from the Sarpanch/ Village Head/ Village Representative etc. Post which the survey was conducted, and village was reported as not having tap connection.

For village reported having greater than 240 Households

A. If the village sampled was greater than 240 households then the village was divided into segments (or subgroups) based on the population of the villages as mentioned in below table:

Table 2: Guide for Segmentation (Hamlet)

IMIS Households of the village	No. of subgroup (Hamlet)
Less than 240	1
More than and equal to 240 and less than 480	2
More than or equal to 480 and less than 720	3
More than or equal to 720 and less than 960	4
More than or equal to 960 and less than 1200	5
…….and so on	……

B. Upon the successful preparation of these segments in a given village, for Villages with partial coverage and Zero FHTC Villages a random segment was selected; for Villages with partial coverage the segment that had adequate representation of both households with and without tap connections was selected.

C. Subsequently, 12 households within this selected segment was chosen following the steps mentioned above (i.e., St*ep 2 to Step 4)*

Visiting Sampled Households

The assessor visited each of the 12 selected households considering all habitation is covered. This involved physically locating and approaching the households for the interview and water quality assessment.

Household Survey

The assessor carried out a detailed household survey by interviewing an adult member of the household using a pre-designed household questionnaire.

Screening Households and Water Sampling

While assessing households with Functional Household Tap Connections (FHTCs), out of 12 sampled households, the assessor covered one household per hamlet/ habitation to measure the flow rate and two households per PWS scheme for collecting water samples.

On-site pH Measurement

The assessor tested the pH of the collected water samples on-site using FTK. The data was directly entered into the CAPI tool for further analysis.

Selection of Public Institutions

All available schools, Anganwadi centres, public health centres and wellness centres were covered in the selected village and water from the piped water connection was collected from these institutions if available.

3.2. Approach for Measuring Quantity of Water Supplied

In order to estimate the quantity of water supplied to the household the flow rate was measured using the bucket method. Water Quantity Measurement (Flow Rate) was carried out one household per hamlet/ habitation in each village.

Steps to measure quantity of water supplied to households during time of Supply

Figure 4: Method of Measuring Quantity of Water Supplied

Visiting households and water sources during the supply timings.	Water supply per minute was measured using a graduated bucket for volume and a stopwatch for time.	Flow rate was recorded in liters per minute. The tap was open until the bucket is full, and the time was noted	Daily Water quantity was calculated by multiplying flow rate by supply duration. If tap water isn't available daily, LPCD is calculated weekly

In the case of households where the connection was directly linked to the storage tap and there was no external tap outside before the water flows into the storage tank. The following method was used:

- The assessor recorded the tank's dimensions (length, breadth, height for cuboidal tanks; diameter or circumference and height for cylindrical tanks).
- The valve was closed, and the water level in the tank was marked using a 5-foot rod to determine the starting volume.
- The valve was opened for 10 minutes, allowing water to flow into the tank.
- After 10 minutes, the valve was closed, and the new water level was measured. The difference in height helps calculate the volume of water added and the flow rate.

For multi-village/regional schemes, water flow was measured at the delivery point to determine the quantity supplied to the village.

3.3. Methods for Tap Water Quality Assessment

Water quality was tested for all public institutions available in the villages, including schools, AWCs, gram panchayat buildings, public health facilities, and wellness centres. Two household per scheme was selected for quality assessment in each village. The following quality tests were carried out for household and Public Institutions in the sampled village- a) Residual Chlorine and PH were tested using field test kits (i.e., FTKs) on ground, and b) Total Coliform & E. Coli (Microbiological test), for which the water sample was collected and transported to nearby NABL - accredited/ recognized lab. The water quality testing for chemical parameters was conducted for the water collected from the source of water supply.

Figure 5: Field Test Kits

Water Sample Collection

Household-level: Water samples was collected from two households per scheme in each village and tested for Microbiological Parameters in NABL - accredited labs.

Source/Scheme: Samples were collected from all PWS sources/schemes and tested for chemical parameters in NABL - accredited labs.

Public Institute: Water sample was collected from two public institutions (i.e., AWC, School, Health Centre) in each village.

Figure 6: Water Sample Collection

3.4. Survey Implementation (Activities Performed During, Pre and After Survey)

The survey was implemented in three phases and the activities done in each phase is described below:

Figure 7: Stages of Project Implementation

- ✓ Finalization of the Research Questionnaire and Manuals
- ✓ Translation of questionnaires into Regional Languages
- ✓ Programming of CAPI Application, Server and Analytical Survey Dashboard Questionnaire and Manuals
- ✓ Pre-test of the CAPI Application and the Dashboard
- ✓ Recruitment and Staffing of field Assessors
- ✓ Orientation and training of field team
- ✓ Deployment of teams and field movement plan
- ✓ Village Data Collection and On site water testing
- ✓ Water Sample collection from HH, source and Public Institution
- ✓ Transportation of water samples to laboratory
- ✓ Data Quality Assurance by Quality control team
- ✓ Data Download
- ✓ Logic Error Check
- ✓ Survey Data and Water quality analysis
- ✓ State, District and National Report Preparation

A total of 200 teams (comprising 200 supervisors, 1000 assessors, and water collection assistants) were recruited, trained, and deployed to complete the survey across the 34 States and UTs. One survey team covered approximately 2 – 3 districts. The state-wise team deployment and fieldwork dates were as presented:

Table 3: State-wise Deployment of Manpower and Field Work Days

State	Team Size	No. of FW Days
Total	1,200	–
Andaman & Nicobar Islands	6	21
Andhra Pradesh	30	44
Arunachal Pradesh	36	31
Assam	48	38
Bihar	54	42
Chhattisgarh	42	36
D&NH and D&D	18	5
Goa	18	5
Gujarat	48	35
Haryana	36	28
Himachal Pradesh	24	23
Jammu & Kashmir	36	25
Jharkhand	36	34
Karnataka	48	35
Kerala	30	12
Ladakh	12	8
Lakshadweep	6	2
Madhya Pradesh	78	34
Maharashtra	48	40
Manipur	30	18
Meghalaya	24	25
Mizoram	24	21
Nagaland	24	29
Odisha	48	34
Puducherry	12	7
Punjab	36	30
Rajasthan	48	50
Sikkim	12	20
Tamil Nadu	48	39
Telangana	48	31
Tripura	24	6
Uttar Pradesh	108	38
Uttarakhand	24	28
West Bengal	36	35

3.5. Survey Quality Assurance Mechanism

A portal was developed and used for monitoring and tracking the progress of the fieldwork at Village, District and State level. Data quality check was also carried out and feedback was given to the field teams through the portal. Mapping of GPS coordinates was also done to check if the interviewer on the field was doing the assessment in the correct sampled village.

Different stakeholders had instant access to a range of metrices and updates related to the progress of the field work. The goal of implementing this real-time tracking and quality assurance system was to ensure that the data collected is of the highest quality possible.

The dashboard hosted the unprocessed data in real-time, providing a comprehensive overview of the ongoing data collection efforts.

Figure 8: AMC Login Showing the Field Assessor List

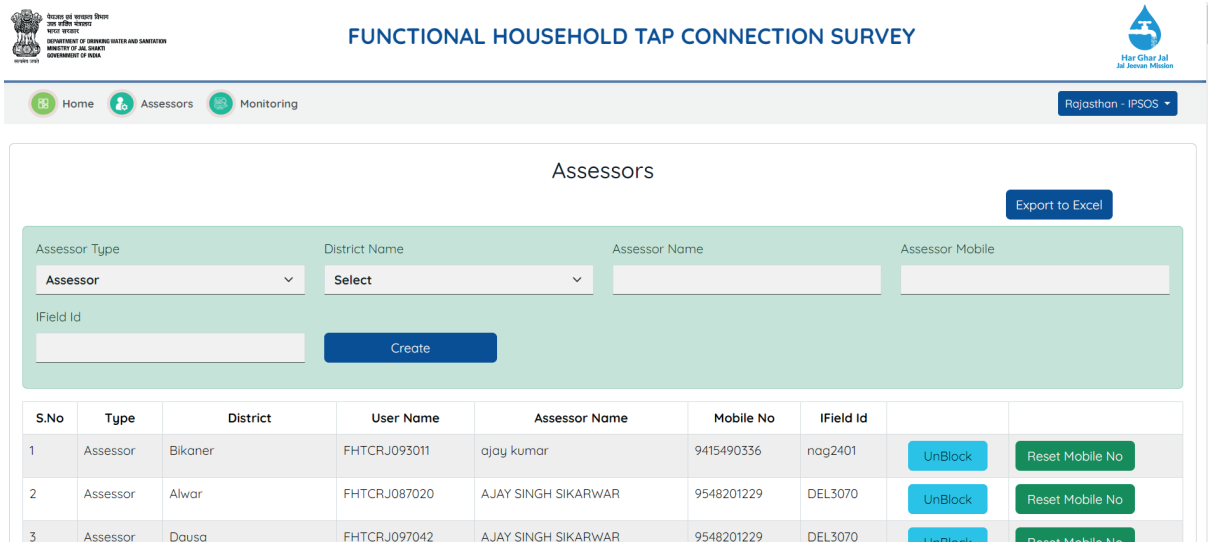


Figure 9: AMC Login Showing the Status of Field Assessment

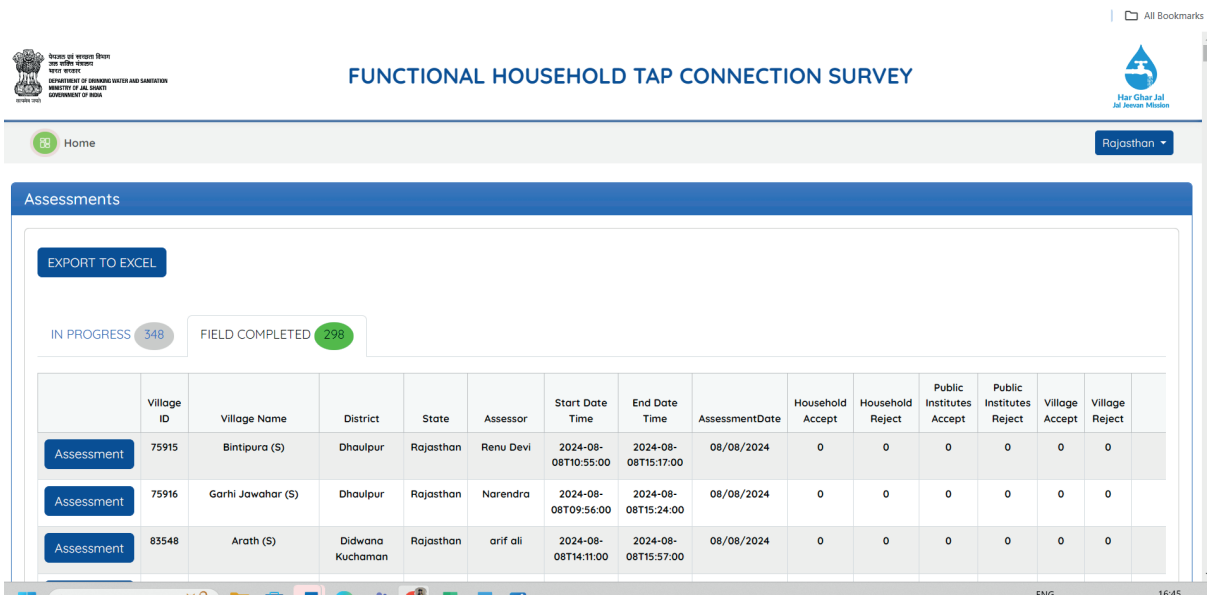
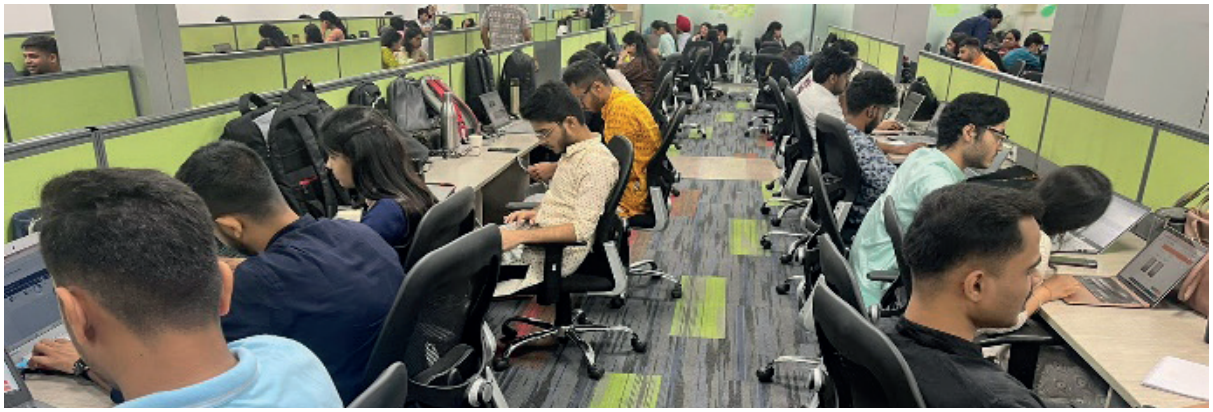


Figure 10: Assessor monitoring team step-up



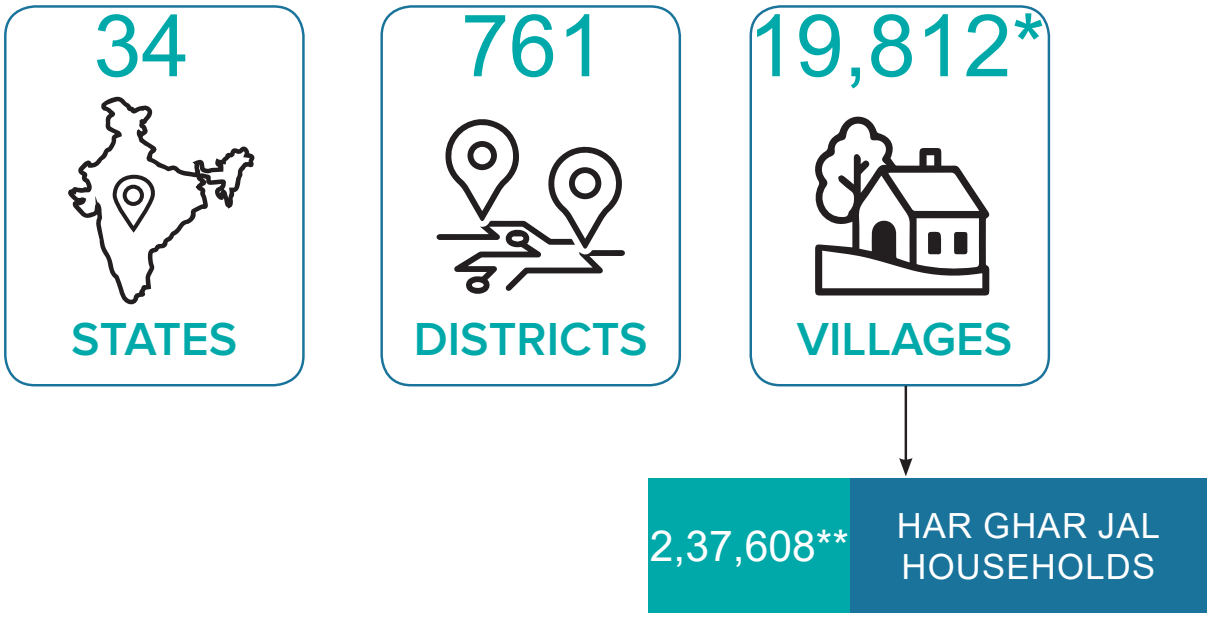
Full-fledged team of more than 100+ AMC assessors was set for conducting the real time monitoring and quality check for field assessment. The peculiarity of AMC is the fast-paced monitoring and connecting with filed assessor on real time basis to guide.

3.6. Limitation of the Survey

This sample survey was conducted from July 2024 to October 2024. Since the implementation work under the Jal Jeevan Mission is ongoing in many districts, there may be differences between the survey data and the status at the time of the report publication.

An important limitation of the survey is the inability to cover 57 villages in Manipur due to the ongoing unrest in the State. This exclusion could lead to incomplete data representation and may affect the overall findings and conclusions about the State.

3.7. Sample Coverage



*57 villages in Manipur could not be completed due to the ongoing unrest in the State.
**Some villages do not have 12 households.

3.8. Weight Calculation for Analysis and Reporting

The basic objective of weighting sample data was to try and maximize the representativeness of the sample in terms of the size, distribution, and characteristics of the study population. As described in the section above we see that the sample units have been selected with differing probabilities (C1, C2, C3), hence it is important to weight the results inversely proportional to the unit selection probabilities, i.e., the design weight, to reflect the actual situation in the population.

For the purpose of analysis and presenting the findings, a 'multiplier' approach is used to calculate the weights, and is applied for household level analysis. This approach involves determining a multiplier for each stage of random sampling. Given the sampling was done separately of three sub stratum of Har Ghar Jal (HGJ) villages, namely C1 (villages with population fewer than 1000 individuals), C2 (villages with population ranging from 1000 to 5000 individuals) and C3 (villages with population exceeding 5000 individuals). The weighting processes is furnished below:

The PSU-level (Village - level) weights were calculated as below

PSU level weight = N_{ij}/n_{ij}

Where, N_{ij} = Number of PSUs (or stratum size) of the i^{th} sub-staratum in the j^{th} district.

n_{ij}= Number of PSUs selected from the i^{th} stratum/sub stratum of the j^{th} district

The final weight at household-level was calculated as below

$(N_{ij} \div n_{ij}) \times (Hs_{ij} \div hs_{ij})$

Where, Hs_{ij} = total number of households in the s^{th} PSU of the i^{th} sub-stratum of the j^{th} district

hs_{ij}= total number of households selected surveyed from the s^{th} PSU of the i^{th} sub stratum of the j^{th} district.

The household level analysis has been done by using the final weight mentioned above i.e., **$(N_{ij} \div n_{ij}) \times (Hs_{ij} \div hs_{ij})$.** The percentages for all household level findings in this report are estimated percentages after applying the weights.

The findings for the data collected at village level and public institutions have been reported using the PSU level weight $N_{ij} \div n_{ij}$

Estimated households and villages after applying weights is shown in **annexure 2** and **3** respectively.

4
CHAPTER

Functionality Assessment of Household tap Connections: Har Ghar Jal Villages

CHAPTER 4

Functionality Assessment of Household Tap Connections: Har Ghar Jal Villages

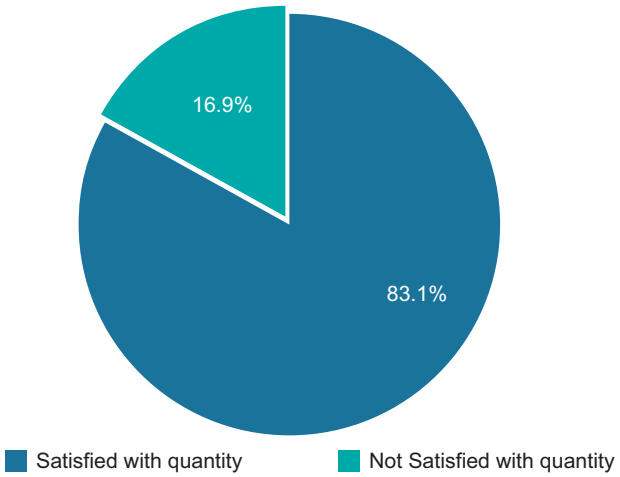
As mentioned in the previous chapter 19,812 HGJ villages were surveyed and it was found that 411 villages (2.07% of the total sampled villages) did not have household tap connections. Response from the households in these 411 villages were excluded from the analysis. Hence, the final analysis has been done on 19,401 HGJ villages, covering 2,32,691 households. The report for the household component has been prepared by applying the weights as per the multiplier calculation explained in chapter 3, section 3.8. The percentages presented in this report are estimated percentages after applying the weights. The percentage for the findings for public institutions and at village level are proportions of the sample.

4.1. User Satisfaction on Quantity, Quality and Pressure

4.1.1. User Satisfaction on Quantity of Water Supplied

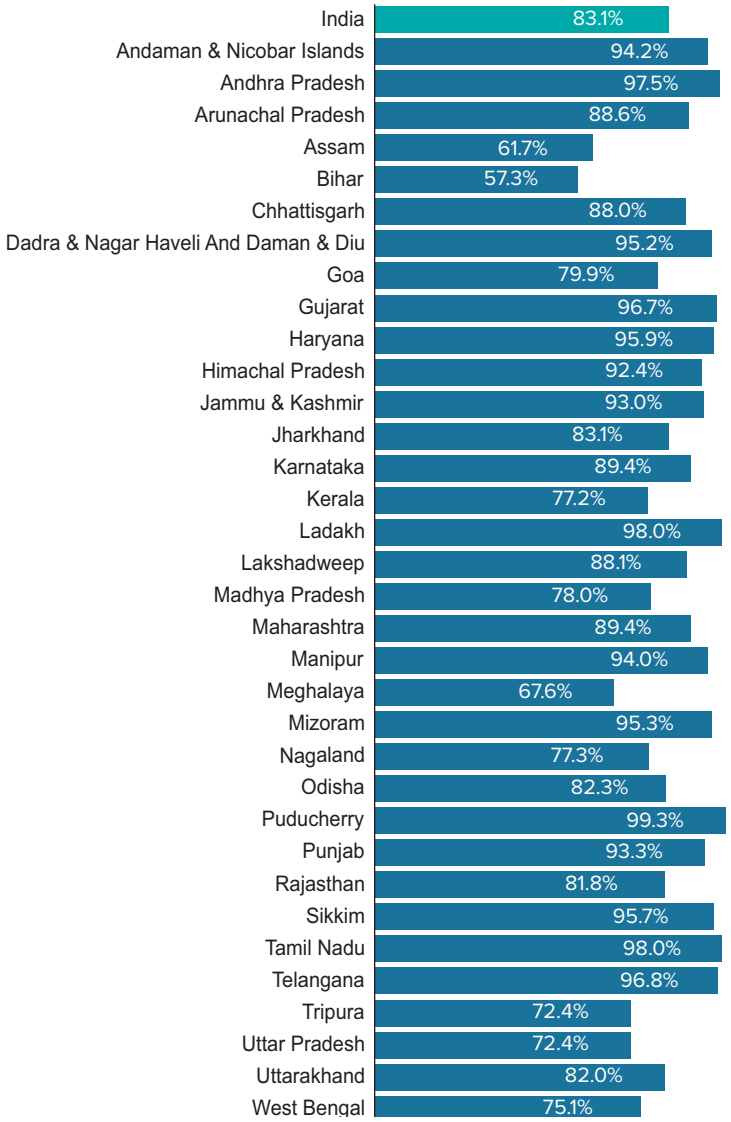
Respondent in the households were asked whether their daily household requirement of water were met or not. If the user's daily requirement of water was met, the user was considered satisfied with quantity of water.

Figure 11: User Satisfaction on Quantity of Water Supplied



As per the survey findings, 83.1% of households expressed satisfaction with the quantity of water. Puducherry (99.3%), Tamil Nadu (98.0%), Ladakh (98.0%), Andhra Pradesh (97.5%), Telangana (96.8%) and Gujarat (96.7%) reported the highest satisfaction levels. Responses are based on user perception.

Figure 12: User Satisfaction on Quantity of Water Supplied– State-Wise



4.1.2. User Satisfaction on Quality of Water Supplied

Respondent in the households were asked whether they were satisfied with overall quality of water supplied. 92.4% of households reported that they were satisfied with the quality of water. Goa and Ladakh reported 100% satisfaction. Tripura (43.3%) reported having the lowest satisfaction.

The 7.6% of the respondent in the households who reported that they were not satisfied, were asked to State the reason for dissatisfaction, and the primary reasons that emerged as reason for dissatisfaction with water quality were dirty water (34%), foul smell (9%), and hard water (8%), with other issues (like yellowish colour of water, iron taste) comprised 47%.

Figure 13: User Satisfaction with Quality of Water Supplied

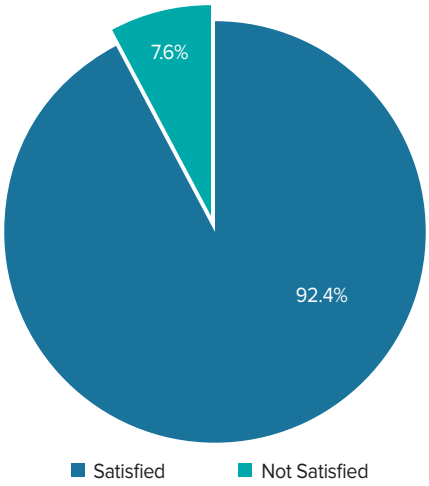


Figure 14: Reasons for Dissatisfaction with Quality of Water Supplied

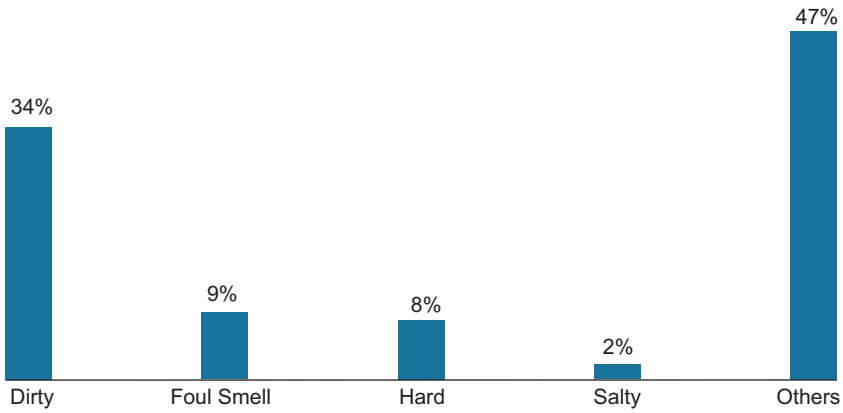
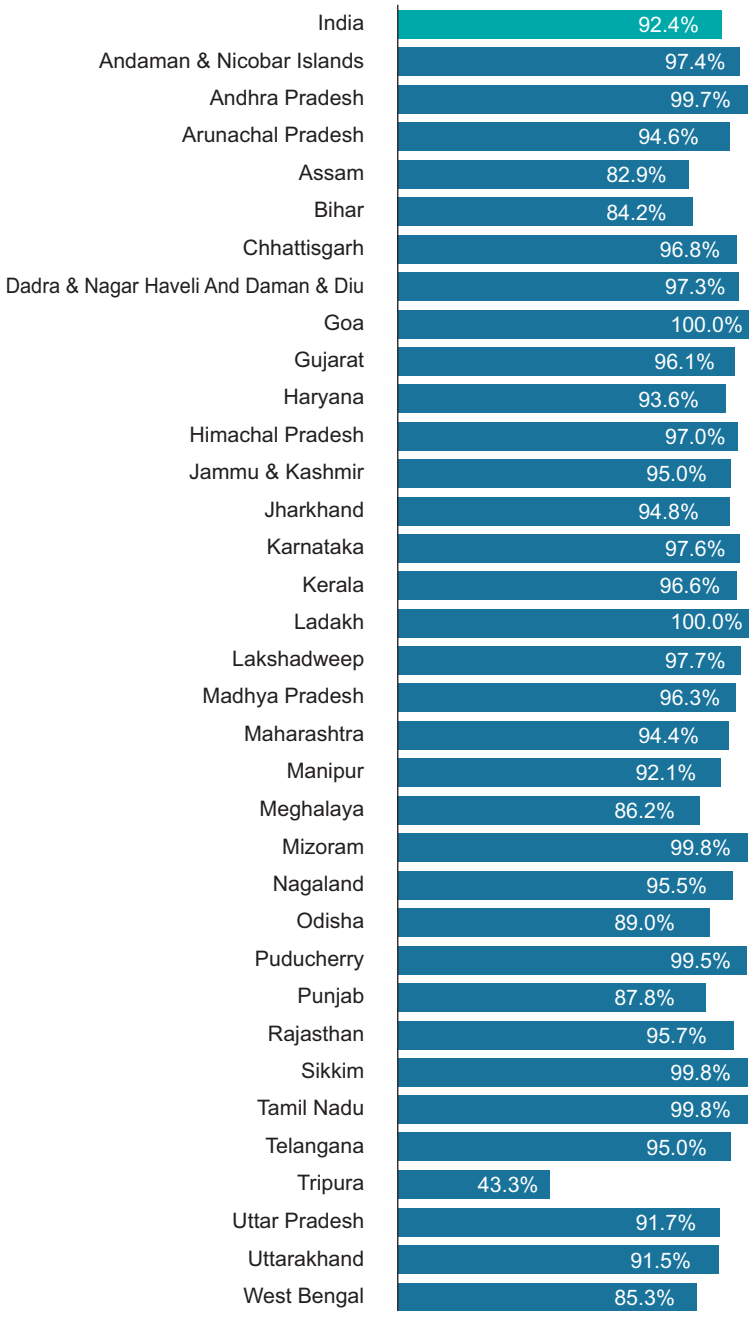


Figure 15: User Satisfaction with Quality of Water Supplied– State-Wise



4.1.3. User Satisfaction on Pressure of Water Supplied

Respondent in the households who reported having tap connections were asked whether they were satisfied with overall pressure of water supplied. As per the survey findings, 83.5% of households were satisfied with the pressure of water. Sikkim reported the highest satisfaction at 99.5%, followed by Tamil Nadu (99.3%), Andhra Pradesh (99%) and Puducherry (99%). Bihar (55.6%) and Tripura (64.2%) reported the lowest levels of satisfaction.

Figure 16: User Satisfaction on Pressure of Water Supplied

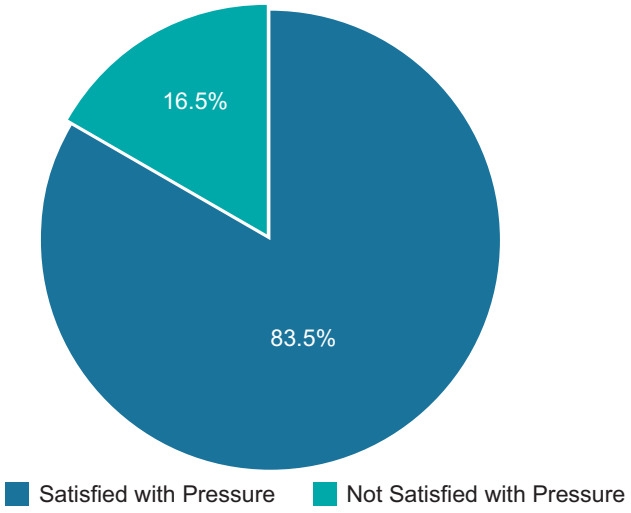
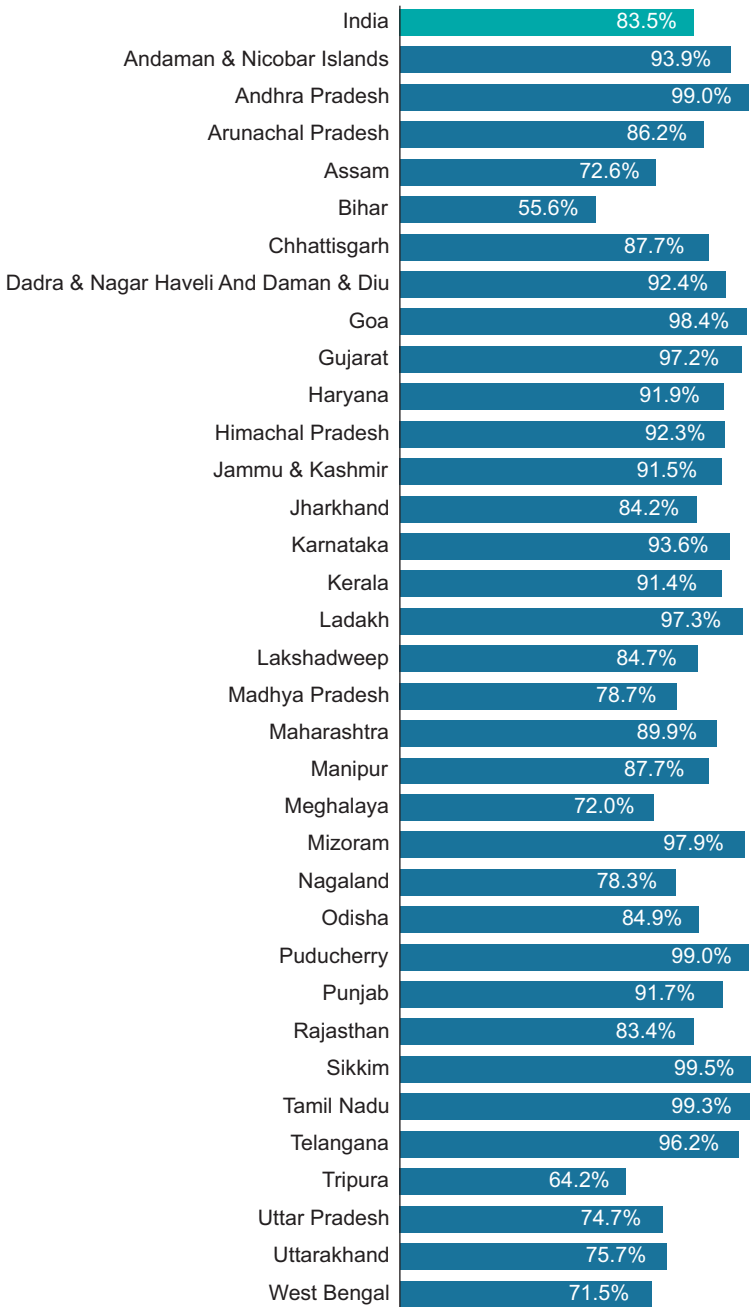


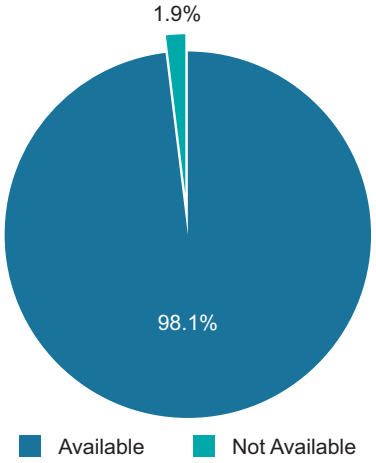
Figure 17: User Satisfaction on Pressure of Water Supplied– State-Wise



4.2. Availability of Tap Water Connection at Households (Excluding Private Tap Connection).

The objective of Jal Jeevan Mission (JJM) is the provide household tap connections to every rural households by 2024. As per the IMIS data (November 2024), ten States/ UTs have reported achieving 100% FHTC (Functional Household Tap Connection) villages: Puducherry, Dadra & Nagar Haveli

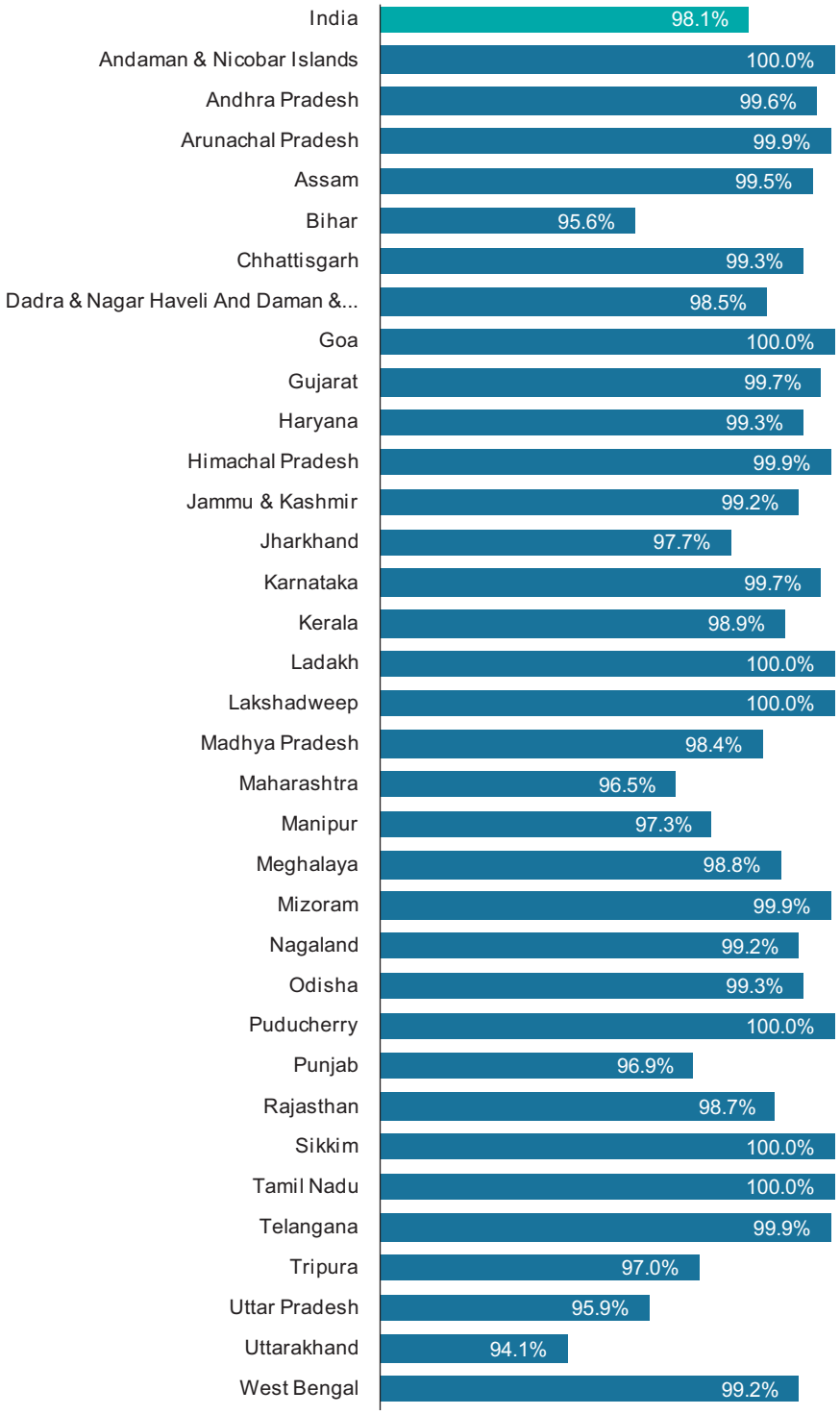
Figure 18: Availability of Tap Water Connection at Households (Excluding Private Tap Connection)



and Daman & Diu, Andaman & Nicobar Islands, Goa, Mizoram, Arunachal Pradesh, Haryana, Telangana, Punjab, and Himachal Pradesh. To assess the availability of tap connection at household level, respondent at the household were asked if they had tap water connection in their house. As part of the assessment, the interviewer also verified the reported tap connection, by capturing a geo-tagged photograph.

Total households interviewed for HGJ villages were 2,32,691. The respondents who reported that they had private tap connection/or private arrangements, then those households were excluded from the based, hence, after that exclusion the total households with tap connections stood at 2,24,249. While number of private connections reported is 4,711. Annexure 6 can be referred for more information.

Figure 19: Availability of Tap Water Connection at Households– State-Wise



4.3. Availability of Working Tap Water Connection at Households

The respondent in the households were asked, if they had received water through the tap connection in the last seven days and if they said “yes” then it was considered as working tap connection. 86.5% of the household where tap connection was found, had working tap connection. Several States/UTs report near-universal working connections (99-100%), including Andhra Pradesh, D&NH and D&D, Goa, Gujarat, Ladakh, Lakshadweep, Puducherry, Tamil Nadu and Telangana.

Figure 20: Availability of Working Tap Connection at Households

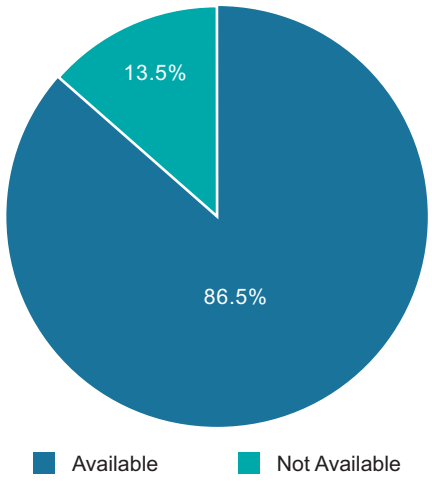
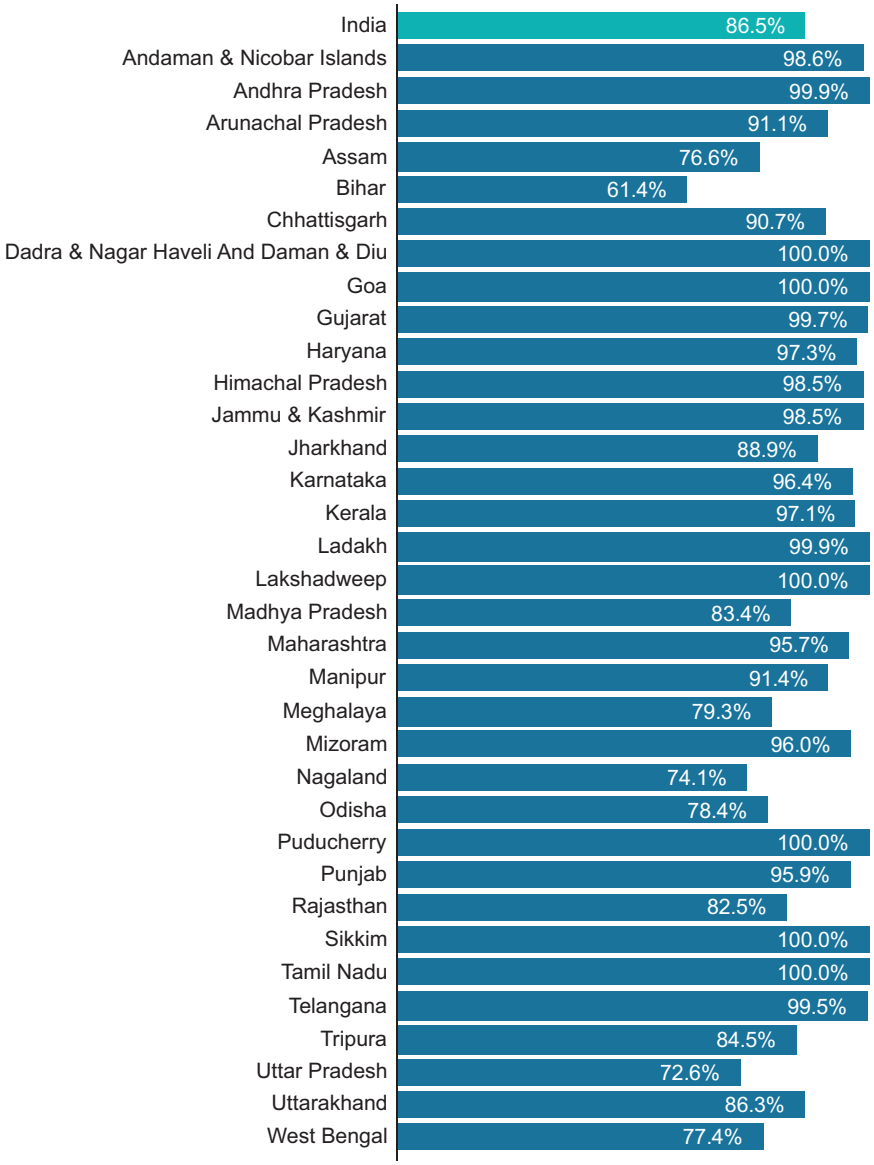


Figure 21: Availability of Working Tap Connection at Households – State-Wise



The 13.5 % of respondents in the households who reported non availability of working tap connection were asked for the reason for non-availability of working tap connections. The reasons stated by the households for non-availability of working tap connection included pump failure (29.6%), damaged pipes networks (31.9%), and source issues (4.6%). Electricity-related issues account for 8.5% of disruptions, while issues with scheme commissioning and testing represent 11%. Damaged pipes network is the most cited reason for not having working tap connection and this corroborates the fact that there is a need to strengthen the operation and maintenance processes.

Figure 22: Reasons for Non-availability of Working Tap Connection at Households

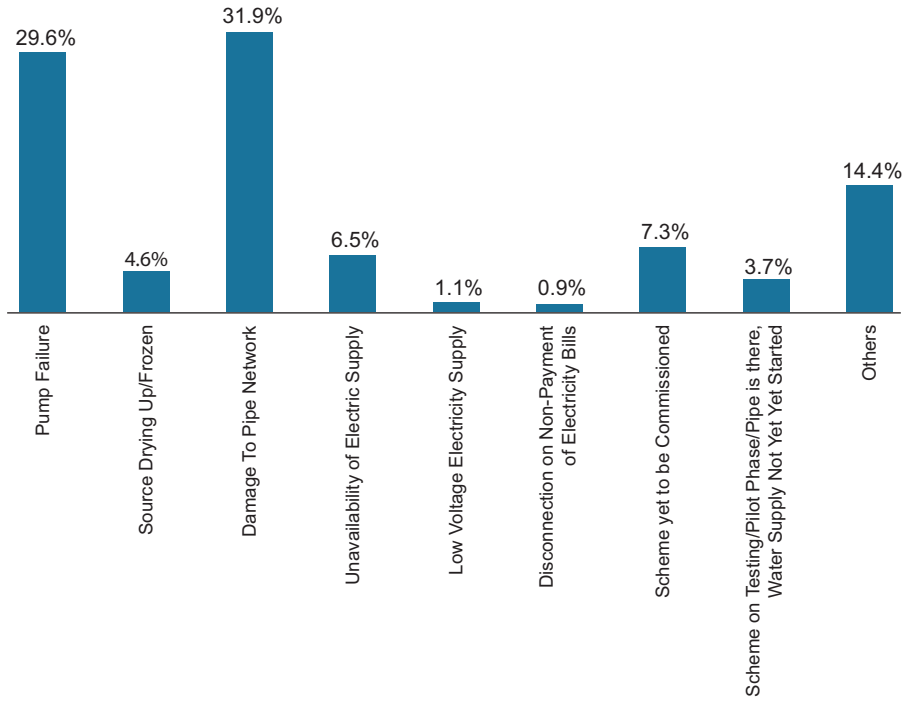


Table 4: Reasons for Non-availability of Working Tap Connection at Households – State-Wise

State	Pump failure	Source drying up/ frozen	Damage to pipe network	Unavailability of electric supply	low voltage electricity supply	Disconnection on non-payment of electricity bills	Scheme yet to be commissioned	Scheme on testing/pilot phase/Pipe is there water supply not yet started	Others
Overall	**29.6%**	**4.6%**	**31.9%**	**6.5%**	**1.1%**	**0.9%**	**7.3%**	**3.7%**	**14.4%**
Andaman & Nicobar Islands	75.0%	0.0%	0.0%	25.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Andhra Pradesh	48.5%	13.0%	22.4%	0.0%	0.0%	0.0%	7.7%	8.4%	0.0%
Arunachal Pradesh	20.4%	3.8%	19.0%	7.4%	9.2%	6.3%	0.2%	0.2%	33.6%
Assam	24.0%	0.9%	27.5%	11.1%	4.4%	5.5%	8.4%	4.6%	13.6%
Bihar	38.5%	5.3%	36.5%	6.1%	0.8%	1.0%	1.0%	0.0%	10.8%
Chhattisgarh	22.2%	4.8%	21.5%	17.1%	5.2%	0.0%	6.2%	10.3%	12.7%

State	Pump failure	Source drying up/ frozen	Damage to pipe network	Unavailability of electric supply	low voltage electricity supply	Disconnection on non-payment of electricity bills	Scheme yet to be commissioned	Scheme on testing/pilot phase/Pipe is there water supply not yet started	Others
Gujarat	76.4%	4.9%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	18.7%
Haryana	27.2%	0.6%	17.0%	0.5%	1.4%	0.0%	15.3%	5.1%	32.8%
Himachal Pradesh	11.4%	13.0%	62.4%	1.9%	0.0%	0.0%	0.0%	5.1%	6.2%
Jammu & Kashmir	7.2%	37.4%	16.4%	5.1%	0.0%	0.0%	7.1%	2.8%	24.1%
Jharkhand	22.9%	3.9%	40.5%	1.9%	0.7%	1.6%	11.0%	0.4%	17.2%
Karnataka	35.3%	1.2%	16.0%	14.6%	0.2%	0.0%	14.7%	15.5%	2.6%
Kerala	31.8%	6.9%	39.5%	8.5%	0.0%	0.0%	0.0%	0.0%	13.3%
Ladakh	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Madhya Pradesh	19.4%	13.9%	27.5%	9.5%	1.0%	0.7%	13.1%	2.2%	12.9%
Maharashtra	27.9%	12.1%	10.1%	10.6%	2.8%	0.5%	7.9%	13.8%	14.3%
Manipur	18.3%	14.6%	43.7%	0.0%	0.0%	0.0%	0.0%	0.0%	23.4%
Meghalaya	15.2%	6.0%	56.5%	0.8%	0.4%	0.0%	0.2%	2.3%	18.5%
Mizoram	14.9%	0.4%	44.6%	1.0%	0.0%	0.0%	2.3%	33.8%	3.0%
Nagaland	4.7%	6.2%	59.8%	8.5%	2.7%	0.0%	0.8%	3.2%	14.2%
Odisha	6.3%	0.0%	14.6%	3.6%	0.1%	0.0%	29.3%	29.9%	16.4%
Punjab	35.7%	1.9%	22.1%	3.6%	0.6%	0.0%	1.1%	1.5%	33.4%
Rajasthan	6.7%	1.8%	25.6%	29.4%	9.8%	0.0%	10.5%	1.0%	15.0%
Tamil Nadu	47.7%	27.3%	0.0%	0.0%	0.0%	0.0%	25.0%	0.0%	0.0%
Telangana	30.3%	10.8%	57.6%	0.0%	0.0%	0.0%	0.0%	0.0%	1.3%
Tripura	29.0%	4.4%	12.8%	42.6%	3.1%	1.7%	6.3%	0.0%	0.0%
Uttar Pradesh	24.1%	0.8%	30.2%	5.4%	0.6%	0.3%	14.1%	4.4%	20.1%
Uttarakhand	16.3%	8.5%	28.9%	2.0%	1.7%	3.3%	21.2%	2.3%	15.8%
West Bengal	12.1%	9.9%	32.3%	0.3%	0.6%	0.0%	12.5%	7.0%	25.3%

4.4. Regularity of Water Supplied to Households

Respondents in the households who reported having tap water connections were asked whether they received water as per pre-decided schedule. Households were considered to have **regular supply** if it received water as per the pre-decided schedule.

As per the survey findings, 83.6% of households reported receiving water regularly. The top performing States/ UTs in terms of regularity were Ladakh and Puducherry with more than 99% regularity.

Figure 23: Regularity of Water Supplied at Households

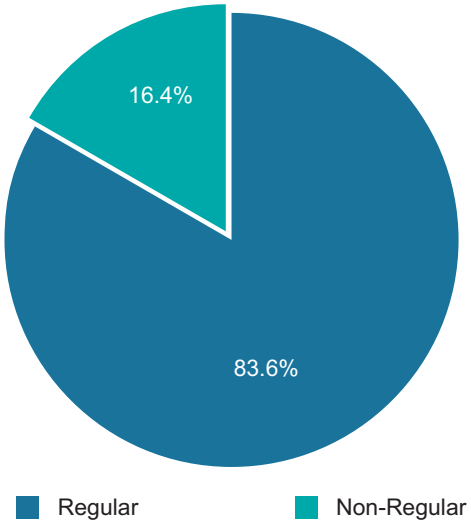
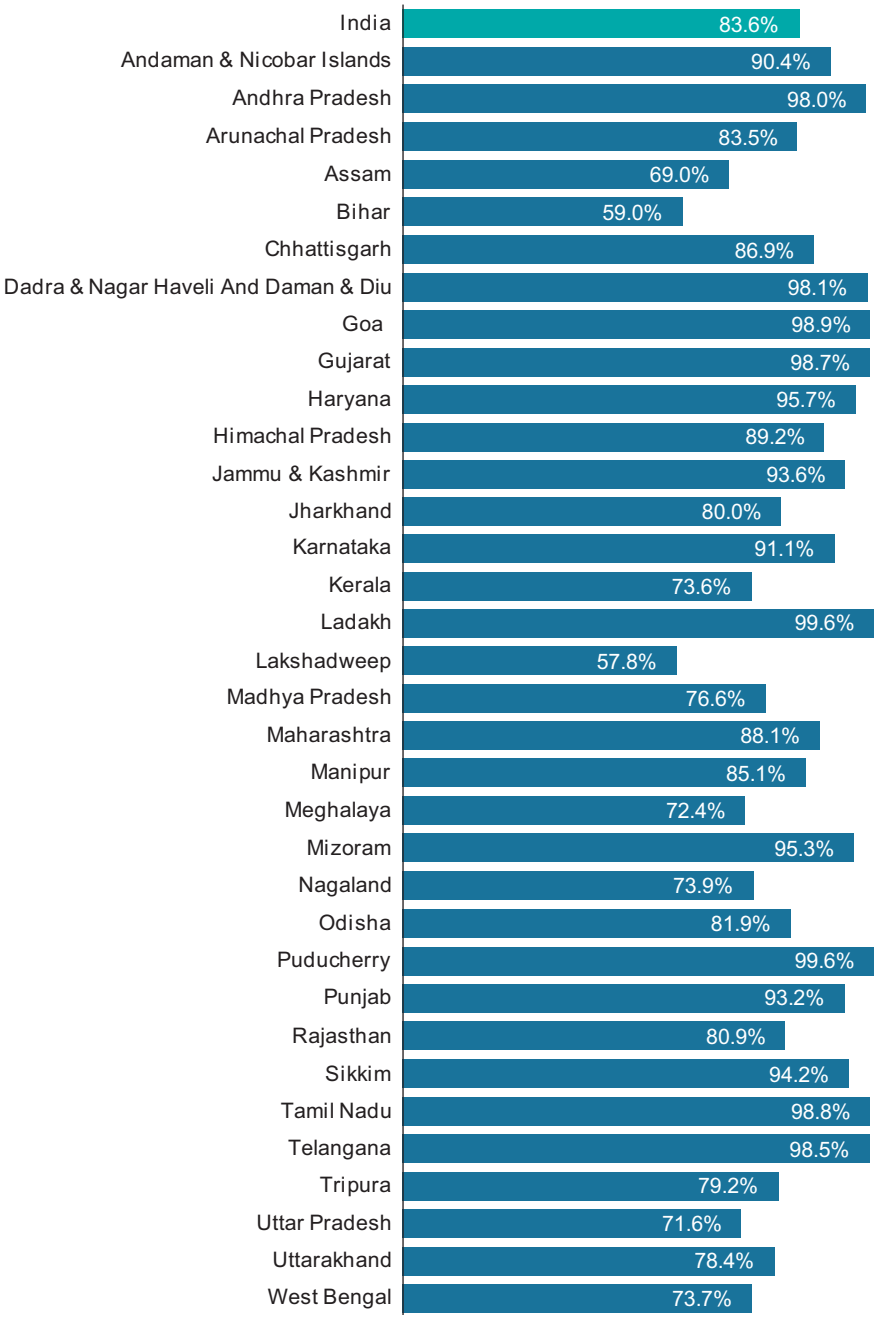


Figure 24: Regularity of Water Supplied at Households– State-Wise



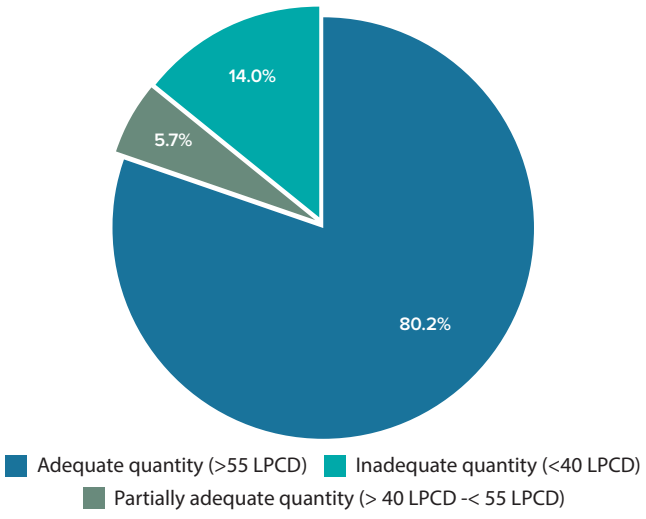
4.5. Quantity of Water Supplied at Households (≥55 LPCD)

As per the JJM operational guidelines, the quantity (in litre) of water supplied per person per day should meet the service level of 55 LPCD.

The adequacy of water supply is categorized as follows:

Adequate: ≥ 55 LPCD (Meets the required service level)

Figure 25: Quantity of Water Supplied at Households

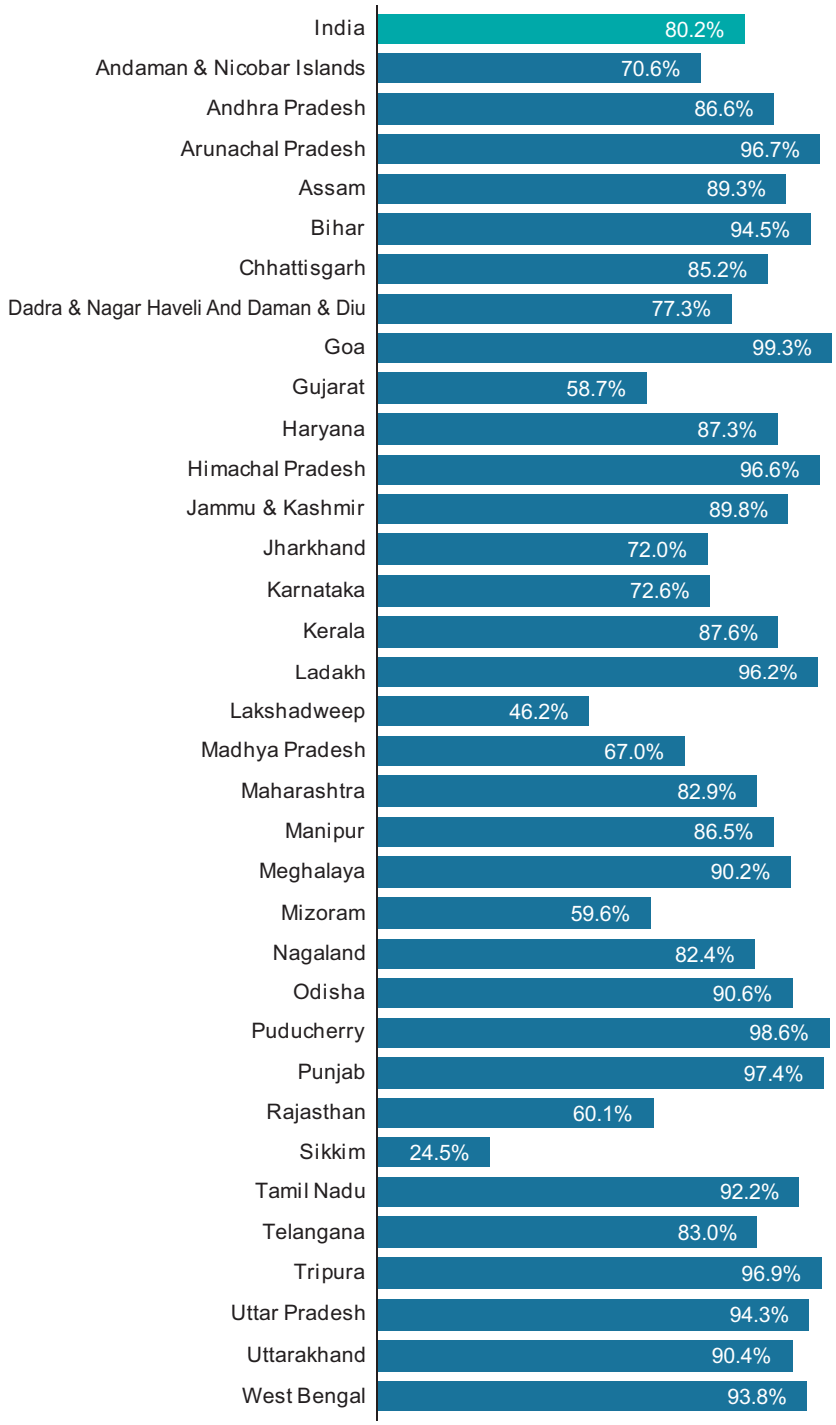


Partially Adequate: 40–55 LPCD (Falls below the standard but still provides some level of service)

Inadequate: < 40 LPCD (Does not meet basic water supply needs)

To arrive at the quantity of water received by households, the flow rate was measured using the bucket method in one household per hamlet/ habitation in each village. The quantity of water supplied per minute was measured using a graduated bucket to capture the volume of water supplied and a stopwatch to measure time. Daily water quantity was calculated by multiplying flow rate to supply duration. If households in a village reported that the tap water was not supplied daily, then the LPCD was calculated using weekly estimate. As per the survey findings, 80.2% of the households receive ≥55 LPCD water, meeting the JJM service level benchmark for adequate water supply.

Figure 26: Quantity of Water Supplied at Households (≥55LPCD)– State-Wise



4.6. Quality of Water Supplied

In order to assess the quality of water supplied- water samples were collected from household as well as at the outlet of the source of water supply. The sample collected from the source was tested for the chemical parameters while the sample collected from the households was tested for the microbiological parameters. Since the parameters for the two types of samples are not same, the analysis is being presented separately. In 2024 survey test was done in privately owned NABL - accredited labs (3rd party labs). The State-owned labs were not used for testing, to eliminate any potential bias in the results.

4.6.1 Quality of Water Supplied at Households

Water samples were collected from two households per source or scheme, where respondents reported having working tap connections. Collected water samples from the households, were tested for three types of parameters: E-Coli, total coliform which were tested in NABL - accredited labs, and on-site testing for pH was conducted. As per the survey findings, 76% of water samples passed the microbiological test.

Figure 27: Percentage of Water Sample Passing Quality Test at Households

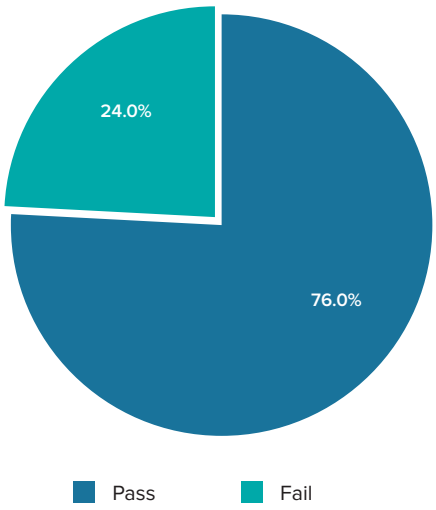
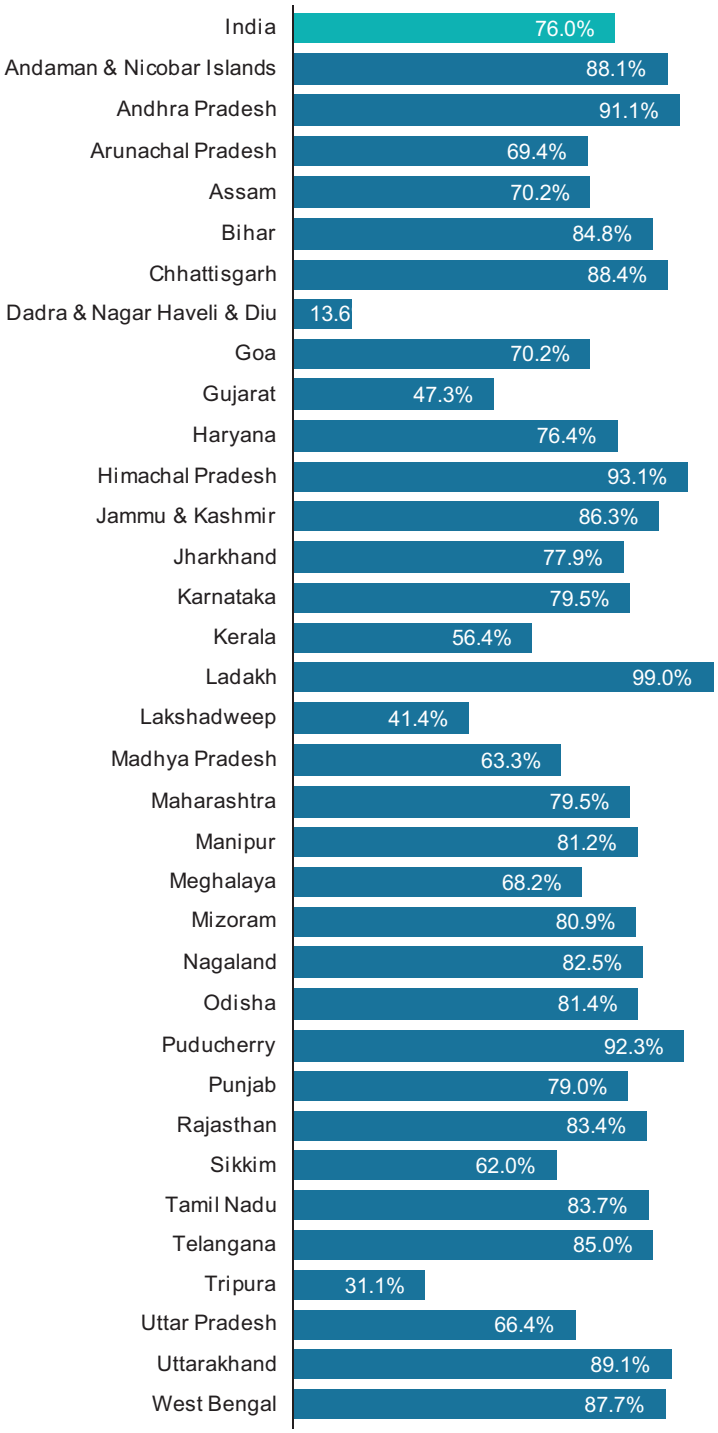


Figure 28: Percentage of Water Sample Passing Quality Test at Households



4.6.2 Quality of Water Supplied at Source

Water samples were collected from sources in the villages that had functional scheme, on the day of survey. The collected water samples were tested for the following chemical parameters, and a sample was considered pass if it met the permissible limit for all the eleven parameters.

Table 5: Chemical Parameters Tested for Water Sample Collected at Source

Sl.No	Parameter	Unit	Requirement (Acceptable Limit)	Permissible Limit in the absence of alternate source
1	Turbidity	NTU	1	5
2	Total Hardness	mg/L	200	600
3	Total Alkalinity	mg/L	200	600
4	Chloride	mg/L	250	1000
5	Ammonia	mg/L	0.5	No relaxation
6	Sulphate	mg/L	200	400
7	Total Dissolved Solids	mg/L	500	2000
8	Iron	mg/L	1	No relaxation
9	Nitrate	mg/L	45	No relaxation
10	Fluoride	mg/L	1	1.5
11	Arsenic (in hotspots)	mg/L	0.01	No relaxation

At the national level, 80.9% of the water sample passed the chemical test, reflecting compliance with quality norms.

Figure 29: Percentage of Water Sample Collected at Source Passed the Quality Test

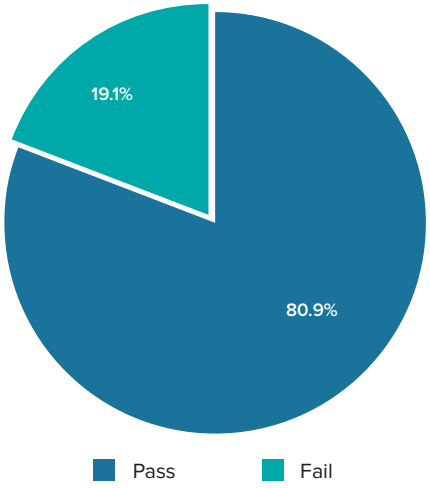
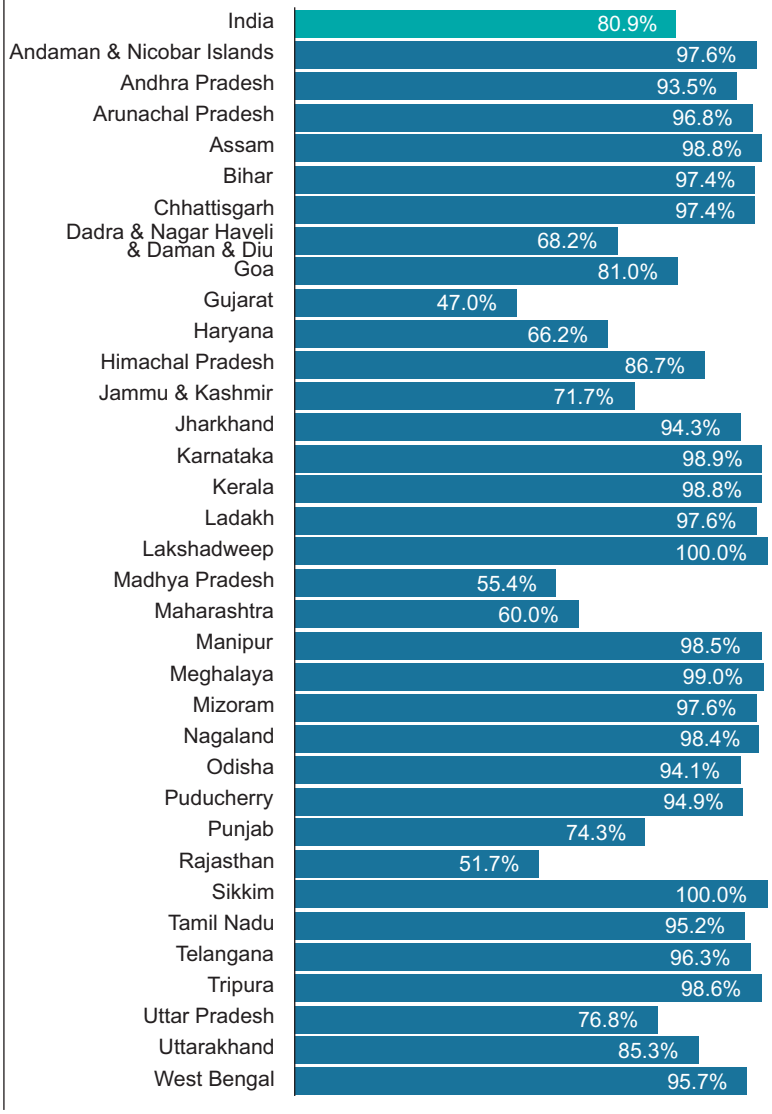


Figure 30: Percentage of Water Sample Collected at Source Passed the Quality Test– State-Wise



4.7. Functionality Status of Household Tap Connection

As per JJM guideline, functionality of tap connections means fulfilling three key criteria:

- **Adequate Quantity –** The household should receive at least 55 liters per capita per day (LPCD).
- **Potable –** The water should be free from contamination and meet quality standards.
- **Regular Supply –** Water should be supplied as per the predefined schedule.

In order to estimate the functionality status of household tap connection the following steps were followed:

a. Estimation of Quantity of water supplied to the household

- Identified the total number of households where flow rate was measured in the dataset.
- Determined the number of households receiving 55 LPCD or more.
- Calculated the percentage of households meeting the adequate quantity benchmark.

b. Estimation of Quality of water received at the household

- Considered all households where water samples were collected and tested.
- Assessed microbiological parameters and pH levels at the household level.
- Estimated the percentage of households meeting the quality standards

c. Estimation of Regularity of water supplied to the household

For estimating the regularity of water supplied the total number of households that reported receiving water supply as per schedule was taken and the percentage was calculated.

d. Estimation of Functionality Status

This is a sample survey and the water samples was collected in two households per source, and the quantity measurement was done in one household per habitation. Further, the water quality was also tested at source. Given these limitations, it is not always possible to determine which household, or populations meet all three of the service level criteria simultaneously. Therefore, the functionality is calculated by using the minimum of the three estimated service level parameters mentioned above.

Figure 31: Functionality Status of Household Tap Connection

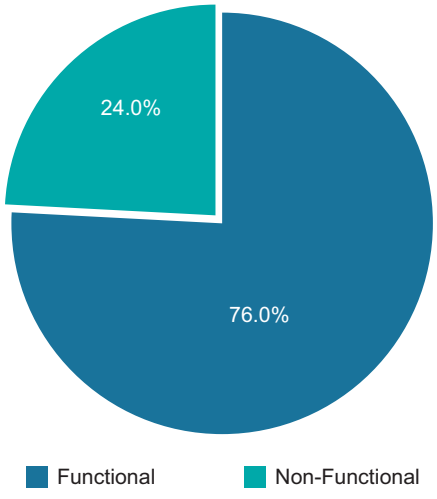
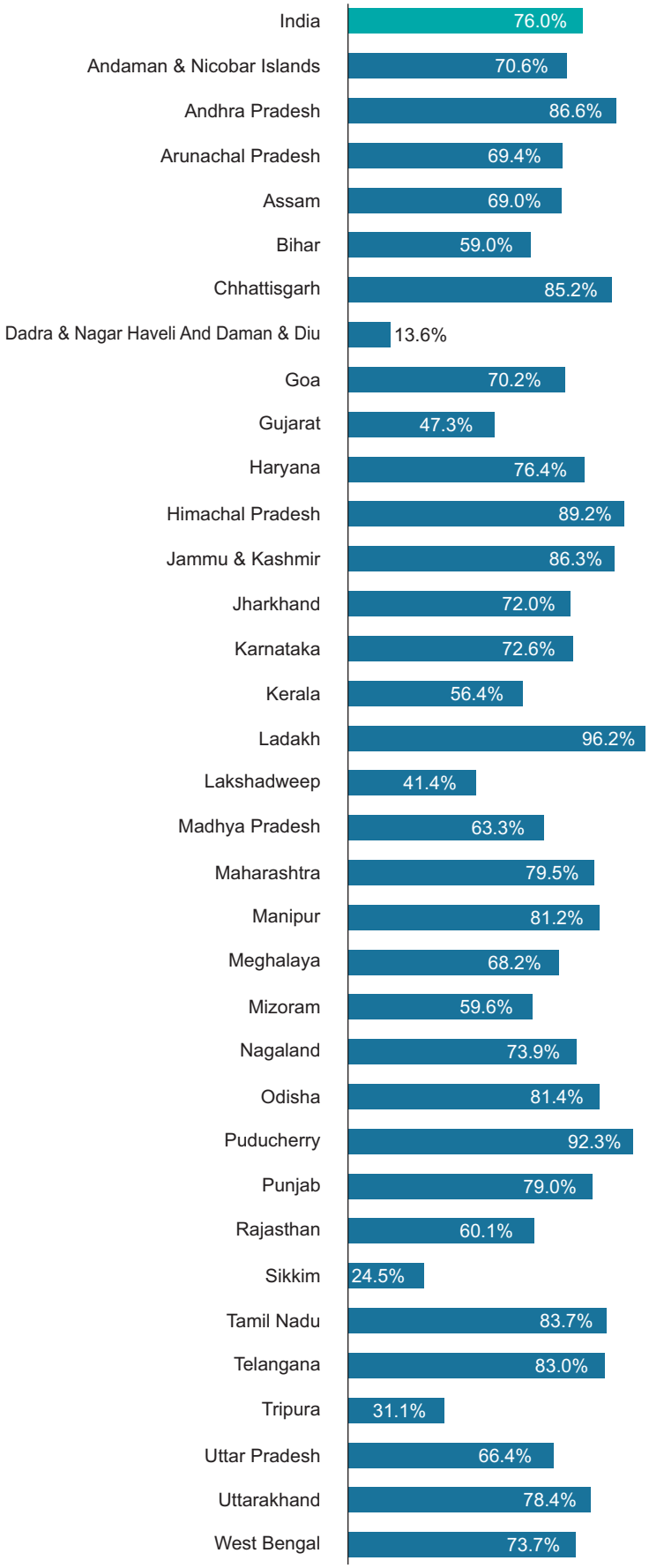


Figure 32: Functionality Status of Household Tap Connection– State-Wise



The table below shows the percentage of Quantity, Regularity and Quality and the minimum of the three taken as functionality.

Table 6: Functionality Status Households Tap Connection– State-Wise

States	Regularity	Quality (Microbiological & pH)	Quantity (>=55 LPCD)	Functionality
	A	B	C	D= Min (A, B, C)
INDIA	**83.6%**	**76.0%**	**80.2%**	**76.0%**
Andaman & Nicobar Islands	90.4%	88.1%	70.6%	70.6%
Andhra Pradesh	98.0%	91.1%	86.6%	86.6%
Arunachal Pradesh	83.5%	69.4%	96.7%	69.4%
Assam	69.0%	70.2%	89.3%	69.0%
Bihar	59.0%	84.8%	94.5%	59.0%
Chhattisgarh	86.9%	88.4%	85.2%	85.2%
D&NH and D&D	98.1%	13.6%	77.3%	13.6%
Goa	98.9%	70.2%	99.3%	70.2%
Gujarat	98.7%	47.3%	58.7%	47.3%
Haryana	95.7%	76.4%	87.3%	76.4%
Himachal Pradesh	89.2%	93.1%	96.6%	89.2%
Jammu & Kashmir	93.6%	86.3%	89.8%	86.3%
Jharkhand	80.0%	77.9%	72.0%	72.0%
Karnataka	91.1%	79.5%	72.6%	72.6%
Kerala	73.6%	56.4%	87.6%	56.4%
Ladakh	99.6%	99.0%	96.2%	96.2%
Lakshadweep	57.8%	41.4%	46.2%	41.4%
Madhya Pradesh	76.6%	63.3%	67.0%	63.3%
Maharashtra	88.1%	79.5%	82.9%	79.5%
Manipur	85.1%	81.2%	86.5%	81.2%
Meghalaya	72.4%	68.2%	90.2%	68.2%
Mizoram	95.3%	80.9%	59.6%	59.6%
Nagaland	73.9%	82.5%	82.4%	73.9%
Odisha	81.9%	81.4%	90.6%	81.4%
Puducherry	99.6%	92.3%	98.6%	92.3%
Punjab	93.2%	79.0%	97.4%	79.0%
Rajasthan	80.9%	83.4%	60.1%	60.1%
Sikkim	94.2%	62.0%	24.5%	24.5%
Tamil Nadu	98.8%	83.7%	92.2%	83.7%
Telangana	98.5%	85.0%	83.0%	83.0%
Tripura	79.2%	31.1%	96.9%	31.1%
Uttar Pradesh	71.6%	66.4%	94.3%	66.4%
Uttarakhand	78.4%	89.1%	90.4%	78.4%
West Bengal	73.7%	87.7%	93.8%	73.7%

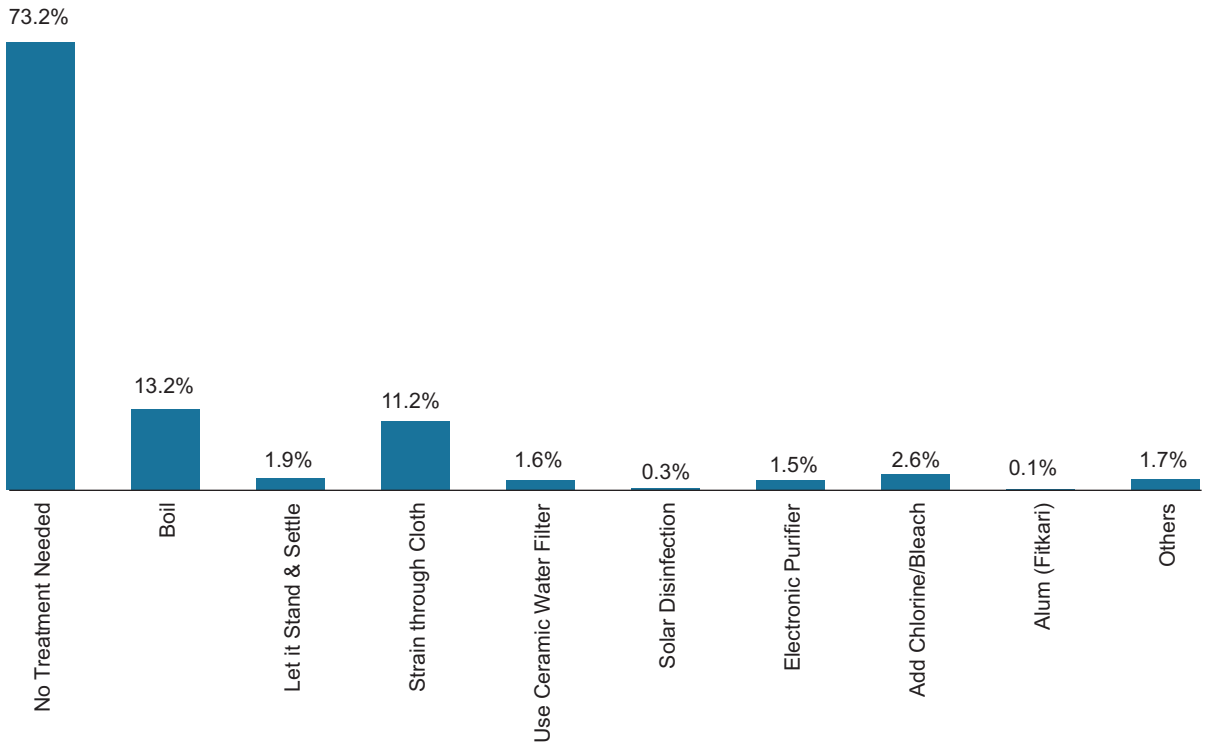
4.8. Household Level Practices

4.8.1. Households Adopting Methods to Make Water Safe for Drinking

As per the survey, 73.2% of respondents in the household believed that the water supplied did not need any additional treatment. While rest of them reported they adopt various methods to make the water safe for drinking. This was a multiple choice question, and the respondent could report one or more method that was followed in the household. Boiling is practiced by 13.2%, cloth straining by 11.2%, and ceramic filters by 1.6%. Other methods, includes chlorine, bleach.

The 73.2% who said that no treatment was needed can be interpreted along with the perception question that was asked and presented in the previous section, where 94% of the users have said that they are satisfied with the quality of water supplied. Since, the user perceives that the water received is of good quality, he/she thinks no treatment is needed.

Figure 33: Households Adopting Methods to Make Water Safe for Drinking



4.8.2. Water Connection Having a Bib Cock

Bib cocks are simple valves controlling water flow, that are essential for water conservation. The household level practices were checked to see if the household had installed the bib cock. The interviewer observed that 70.9% of tap connections had bib cocks across India. Lakshadweep has 100% bib cock installation, followed by Sikkim (99.4%) and Haryana (96.7%).

Figure 34: Water Connections Having a Bib Cock (Tap)

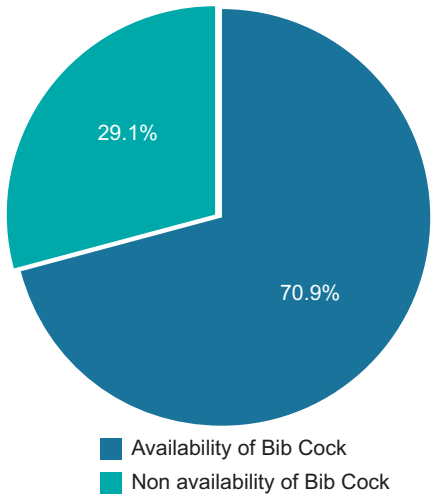
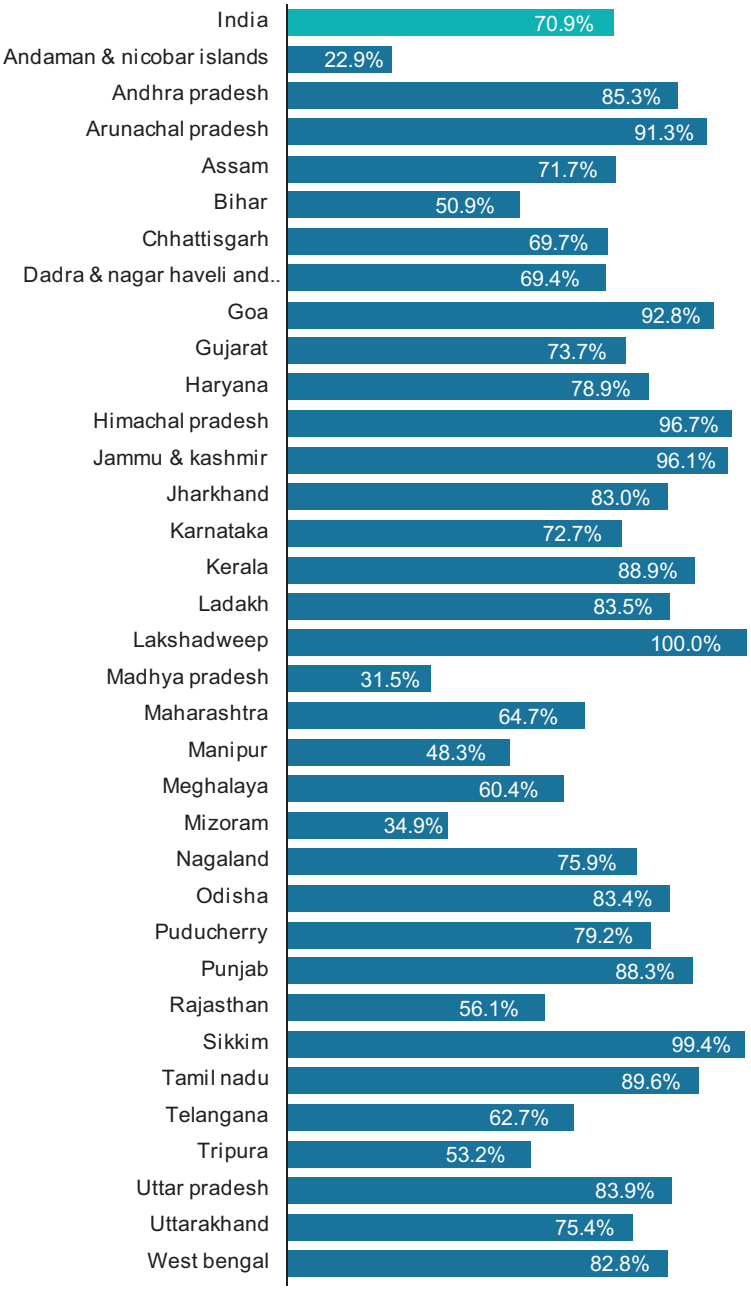


Figure 35: Water Connections Having a Bib Cock (Tap)– State-Wise



4.8.3. Households Closing Tap After Use

Water conservation is an important aspect of water supply, and this question was added to nudge the respondent. While we recognize that direct questions may sometimes lead to socially desirable responses, simply asking them helps reinforce the importance of water conservation. 87.1% respondents said that they close the tap after use. The rest who said they do not close the tap, could be the people who did not have bib cock, making it difficult to close the same.

Figure 36: Households Closing Tap After Use

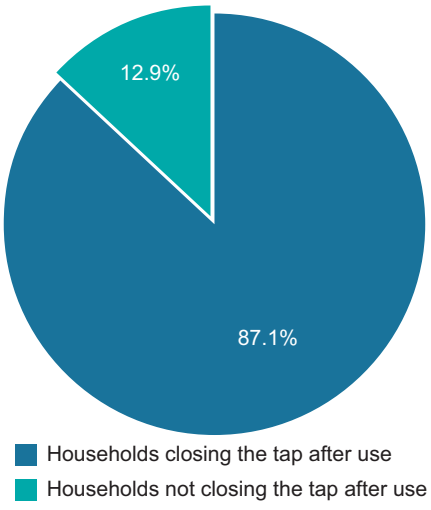
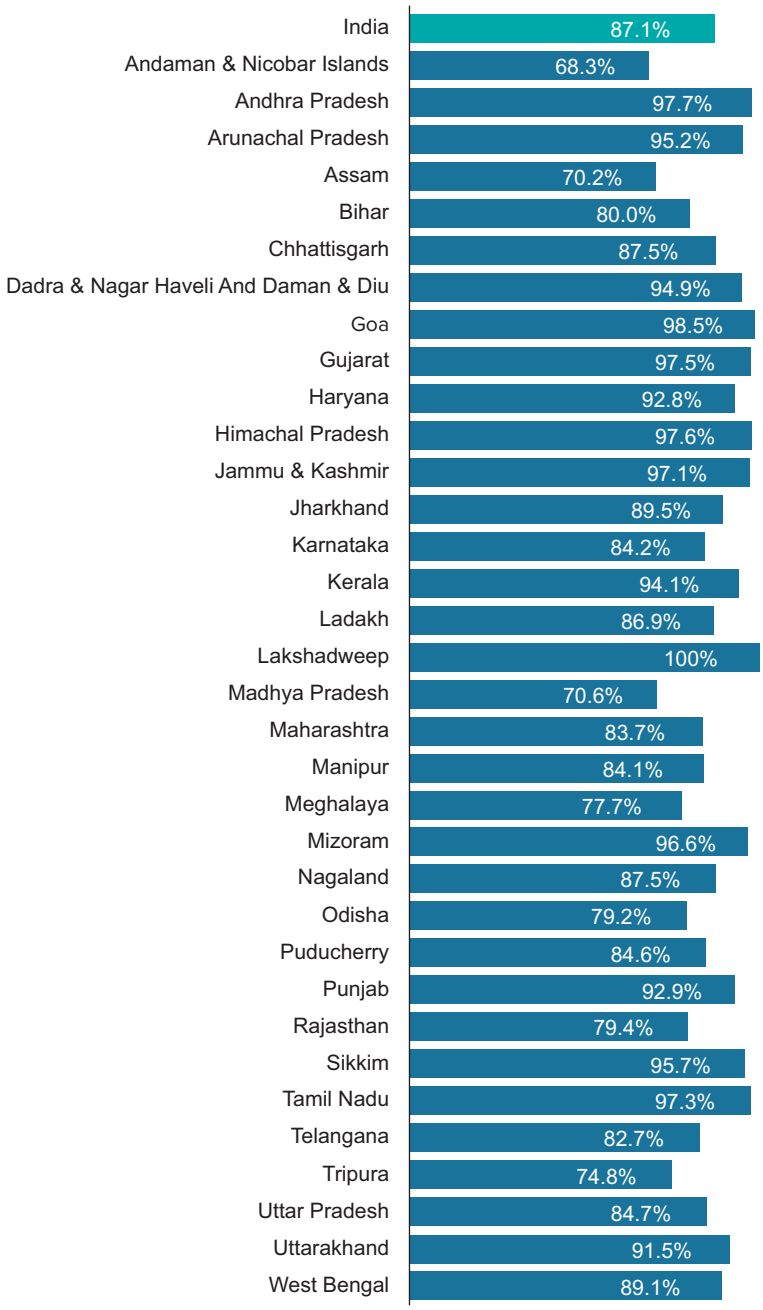


Figure 37: Households Closing Tap After Use State-Wise



4.9. Management of Water Service Delivery at Village Level (O&M)

4.9.1. Availability of VWSC/Paani Samiti at Village Level

As per JJM operational guidelines every village should constitute a Village Water and Sanitation Committee (VWSC). In the survey conducted between July and October 2024, the availability of village water sanitation committee (or Pani Samiti) is higher in D&NH and D&D and Mizoram (100%), Nagaland (98.7%), Andhra Pradesh (98.5%) and Sikkim (98%).

Figure 38: Availability of VWSC or Paani Samiti in the Village

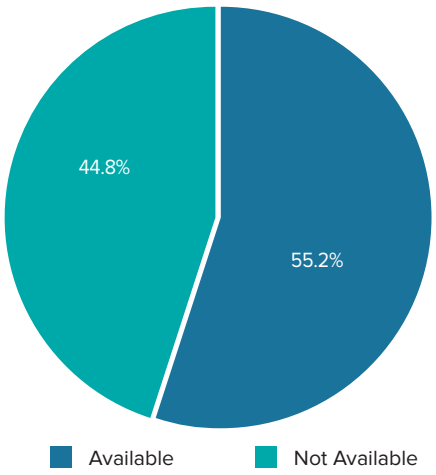
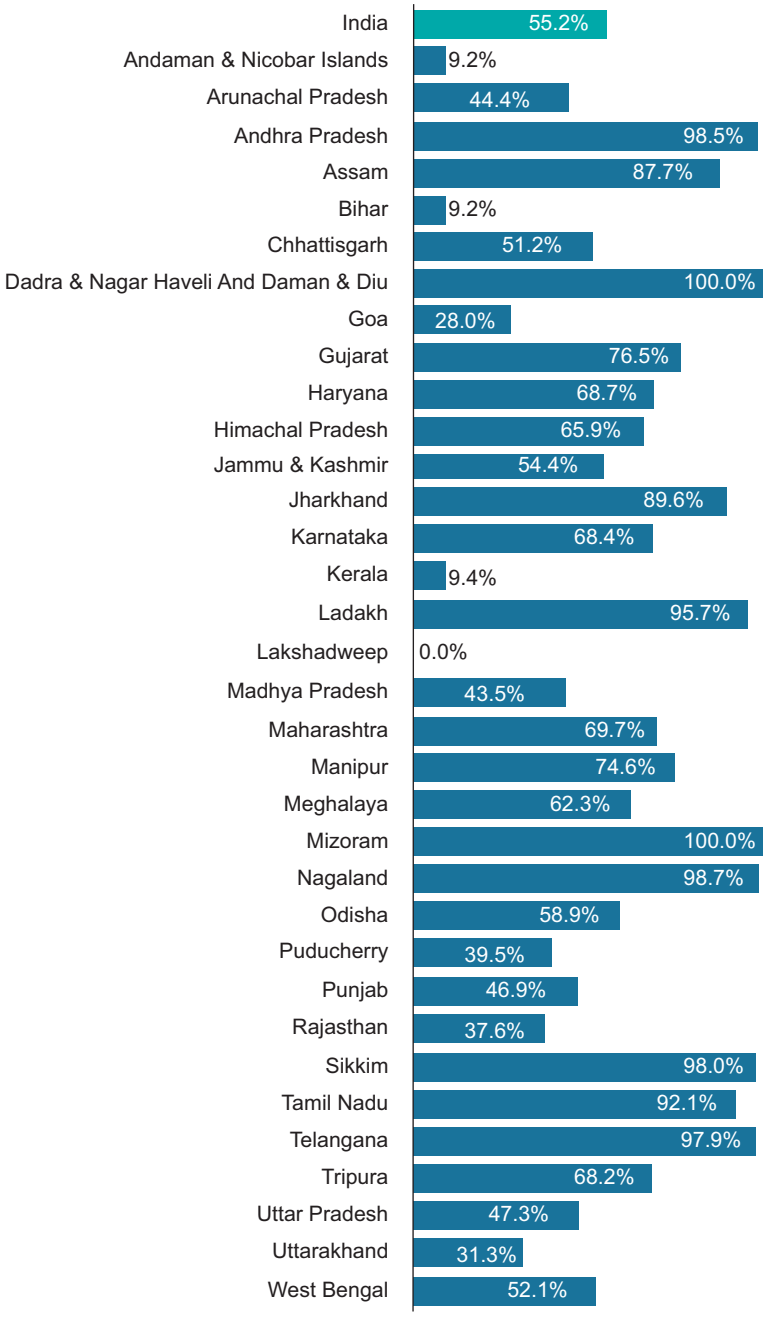


Figure 39: Availability of VWSC or Paani Samiti in the Village– State-Wise



4.9.2. VWSCs (Village Water Sanitation Committee) Having Bank Accounts

As per the JJM operational guidelines, all VWSCs should have bank accounts. The villages where the presence of VWSC was reported a follow up question was asked regarding the availability of bank account exclusively for the VWSC. The percentage of VWSC or Paani Samiti with a bank account varies significantly across India. Notable States with high percentages include Sikkim (96.3%), Andaman & Nicobar Islands (88.5%), and West Bengal (87.2%). VWSC bank accounts are essential for managing funds, ensuring transparency, and facilitating the operation and maintenance of rural water supply systems under the Jal Jeevan Mission. This question was asked in only those villages where the VWSC was found.

Figure 40: VWSC Having Bank Accounts

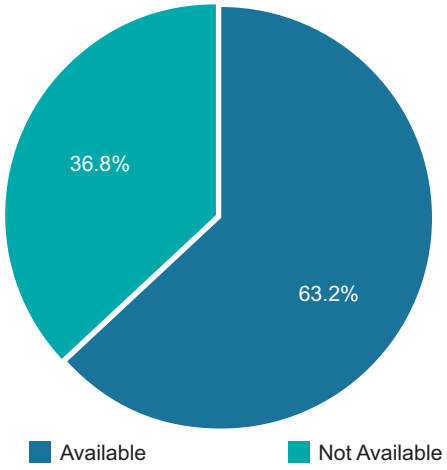
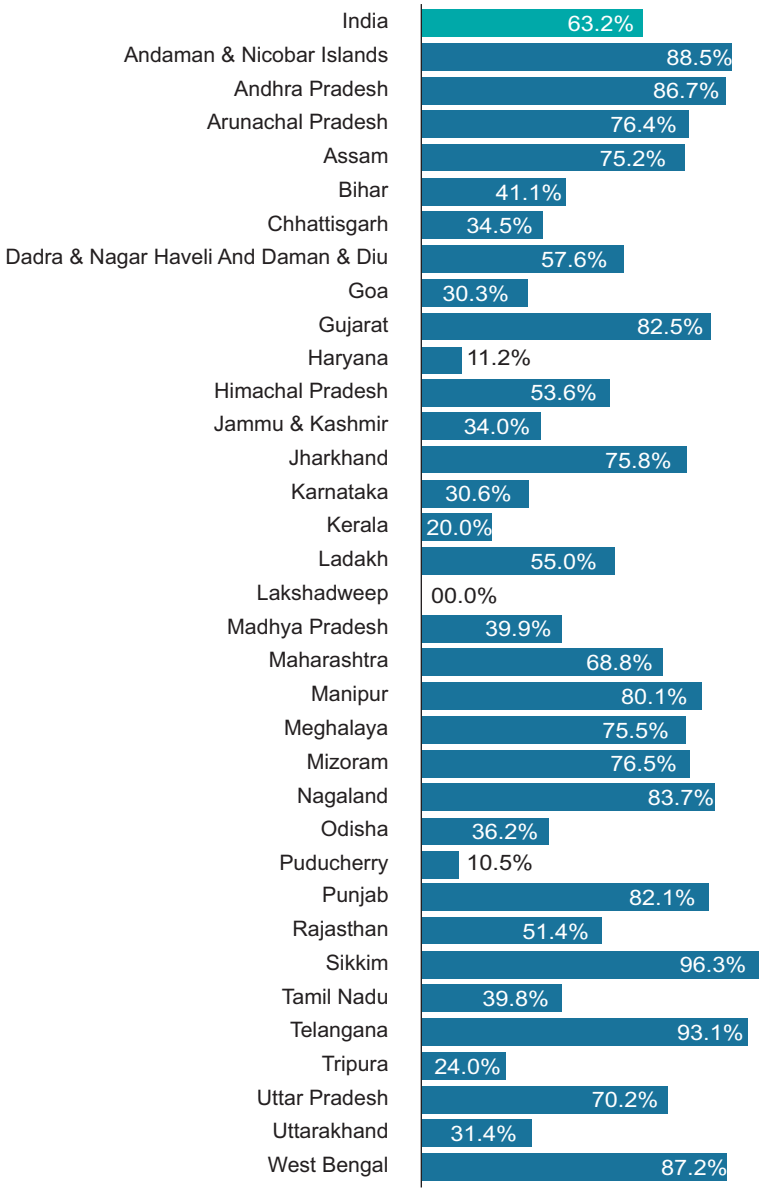


Figure 41: VWSC Having Bank Accounts– State-Wise



4.9.3. Availability of Skilled Manpower in the Village for O&M

According to JJM operational guidelines, villages should have skilled manpower available for operation and maintenance and 58.1% villages were found to have skilled manpower deployed. Notable States and UTs like Lakshadweep, D&NH and D&D and Puducherry report near-universal availability (93-100%), while several States, including Telangana (91%), Gujarat (89.8%), report high availability of manpower.

Figure 42: Availability of Skilled Manpower in the Village for O&M

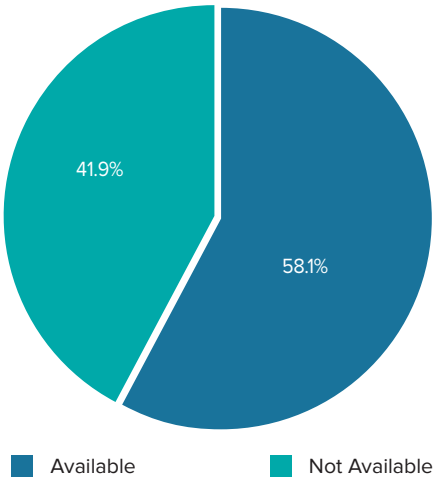
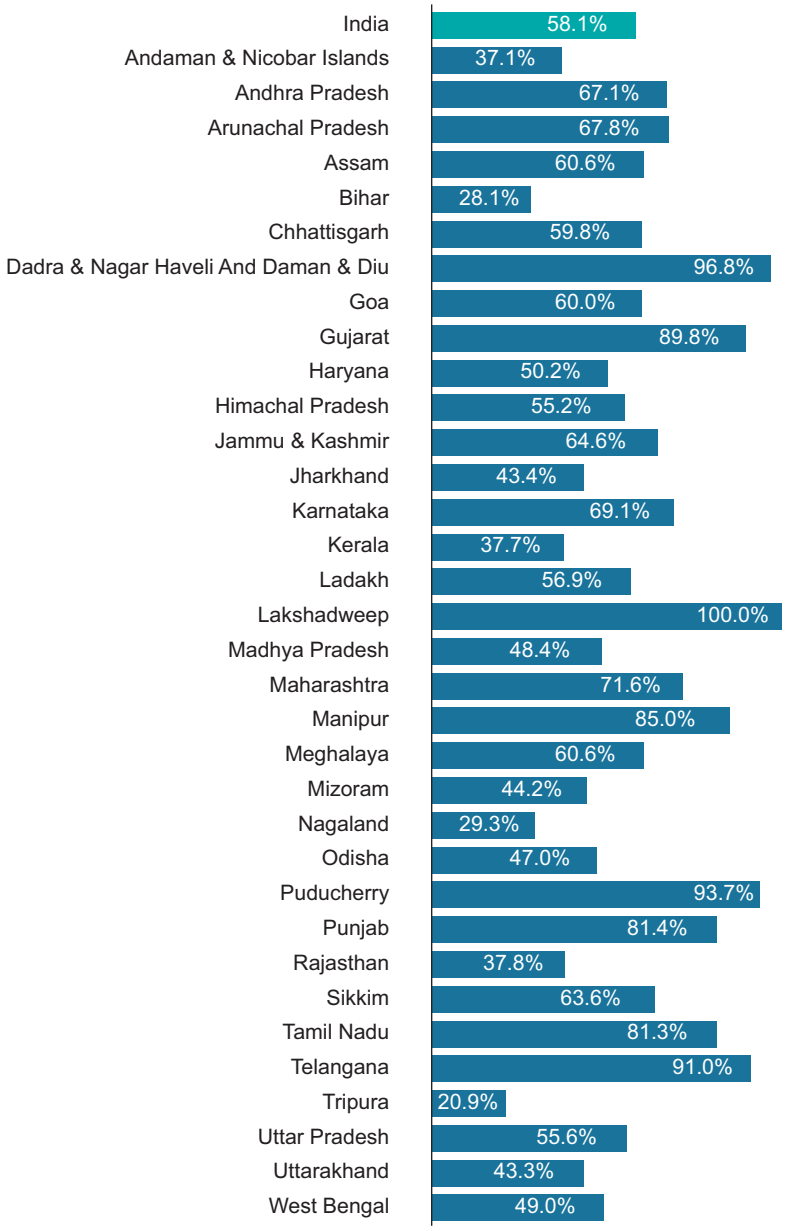


Figure 43: Availability of Skilled Manpower in the Village for O&M– State-Wise



4.9.4. Availability of FTKs (Field Testing Kits) in the Village

As per the JJM operational guidelines the members of the VWSC should have FTKs available with them to check the quality of water periodically in the village. 27.2% villages were found to have FTKs. Telangana has the highest availability of FTK (88.7%). Andhra Pradesh (67.3%), Jharkhand (65.3%) and Tamil Nadu (63.9%) also have relatively high FTK availability. The low national average of FTK availability raises concerns about the ability to effectively monitor water quality, especially given that the water quality passing percentage at household level is 76%.

Figure 44: Availability of FTKs in the Village

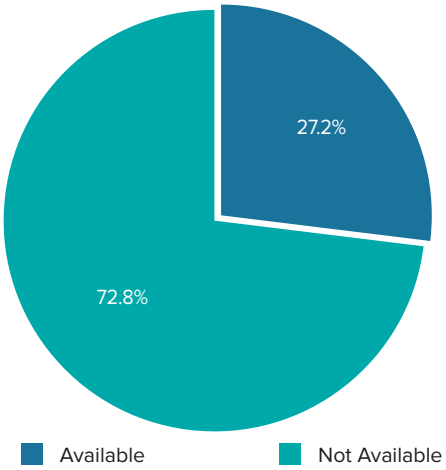
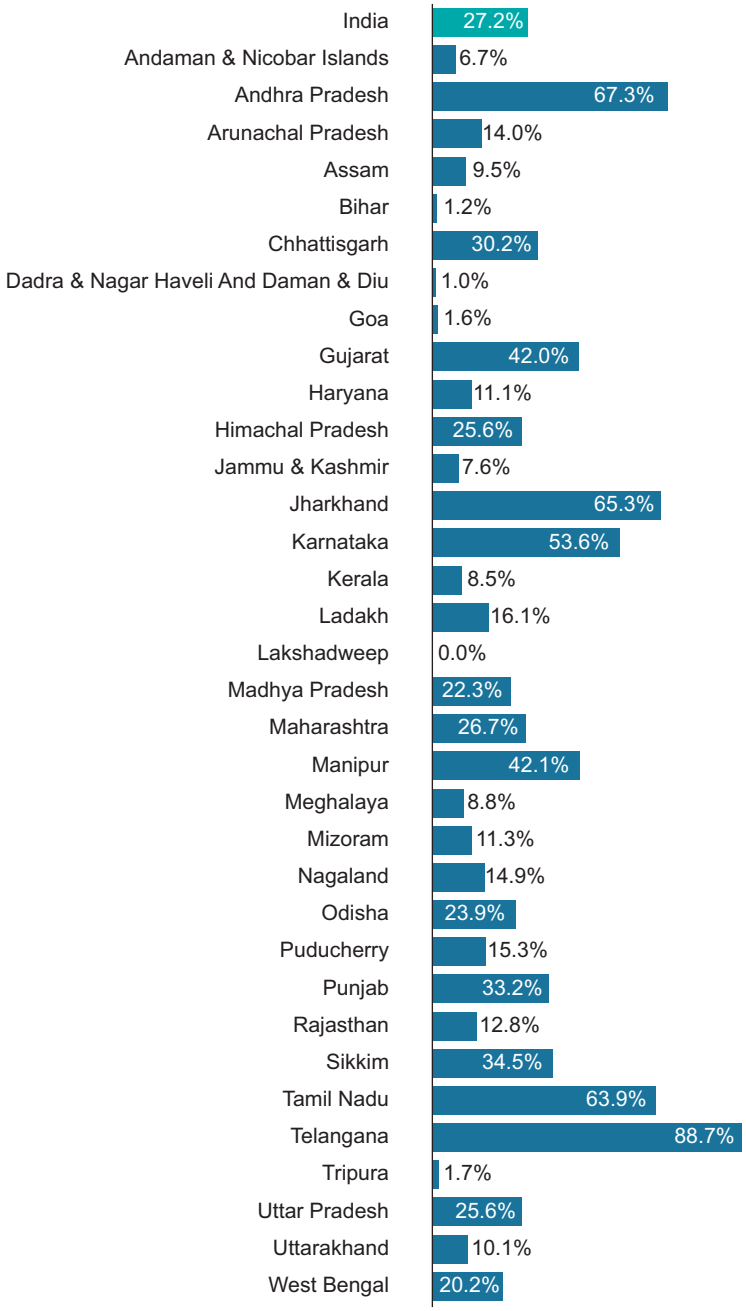


Figure 45: Availability of FTKs in the Village– State-Wise



4.9.5. Villages Levying Water Service Delivery Charges

According to JJM operational guidelines, villages decide on a user charge for water service delivery through a gram sabha resolution. Only 26.8% of the villages are levying water service delivery charges.

Figure 46: Villages Levying Water Service Delivery Charges

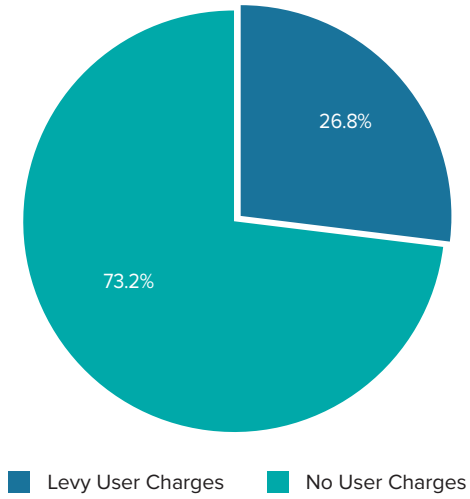
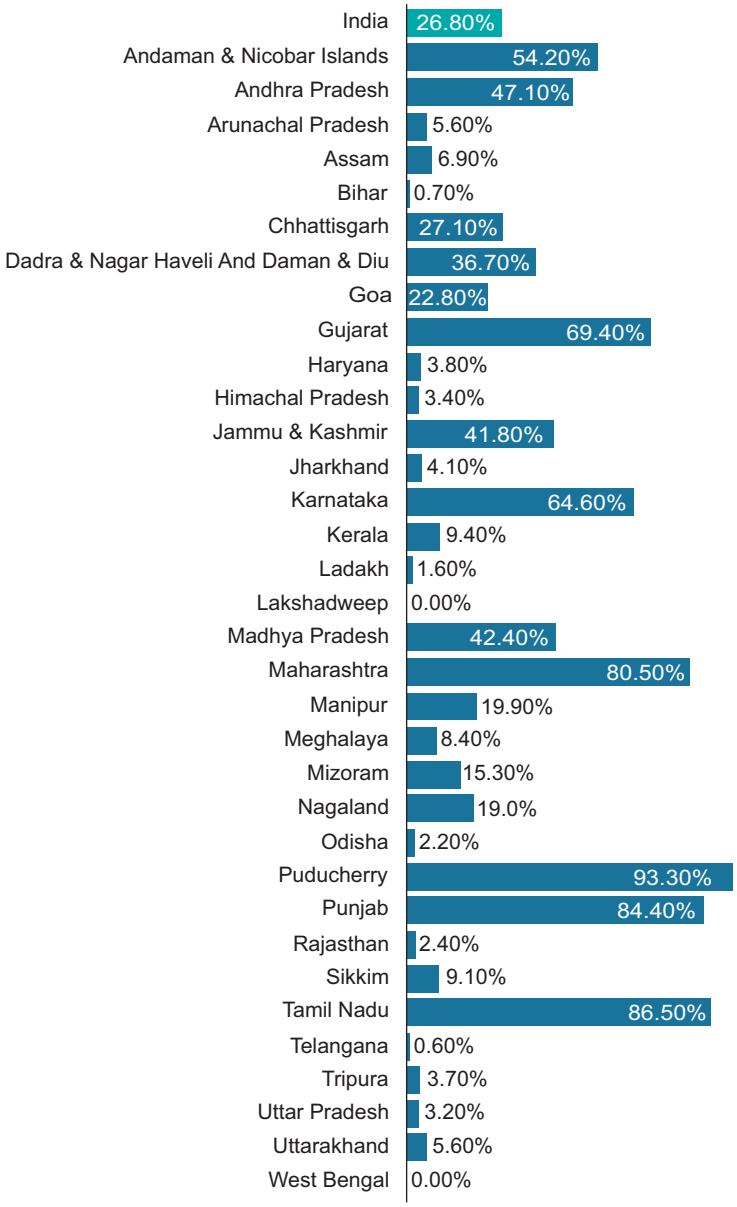


Figure 47: Villages Levying Water Service Delivery Charges– State-Wise



4.9.6. Household Satisfaction with Grievance Redressal Mechanism

Grievance redressal is an important aspect of O&M, and villages, blocks, or districts typically have institutional arrangements for this purpose. The respondents in the households were asked if they were satisfied with the existing mechanism. 82.9% of households reported that they are satisfied with the grievance redressal mechanism.

Figure 48: Households Satisfied with Grievance Redressal Mechanism

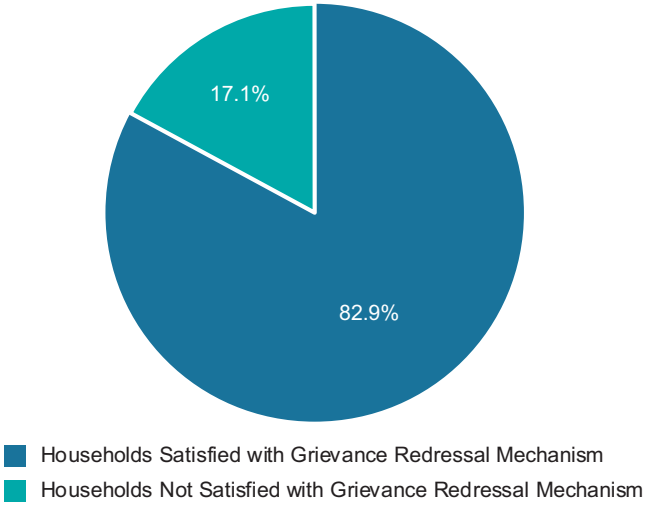
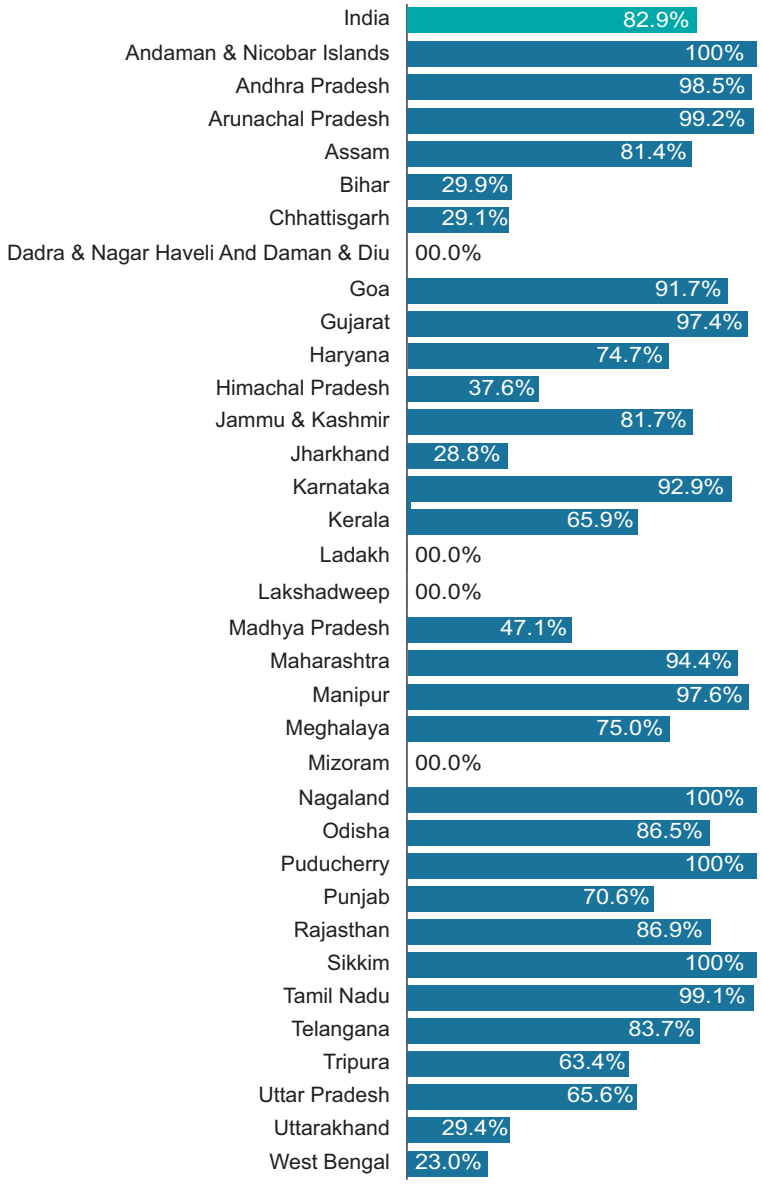


Figure 49: Households Satisfied with Grievance Redressal Mechanism– State-Wise



4.9.7. Availability of Chlorination Mechanism in the Village

Chlorination is a crucial water treatment method to disinfect water and kill harmful bacteria and viruses, ensuring safe drinking water under the Jal Jeevan Mission. Villages are mandated to adopt chlorination to provide safe drinking water to households. Chlorination mechanisms are available in 70.3% of villages. Puducherry and Tamil Nadu report 100% availability, followed closely by Andhra Pradesh (97.4%) and Telangana (96.5%).

Figure 50: Availability of Chlorination Mechanism in the Village

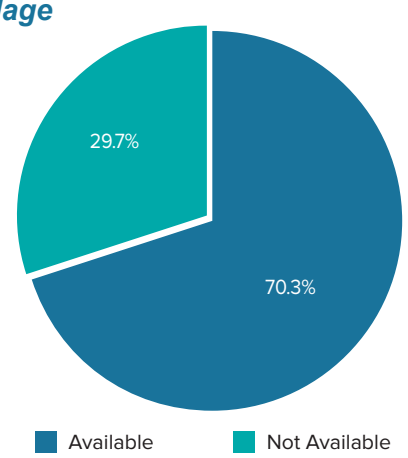
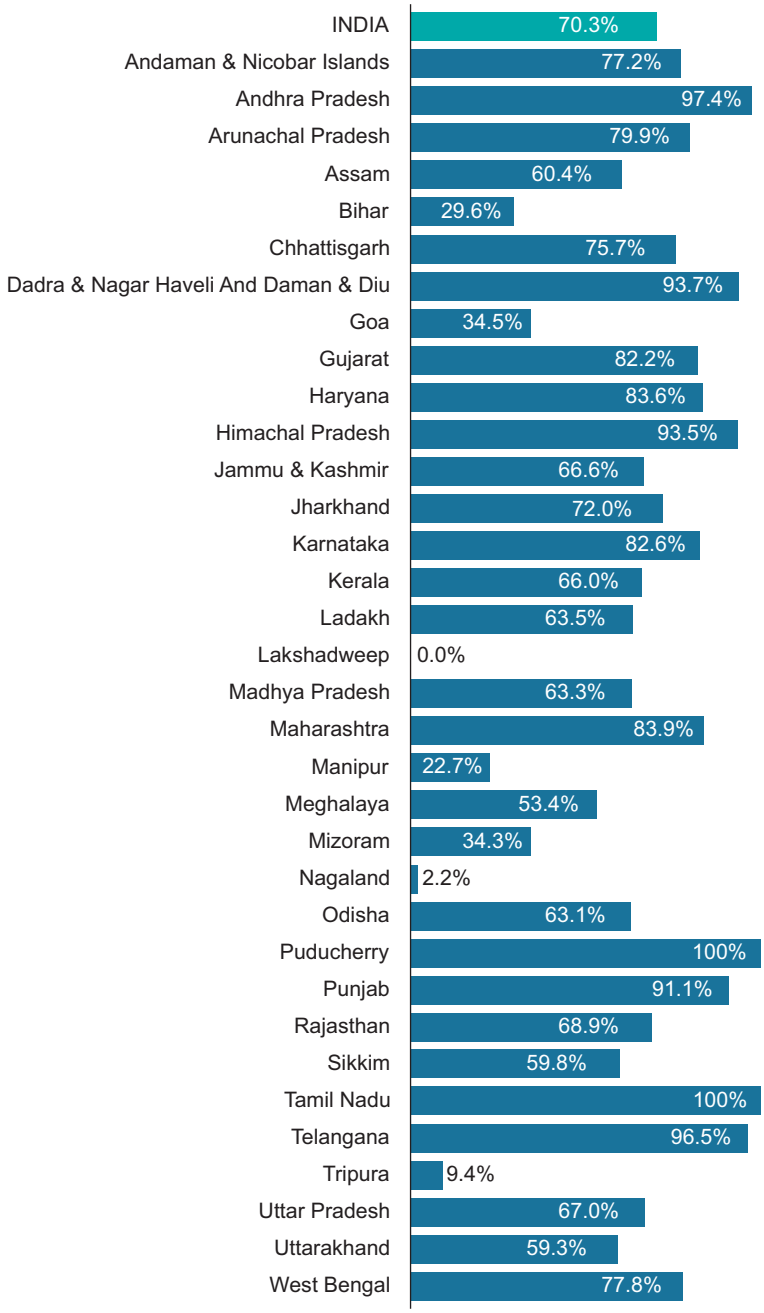


Figure 51: Availability of Chlorination Mechanism in the Village– State-Wise



4.9.8. Signage and IEC Messages for Water Conservation

62.4% of households reported seeing signages or Information, Education, and Communication (IEC) messages on water conservation. Puducherry (98.3%), Gujarat (97%) have the highest reported exposure. While the Jal Jeevan Mission focuses on infrastructure development, IEC messages are crucial for promoting responsible water use and ensuring long-term water security.

Figure 52: Households Exposure to Signage and IEC Messages

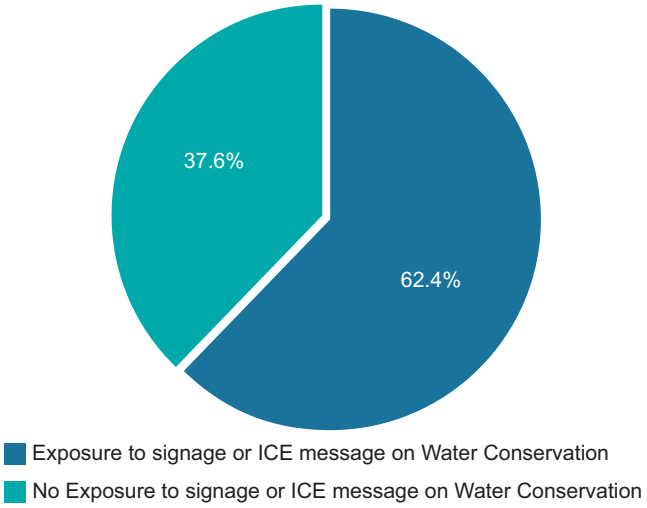
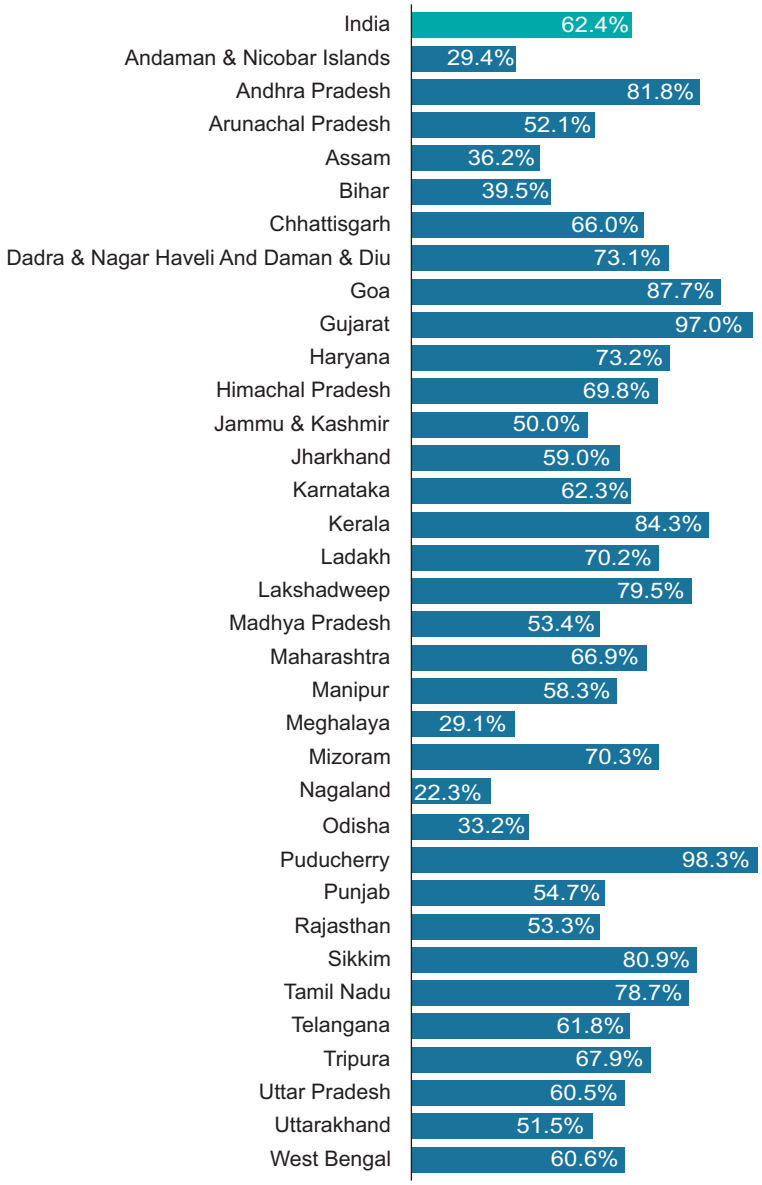


Figure 53: Household's Exposure to Signage and IEC Messages– State-Wise



4.10. Water Supply at Village Level

4.10.1. Availability of Piped Water Schemes in the Villages

In each surveyed village, the availability of a piped water scheme was determined through interviews with the village sarpanch or mukhiya. The details of the schemes were also ascertained. In the 19,401 villages that were surveyed, 98.8% villages had piped water scheme. In Andaman, Manipur, Goa, Chhattisgarh, Dadar Nagar Haveli and Daman and Diu, Ladakh, Jammu & Kashmir, Lakshadweep, Meghalaya, Puducherry, Sikkim, Tamil Nadu and Tripura, all villages that were surveyed has a piped water scheme.

Figure 54: Availability of Piped Water Scheme in the Village

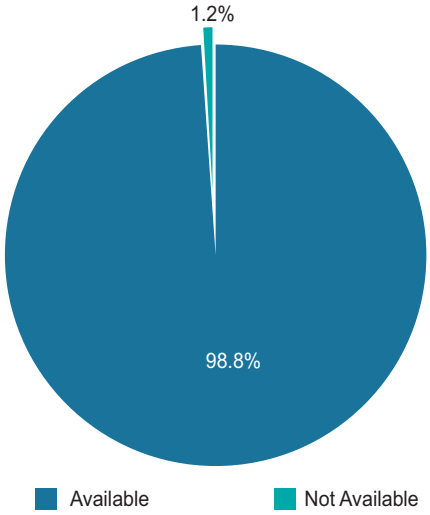
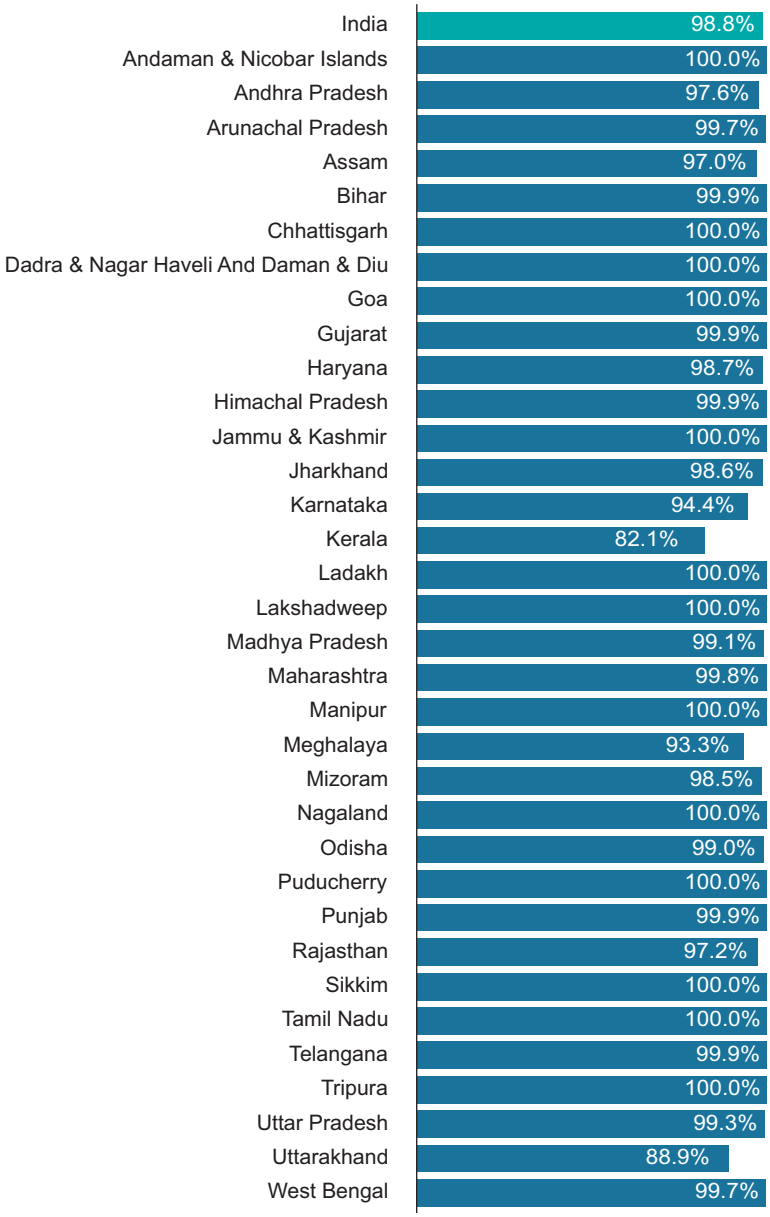


Figure 55: Availability of Piped Water Scheme in the Villages– State-Wise



4.10.2. Functionality of Piped Water Schemes in the Villages

All villages that reported availability of piped water schemes in the village were further asked about the functionality of the scheme. If the sarpanch or mukhiya said that the scheme was functional, the village infrastructure was observed and assessed if the water was being supplied or not. On the day of survey 84.8% of the schemes were found functional.

Figure 56: Functionality of Piped Water Schemes in the Villages

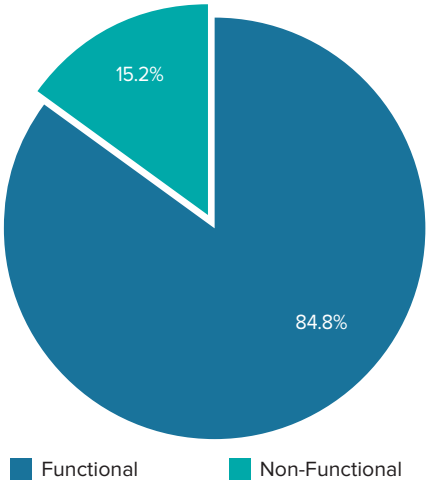
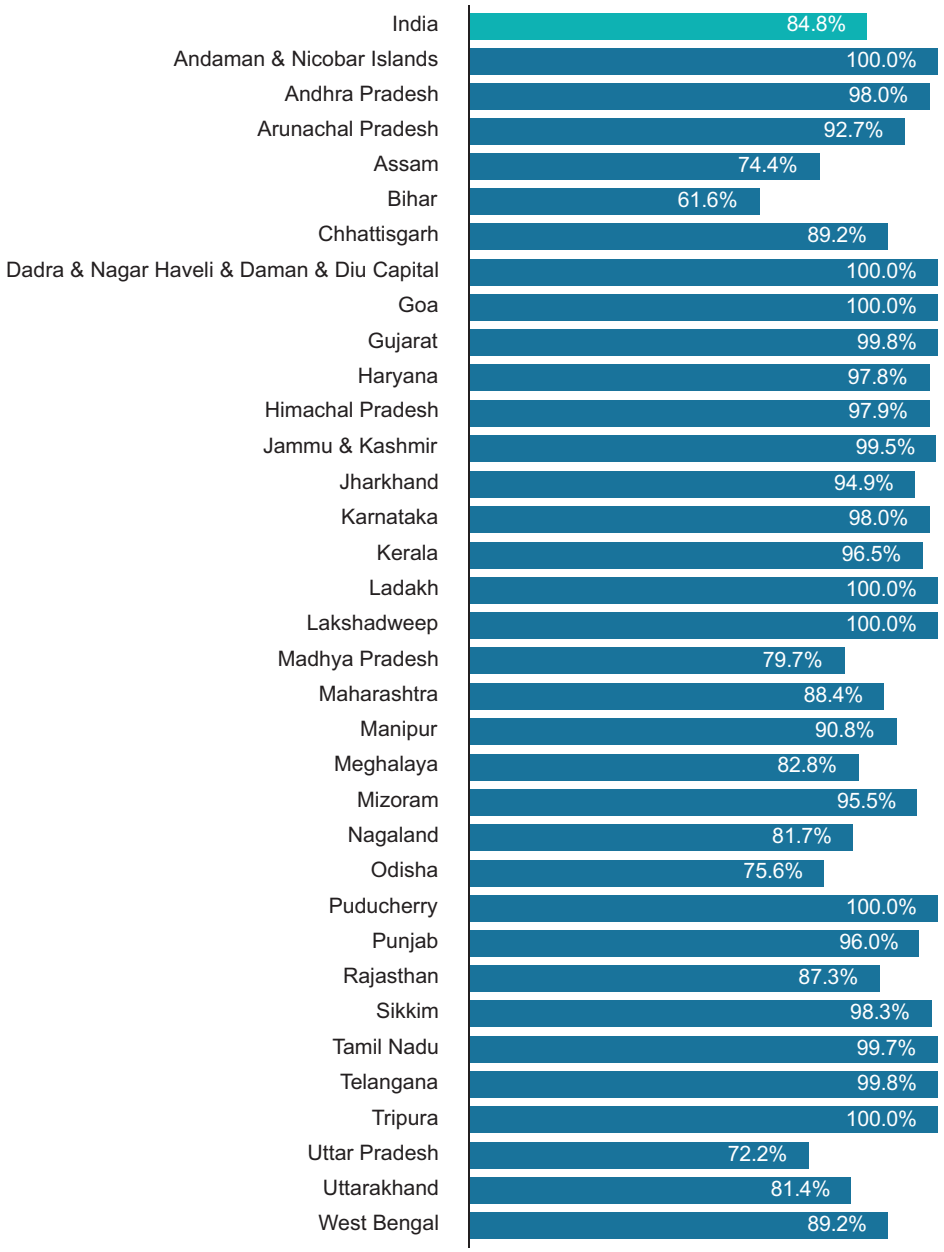


Figure 57: Functionality of Piped Water Scheme in the Villages– State-Wise



4.10.3. Quality of Water Supplied from the Source (Water Quality)

Samples were collected from all PWS sources/schemes from the village and tested for chemical parameters in NABL labs. For all the chemical parameters and their permissible range refer Water Quality Parameters: Acceptable and Permissible Limits in the glossary section. 80.9% of the water supplied from the source passed in all the chemical parameters.

Figure 58: Water Samples Passed for the Samples Collected at Source

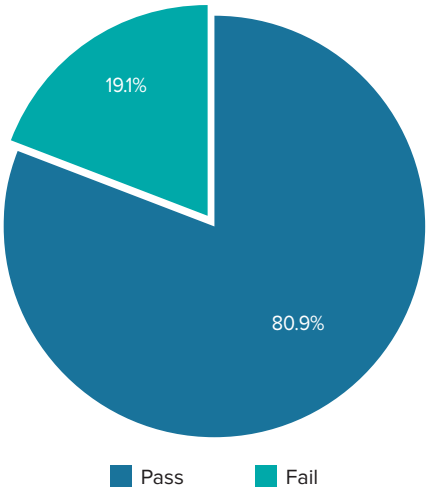
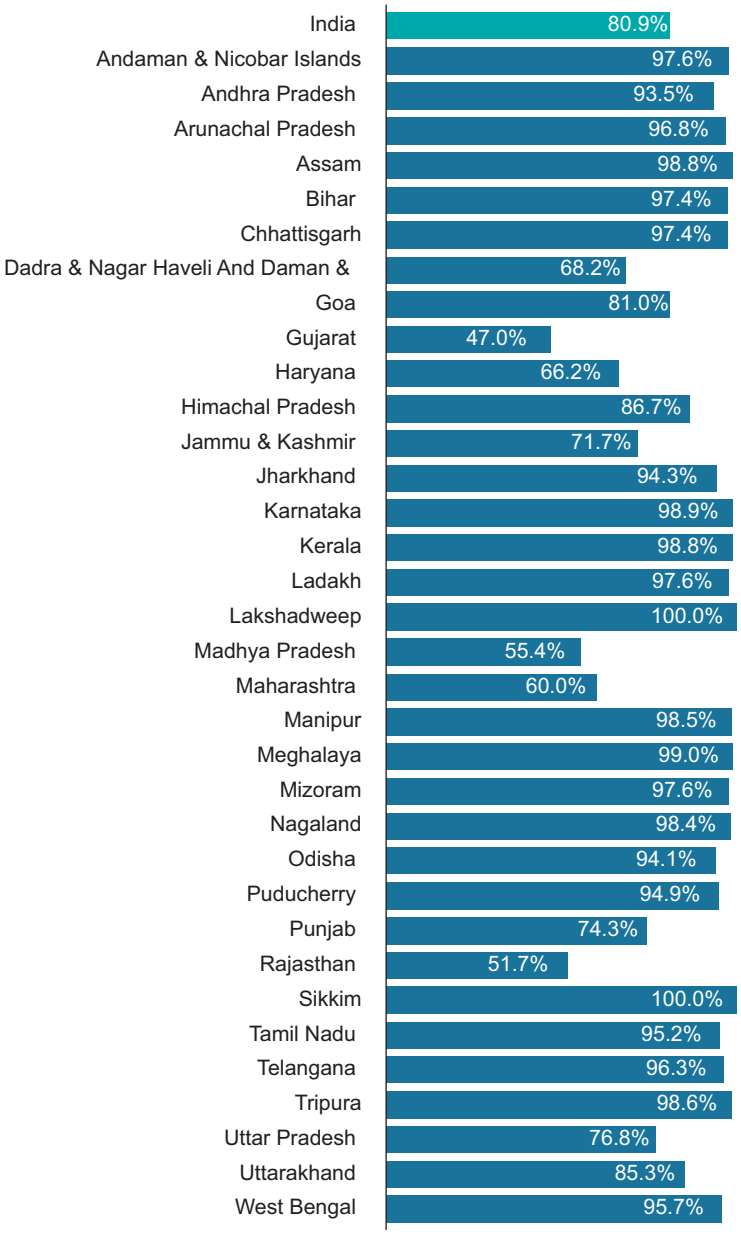


Figure 59: Water Samples Passed for Samples Collected at Source– State-Wise



4.10.4. Quantity of Water Supplied at Village (≥55 LPCD)

In order to measure the flow rate at sources at village level, we used flow meter and checked the reading. In cases where flowmeter was not available at sources, flowmeter was carried to check the flow rate. Based on above measurement, it was found that in 84.6% villages the water supply was more than equal to 55 LPCD.

Figure 60: Quantity of Water Supplied at Village

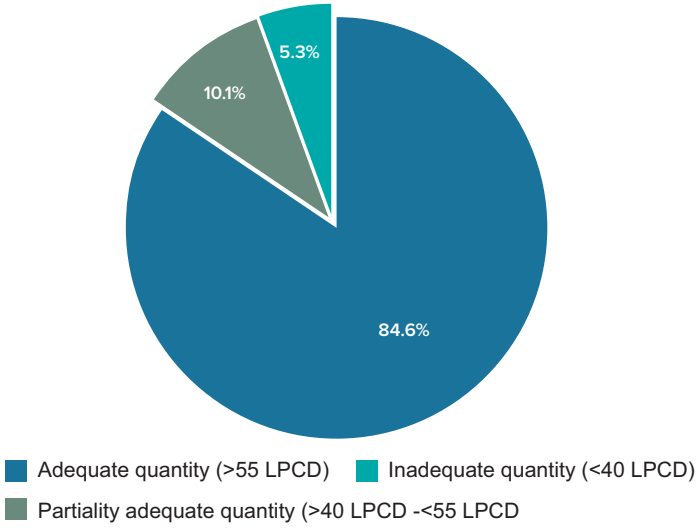
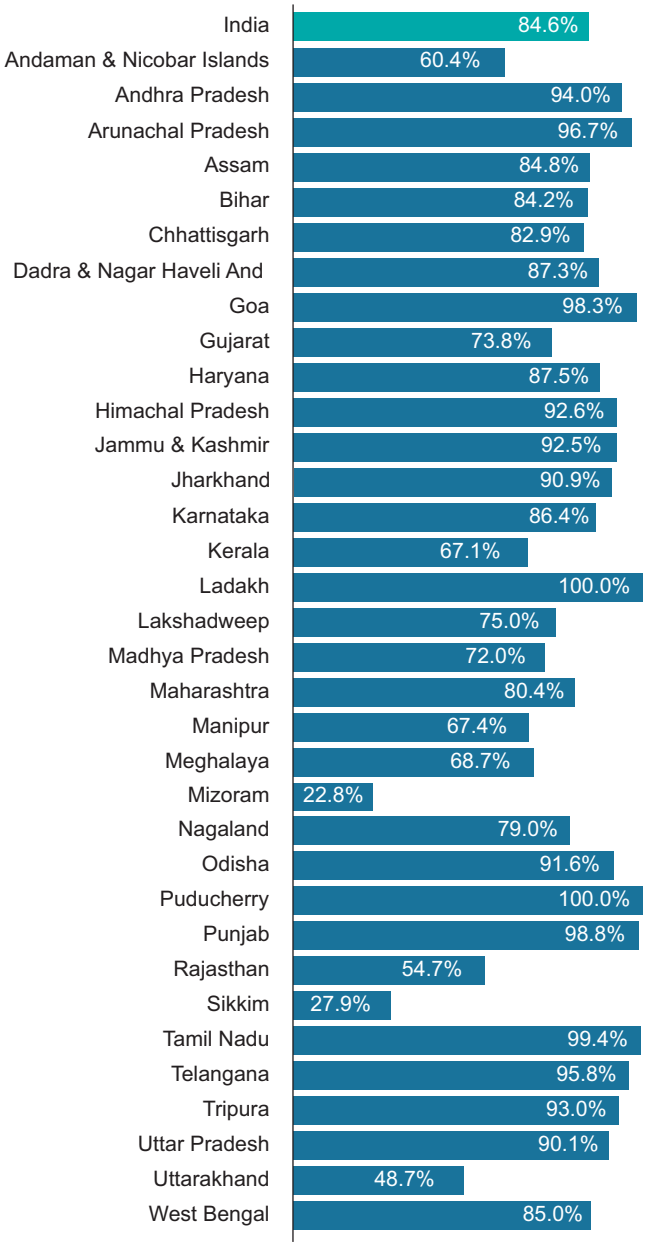


Figure 61: Quantity of Water Supplied (≥55 LPCD) at Village Level– State-Wise



4.11. Findings for Public Institutions

4.11.1. Availability of Tap Water Connections at Public Institution

Nationally, 68% of public institutions have tap connections. The State-wise data has wide variation. Puducherry have 100% availability of tap connection at Public Institution. Sikkim (99.7%) and Tamil Nadu (99.2%).

Figure 62: Availability of Tap Connection at Public Institutions

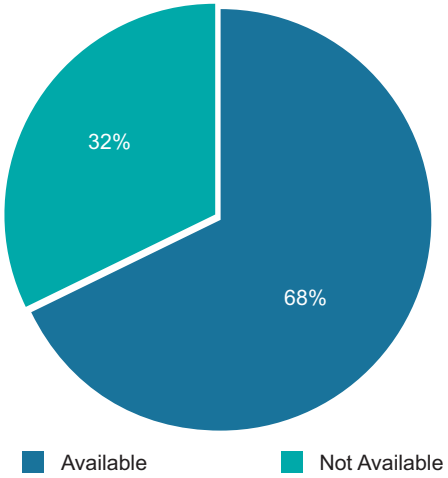


Figure 63: Percentage of Public Institutions with Tap Connections

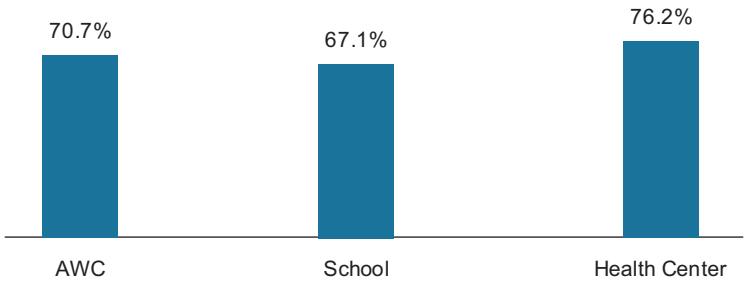
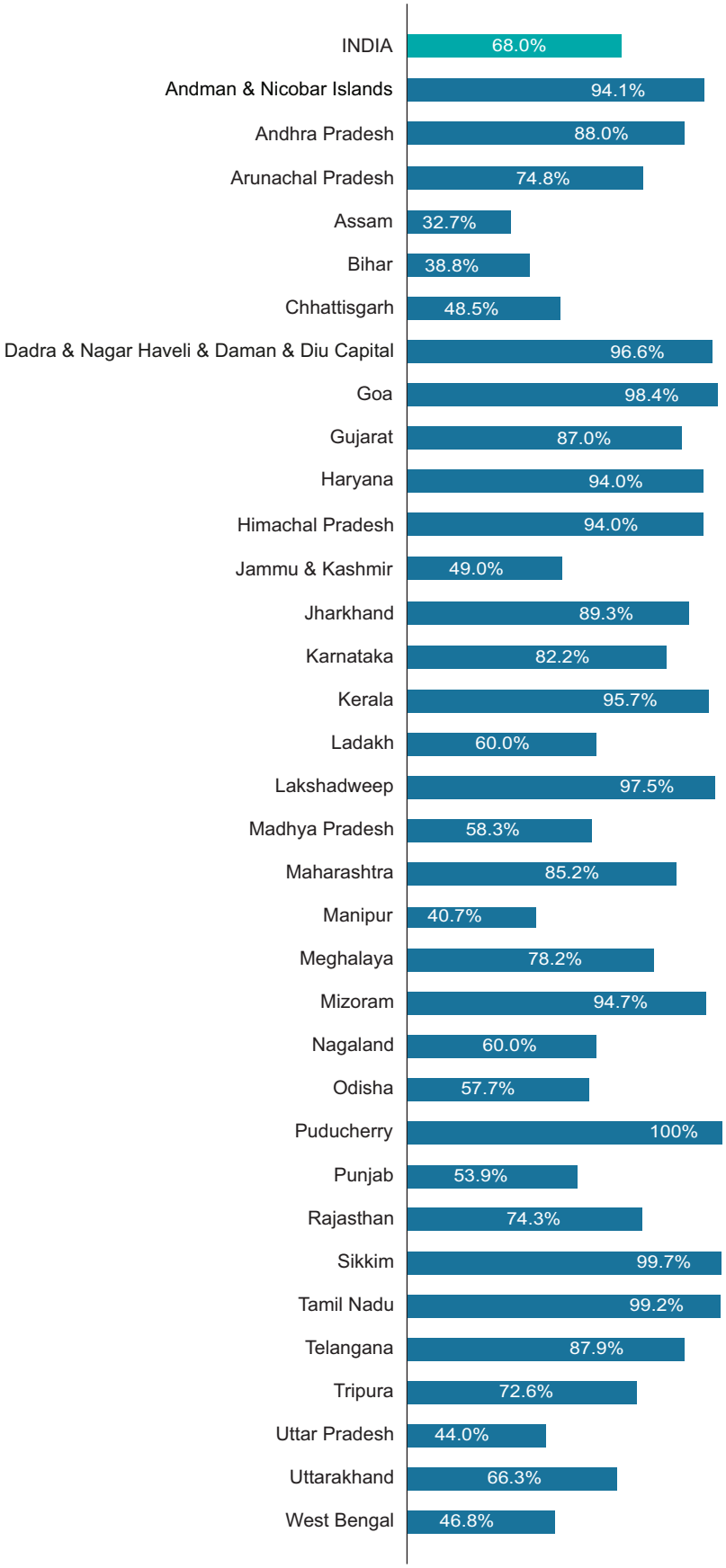


Figure 64: Availability of Tap Connection at Public Institutions State-Wise



4.11.2. Percentage of Public Institutions Meeting Microbiological Quality Standards

Nationally, 72.8% of institutions passed in microbiological parameters. Ladakh (97.7%), Uttarakhand (90.7%), and Himachal Pradesh (89.5%) are the highest performing States, while D&NH and D&D has the lowest passing percentage.

Figure 65: Percentage of Public Institution Passing in Microbiological Parameters

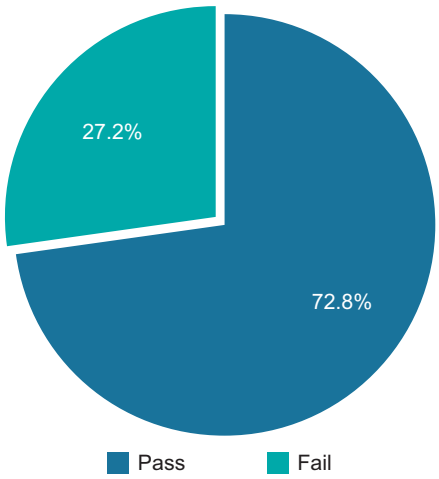
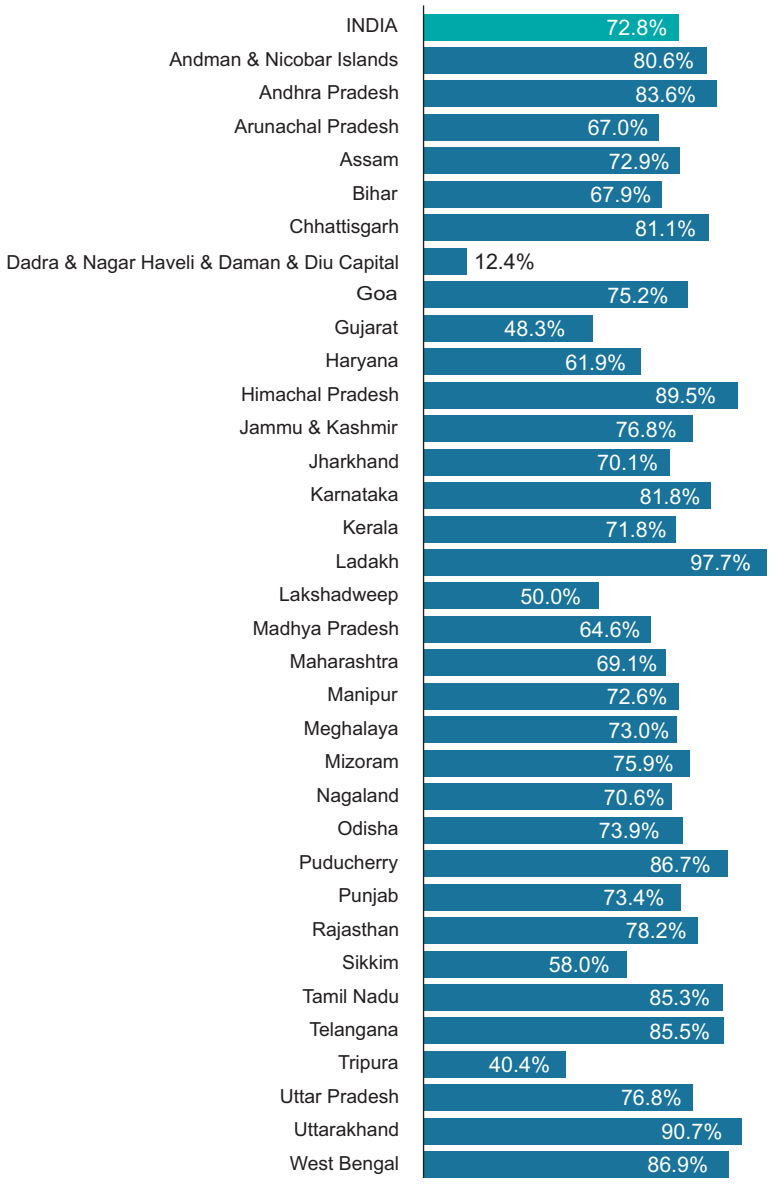


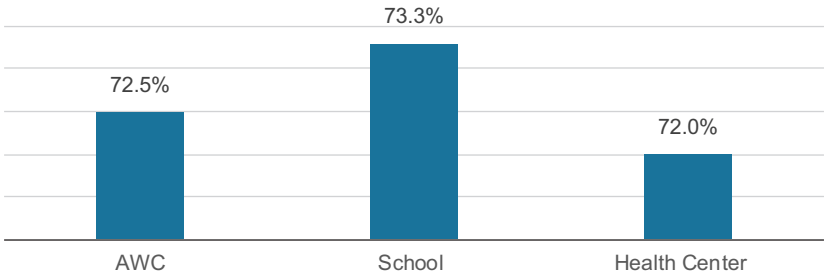
Figure 66: Percentage of Public Institution Passing in Microbiological Parameters State-Wise



4.11.3. Percentage of Public Institutions Passing by type in Quality Assessment

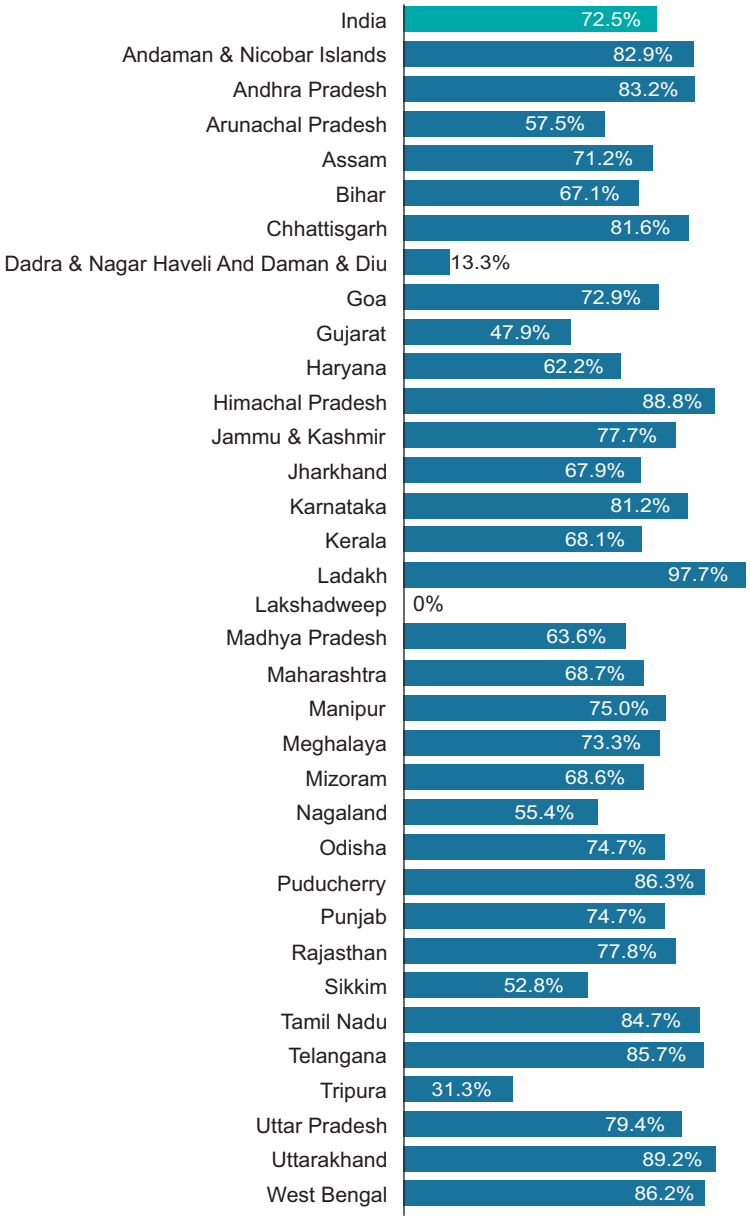
Water samples collected from public institutions were tested for quality parameters (microbiological) and the percentage of sample passed at the national level is - 72.5% AWC Centres, 73.3% Schools and 72.0% health centres.

Figure 67: Percentage of Public Institutions Passing in Microbiological Parameters



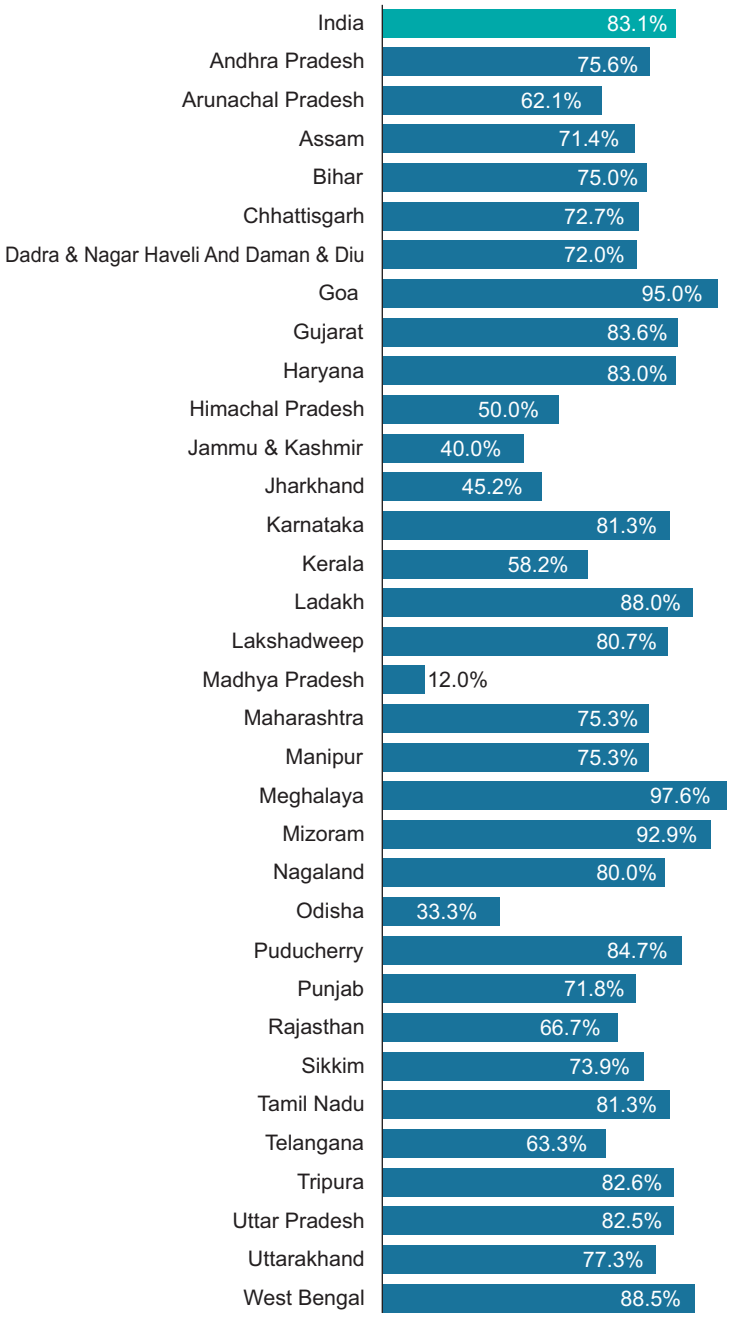
In Ladakh, Uttarakhand and Himachal Pradesh maximum number of Anganwadi's passed the microbiological test carried out on the sample water sample collected.

Figure 68: Percentage of AWC Passed the Microbiological Test – State-Wise



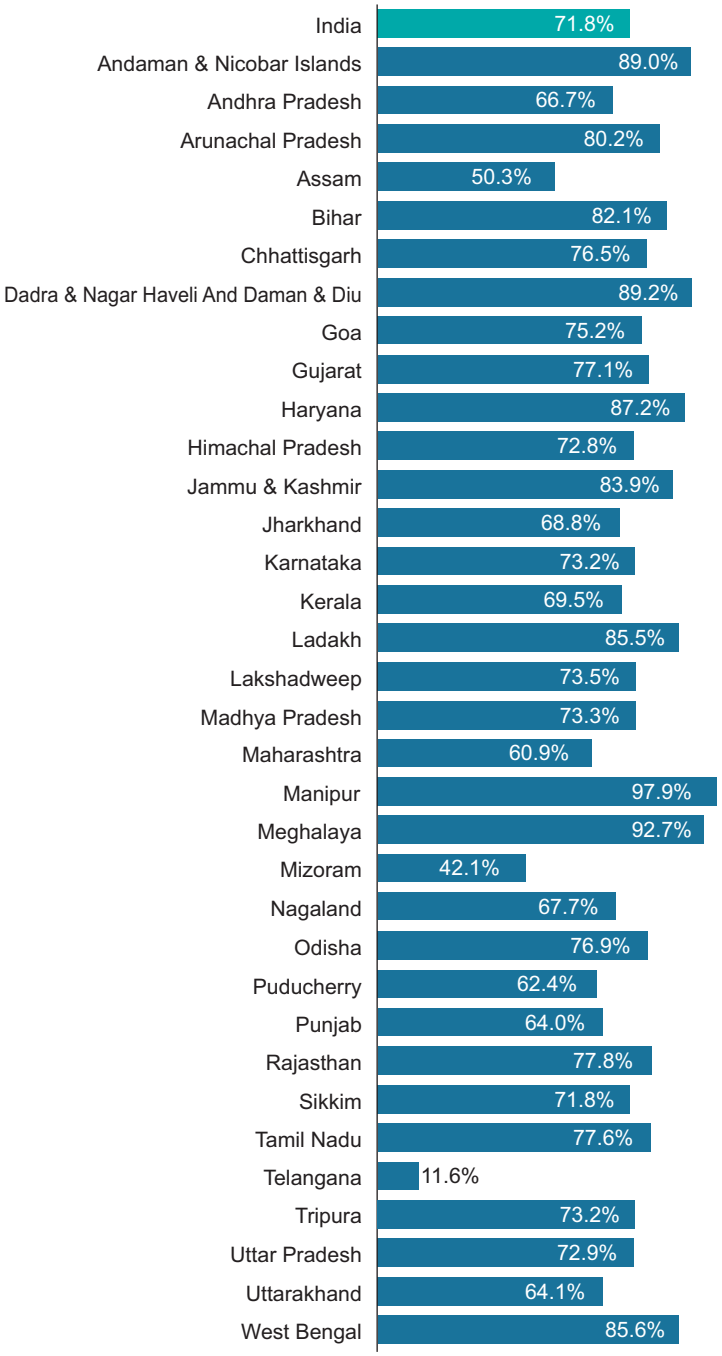
In Meghalaya, Goa and Mizoram maximum number of health centres passed the microbiological test carried out on the sample water sample collected.

Figure 69: Percentage of Health Centre Passed Microbiological Test– State-Wise



In Meghalaya, Dadara & Nagar Haveli and Andaman & Nicobar Islands maximum number of schools passed the microbiological test carried out on the sample water sample collected.

Figure 70: Percentage of School Passed the Microbiological Tests– State-Wise



5
CHAPTER

Functionality Assessment of Household Tap Connections: JE-AES Districts

CHAPTER 5

Functionality Assessment of Household Tap Connections: JE-AES Districts

The Jal Jeevan Mission has prioritized providing tap water to areas affected by Japanese Encephalitis and Acute Encephalitis Syndrome (JE-AES) Districts. There are five States with JE-AES districts and the survey findings of these 60 districts in five states are being presented here. The findings are from 1830 villages and 21,951 households.

5.1. Availability of Tap Water Connection at Households. (Excluding Private tap connection)

The Jal Jeevan Mission has significantly improved access to tap water in JE-AES affected districts across five States. In India, 96.5% of households in these districts have tap water connections. Tamil Nadu boasts 100% coverage Availability of tap water connection at household (Excluding private tap connection), representing the highest, while Uttar Pradesh has the lowest coverage at 94.5%.

Figure 71: Availability of Tap Water Connection at Household (Excluding Private Tap Connection)

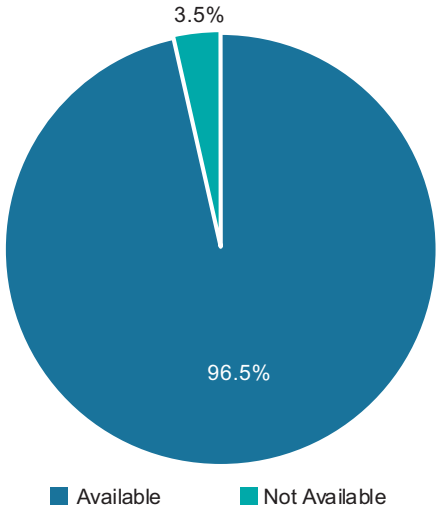
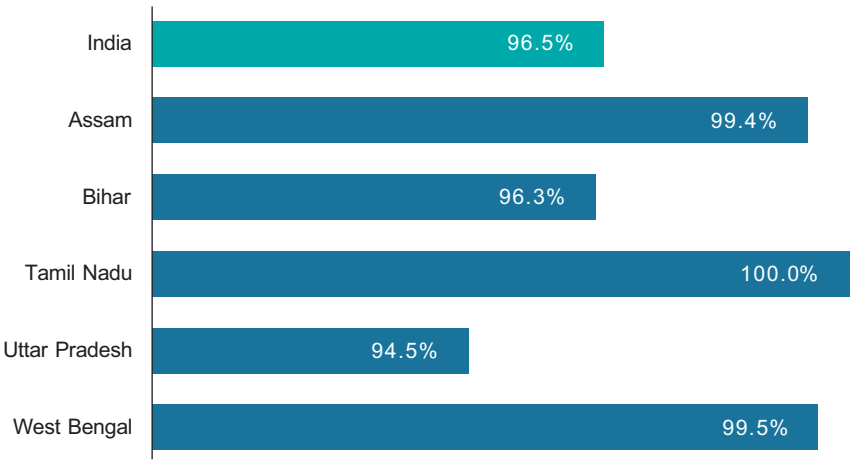


Figure 72: Availability of Tap Water Connection at Household (Excluding Private Tap Connection)– State-Wise



5.2. Availability of Working Tap Water Connection at Households

The data shows that 66.8% of households in JE-AES affected districts across five States have working tap water connections. Tamil Nadu has the highest percentage of households with working tap connections at 99.9%, while Bihar has the lowest at 61.5%.

Figure 73: Availability of Working Tap Connection at Households

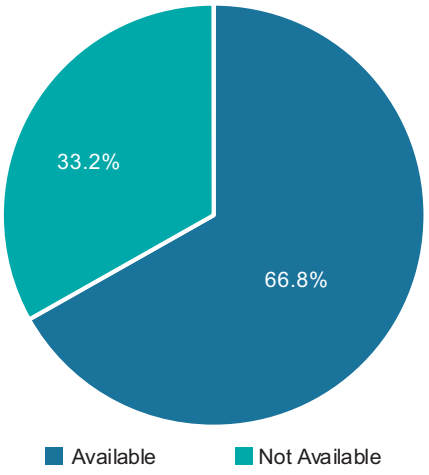
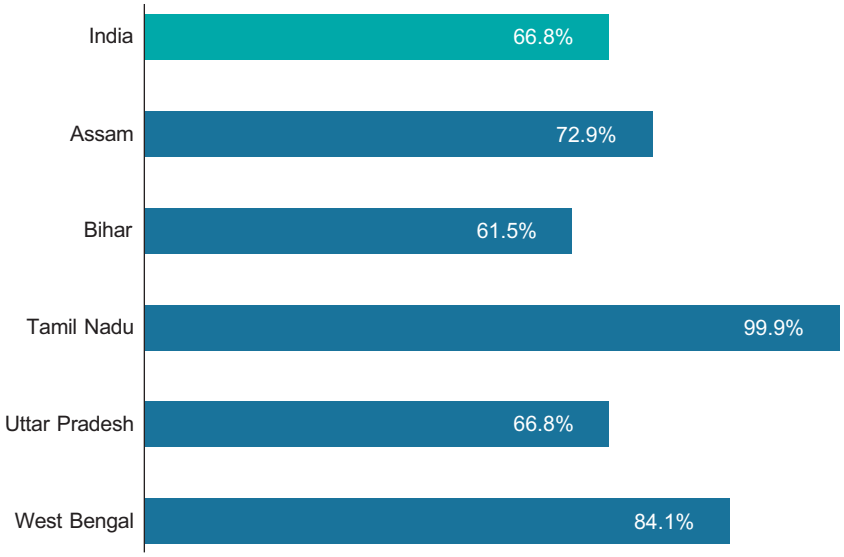


Figure 74: Availability of Working Tap Connection at Households– State-Wise



5. 3. Regularity of Water Supplied to Households

The data reveals that 65% of households in Japanese Encephalitis - Acute Encephalitis Syndrome (JE-AES) affected districts across five States have regular access to water supply. Tamil Nadu reports the highest regularity at 96.3%, while Bihar experiences the lowest at 59.4%.

Figure 75: Regularity of Water Supplied at Households

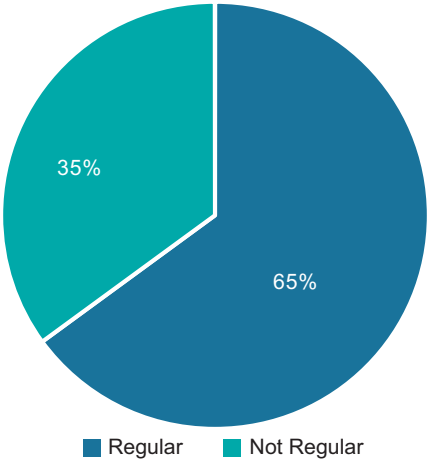
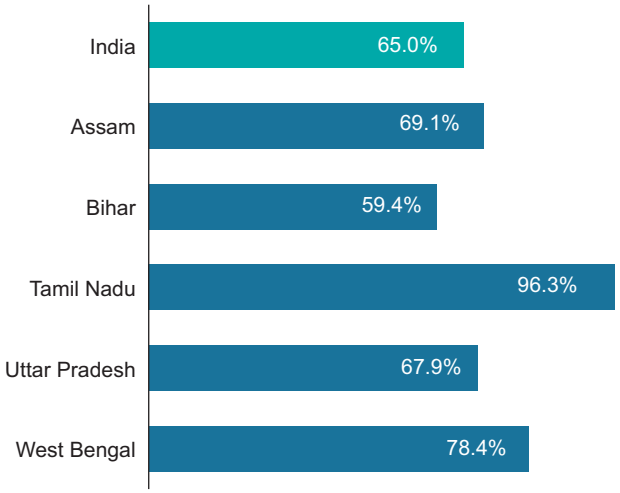


Figure 76: Regularity of Water Supplied at Households– State-Wise



5.4. Quantity of Water Supplied at Households (≥55 LPCD)

Water supply regularity is at 96.3% overall, with Tamil Nadu at 96.7% and Assam at 94.2%. Encouragingly, 96.3% of households receive at least 55 liters per capita per day. This data highlights the success of JJM initiatives.

Figure 77: Quantity of Water Supplied at Households

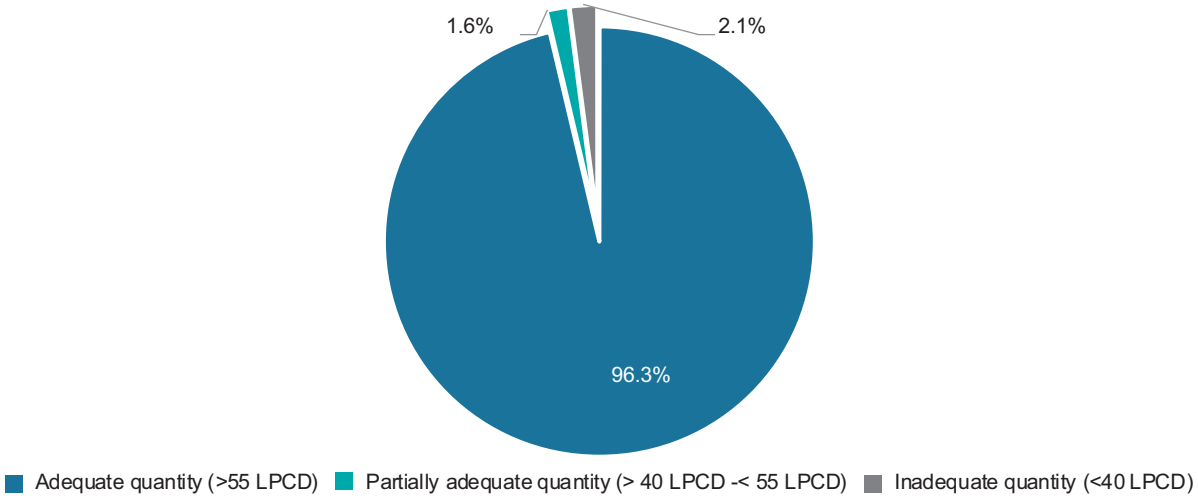
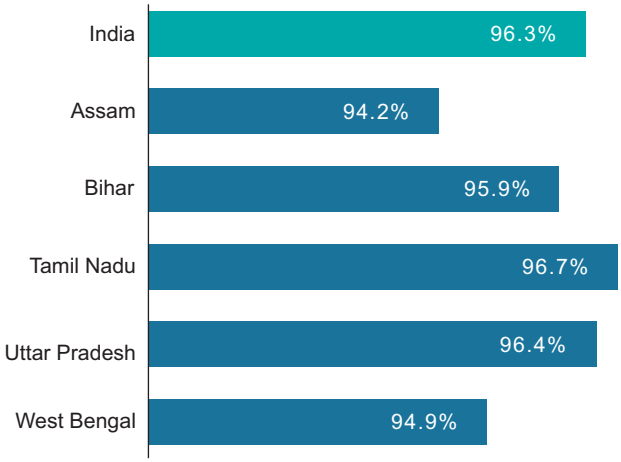


Figure 78: Quantity of Water Supplied at Households– State-Wise



5.5. Quality of Water Supplied

5.5.1. Quality of Water Supplied at Households

The overall household water quality in India is 80.2%. Examining the quality of water supplied to households in JE-AES States, Bihar, and West Bengal all have above 82% pass household water quality. Assam has a 68% pass household water quality, while Uttar Pradesh has a 68.3%.

Figure 79: Percentage of Households Water Samples Passed the Quality Test

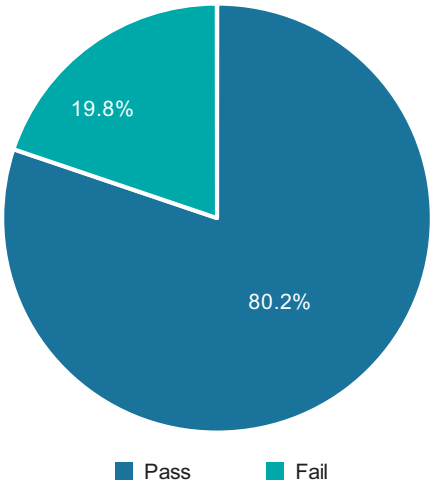
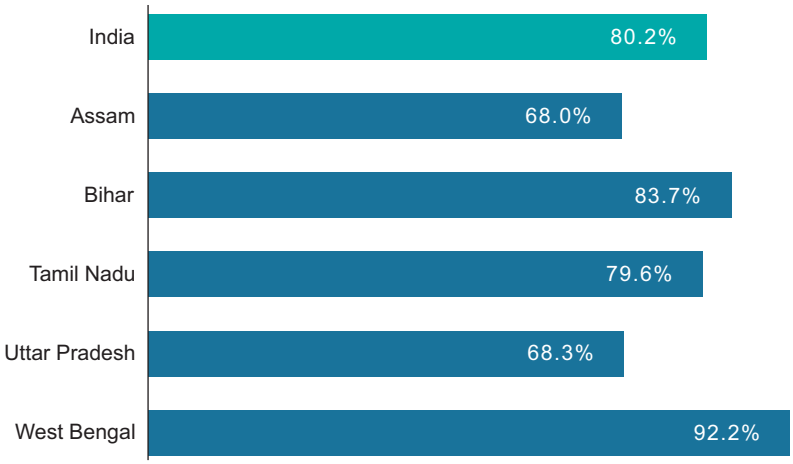


Figure 80: Percentage of Households Water Samples Passed the Quality Test– State-Wise



5.5.2 Quality of Water Supplied at Source

The source water quality in India is 94.7%. Examining the source of water passing in JE-AES States, Bihar has the highest percentage passing at 98.6%, followed by Assam at 98.1%. West Bengal is at 96.3%, Tamil Nadu at 96.4%, and Uttar Pradesh at 83.1%. Factors affecting water quality can include the source of the water, age of plumbing, and seasonal changes.

Figure 81: Percentage of Water Sample Collected at Source Passed the Quality Test

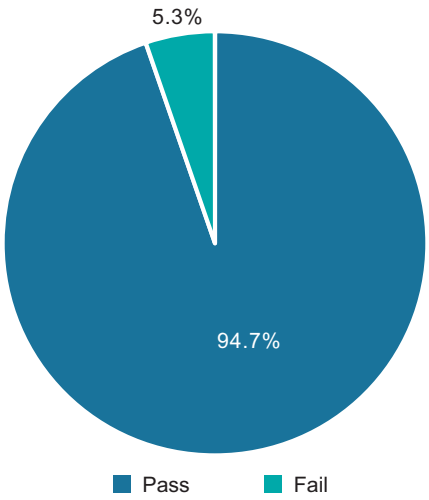


Figure 82: Percentage of Water Sample Collected at Source Passed the Quality Test– State-Wise

6
CHAPTER

Functionality Assessment of Household tap Connections: Aspirational Districts

CHAPTER 6

Functionality Assessment of Household tap Connections: Aspirational Districts

The Jal Jeevan Mission gives special emphasis to aspirational districts. There are 112 aspirational districts in the country and the survey was done in 111 districts covering 2,871 villages and 34,450 households across 26 States.

6.1. Availability of Tap Water Connection at Households (Excluding Private Tap Connection)

The overall availability of tap water connections at households, excluding private connections, in aspirational districts is 96.6%. All listed States, except for Bihar (94.9%) and Uttar Pradesh (91.9%), have over 95% tap water connection availability. Notably, Gujarat, Himachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tamil Nadu, Telangana and Tripura all report 100% availability.

Figure: 83 Availability of Tap Water Connection at Households (Excluding Private Tap Connection)

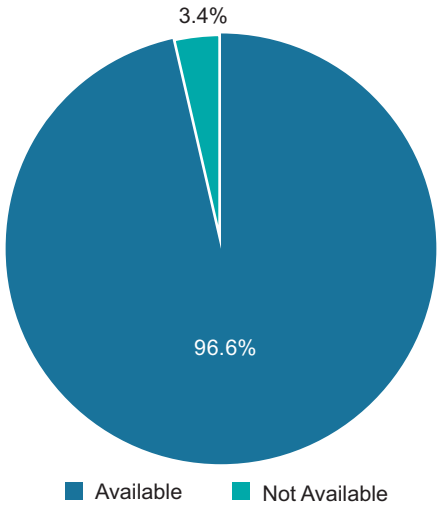
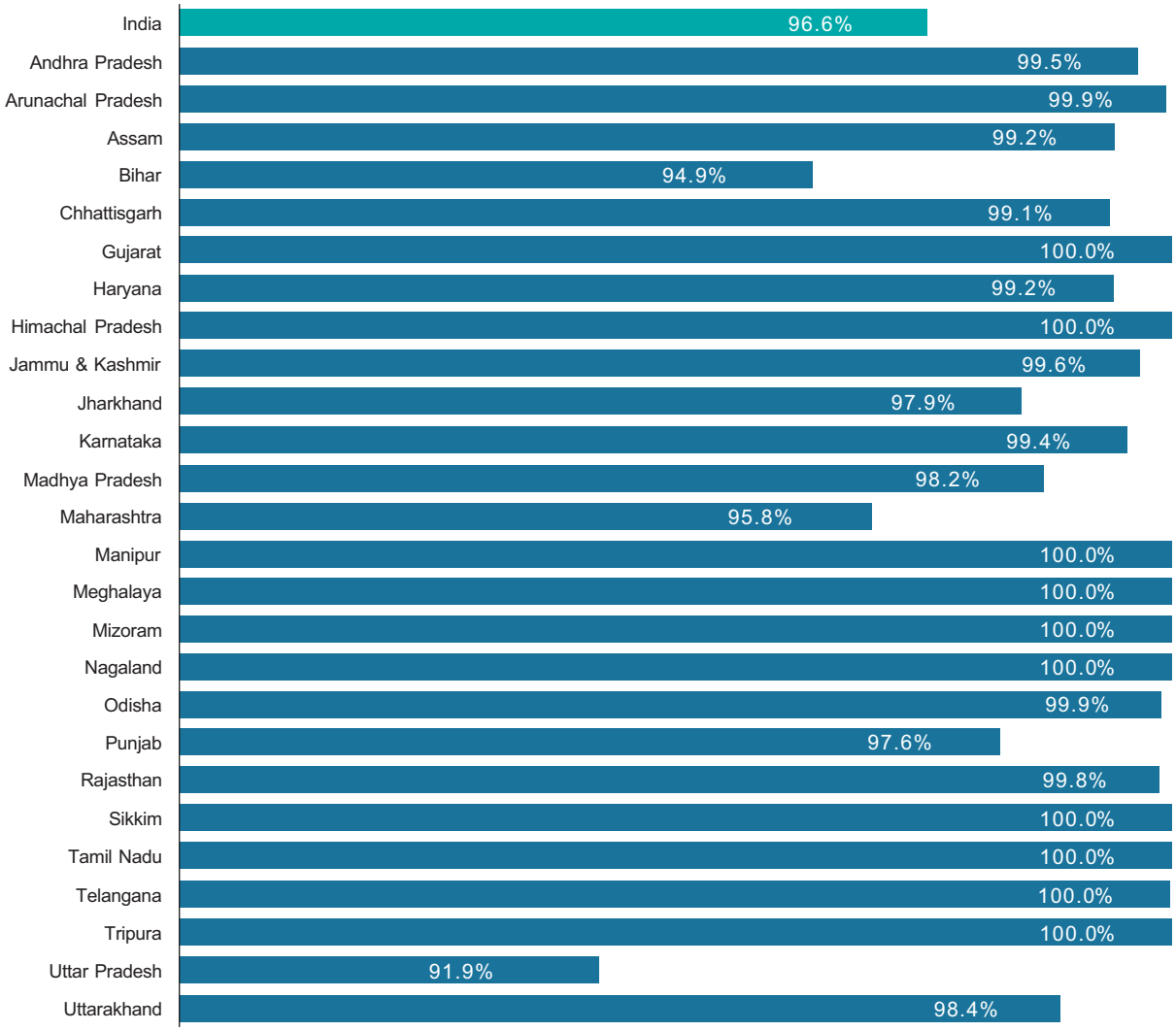


Figure: 84 Availability of Tap Water Connection at Households (Excluding Private Tap Connection)– State-Wise



6.2. Availability of Working Tap Water Connection at Households

The overall percentage of working tap connections in aspirational districts in India is 76.7%. Gujarat, Andhra Pradesh, Himachal Pradesh, Manipur, Sikkim, and Tamil Nadu all report 100% working tap connection. Uttar Pradesh has the lowest rate of working tap water connections at 54.7%.

Figure 85: Availability of Working Tap Connection at Households

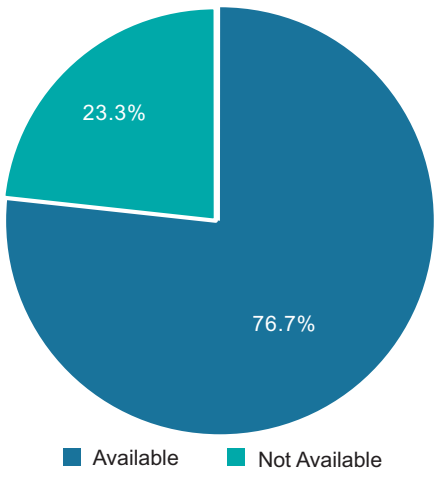
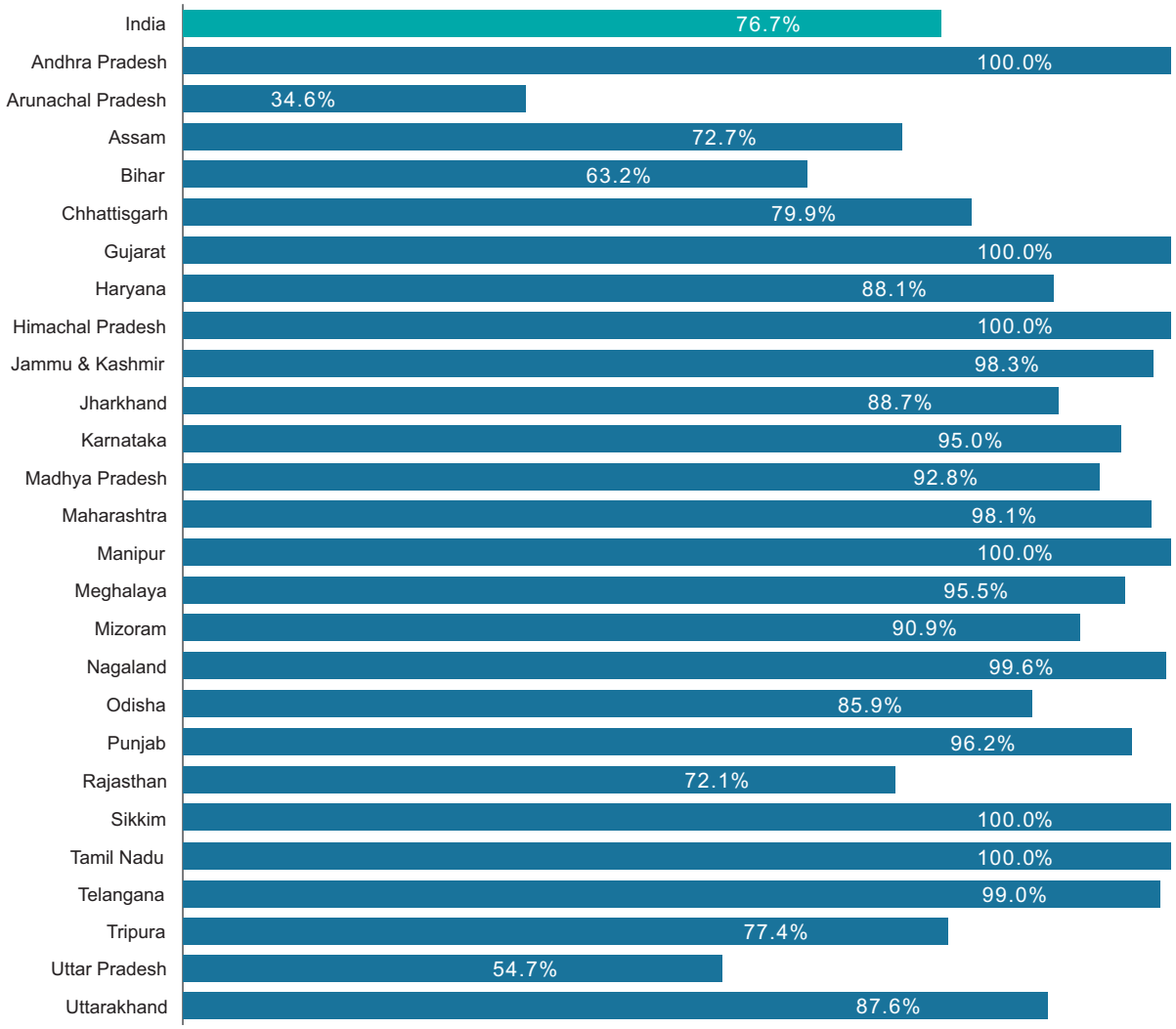


Figure 86: Availability of Working Tap Connection at Households– State-Wise



6.3. Regularity of Water Supplied to Households

The overall rate of regular tap connections in aspirational districts in India is 73.6%. Gujarat has the highest rate at 100%, while Tripura has the lowest at 22.4%. Uttar Pradesh also has a low rate of regular tap water connections, at 55.9%.

Figure 87: Regularity of Water Supplied at Households

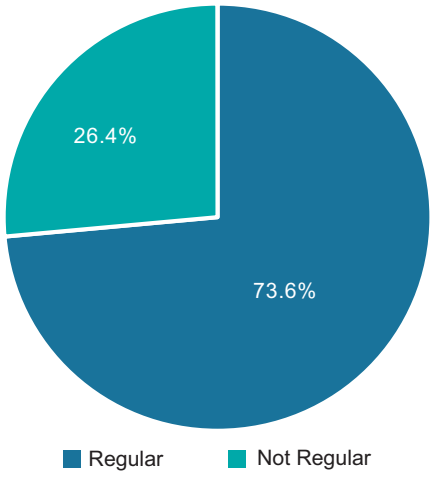
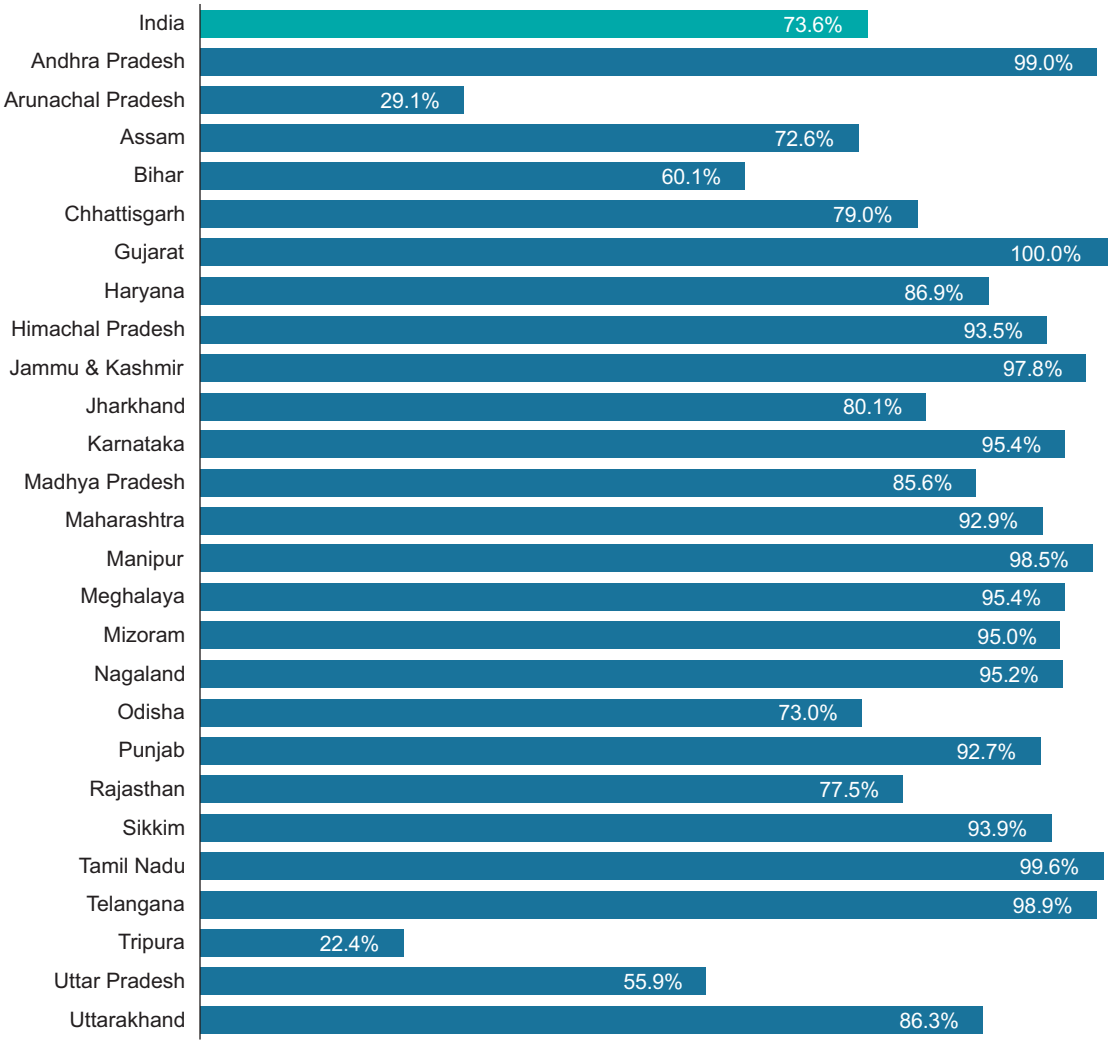


Figure 88: Regularity of Water Supplied at Households– State-Wise



6.4. Quantity of Water Supplied at Households (≥55 LPCD)

The overall rate of aspirational districts in India that have greater than 55 LPCD of water supply is 76.5%. Uttarakhand has the highest rate at 100%, while Tripura has the lowest at 29.4%.

Figure 89: Quantity of Water Supplied at Households

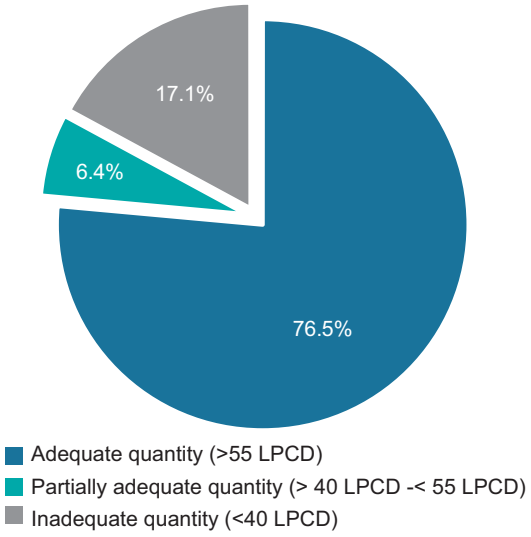
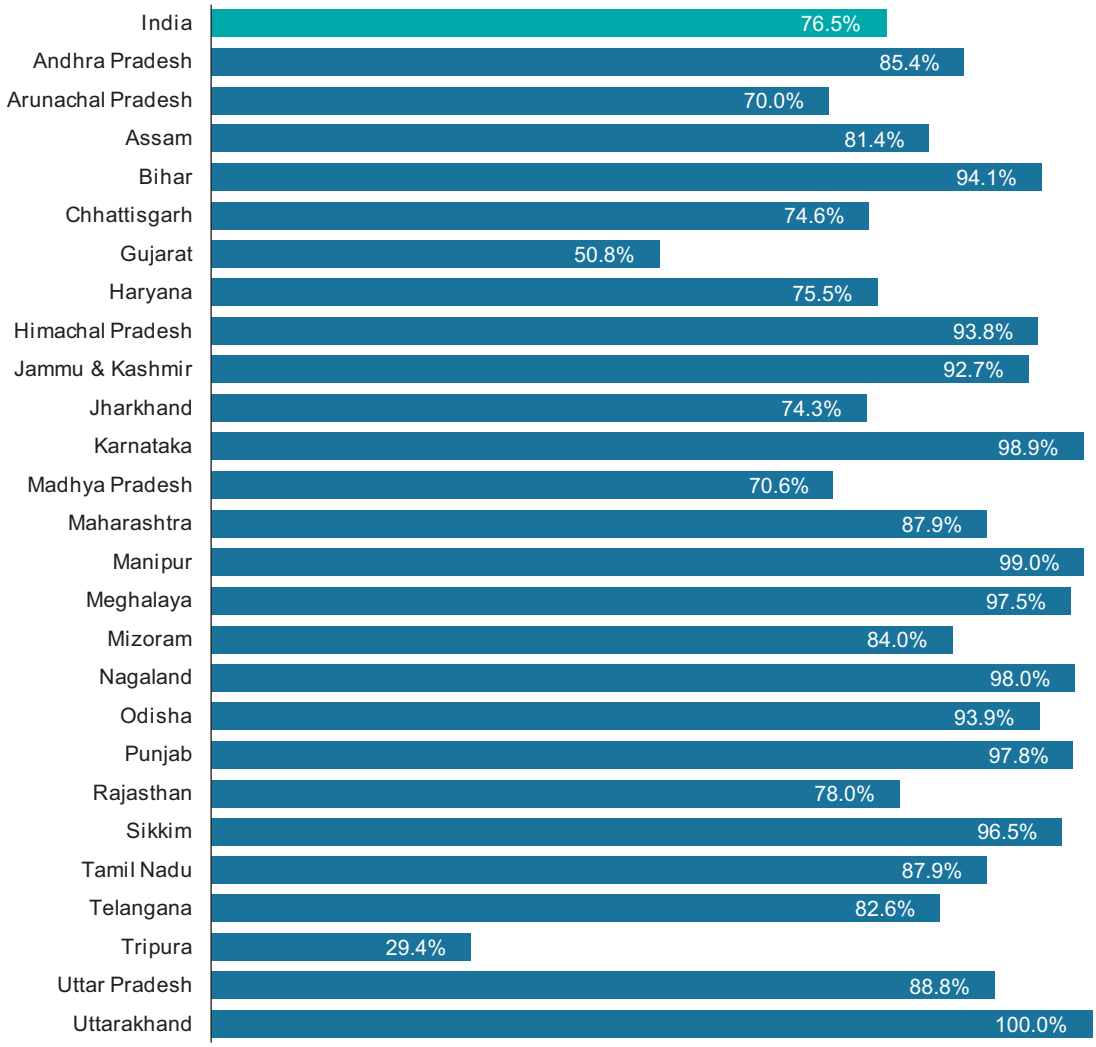


Figure 90: Quantity of Water Supplied at Households– State-Wise



6.5. Quality of Water Supplied

6.5.1. Quality of Water Supplied at Household

The overall rate of potable water at households in aspirational districts in India that pass both bacteriological and pH tests is 77.5%. Gujarat has a significantly lower rate at 4.9%, while Jammu & Kahmir and Telangana has the highest rate at 96.9%. Access to safe drinking water is essential for maintaining good health and well-being. Water quality can be affected by various factors, including contamination from bacteria, chemicals, and other pollutants. It is important to regularly test your water quality to ensure it is safe for consumption. If you are concerned about the quality of your drinking water, you can use a water filter or boil your water before drinking it.

Figure 91: Percentage of Households Water Samples Passed the Quality Test

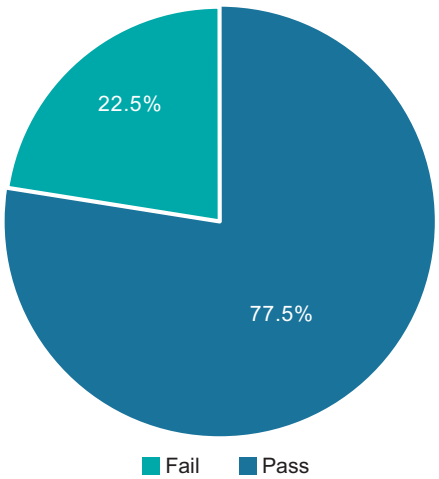
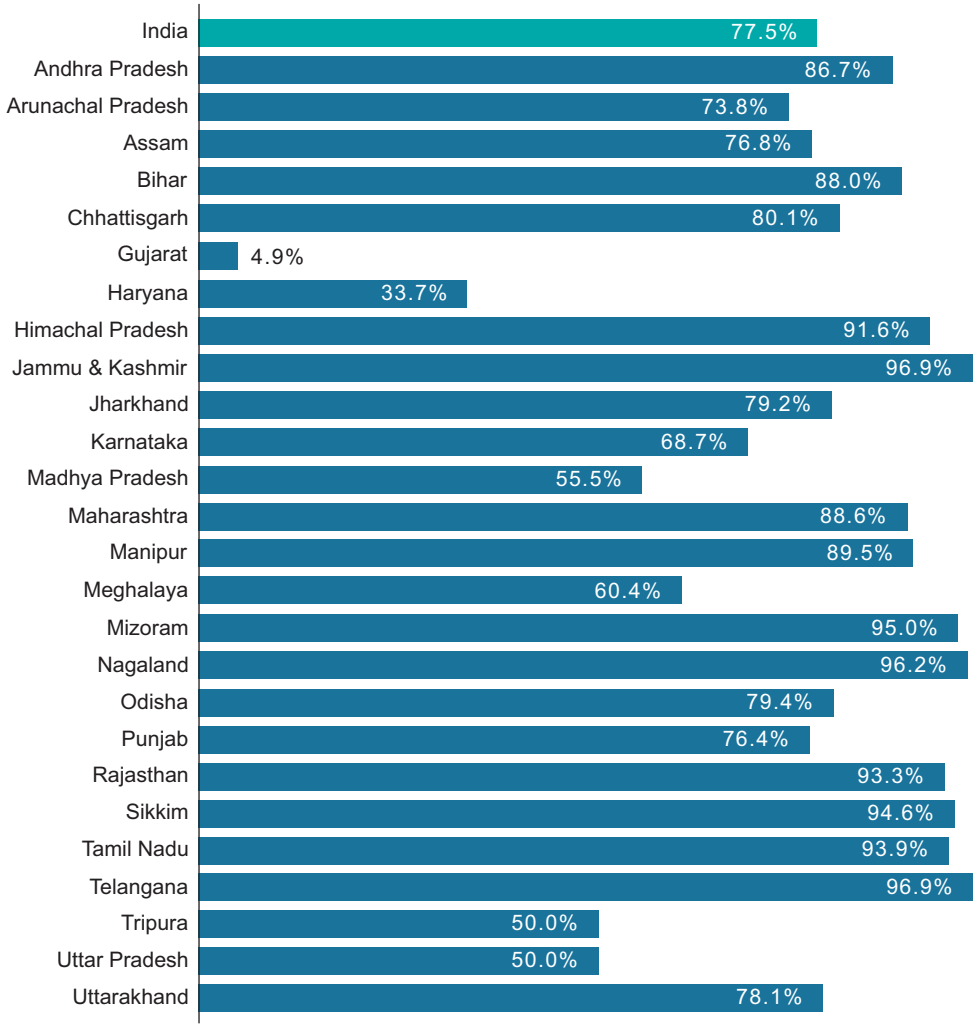


Figure 92: Percentage of Households Water Samples Passed the Quality Test– State-Wise



6.5.2 Quality of Water Supplied at Source

The overall rate of passing sources for aspirational districts in India is 86.2%. Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura all have a 100% pass rate. Haryana has a significantly lower rate at 43.6%, while Rajasthan has the lowest rate at 41.3%.

Figure 93: Percentage of Water Sample Collected at Source Passed the Quality Test

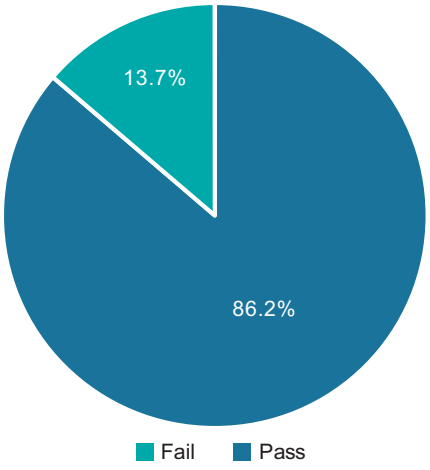
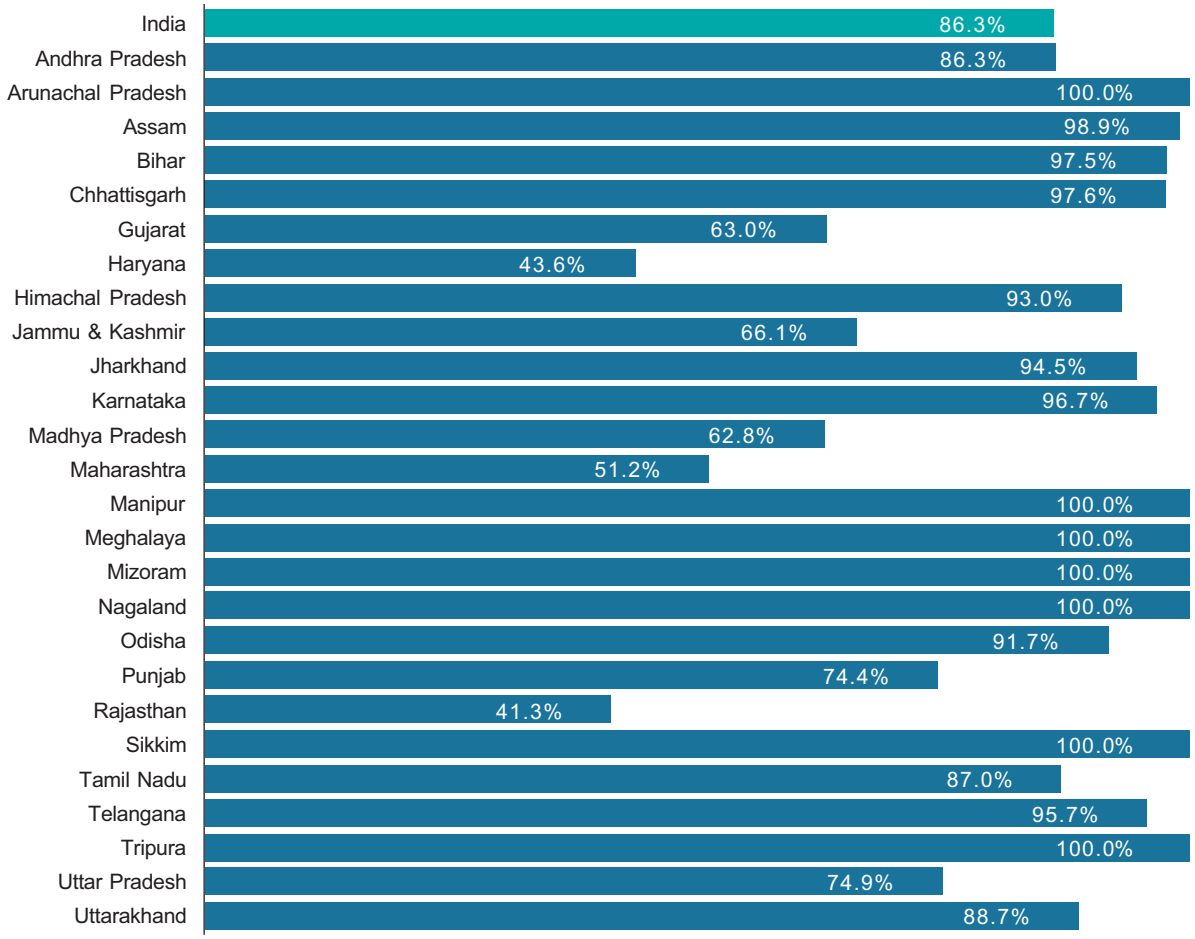


Figure 94: Percentage of Water Sample Collected at Source Passed the Quality Test– State-Wise



7

CHAPTER

Conclusion and Recommendations

CHAPTER 7

Conclusion and Recommendation

Conclusion

The Jal Jeevan Mission has made significant progress in expanding tap water coverage (98.1% nationally) and aims to achieve universal access. However, challenges persist in ensuring functionality (only 76% functional), consistent with 92.4% user satisfaction on quality of water supplied, limited FTK availability at 27.2%, and adequate water pressure (83.5% user satisfaction). Addressing these discrepancies between public perception and on-the-ground realities requires strengthening operation and maintenance, improving water quality monitoring, and establishing a dedicated State-level implementation body. Promoting community ownership through VWSCs/Pani Samitis and enhancing public awareness about water conservation are crucial for long-term sustainability. The 2024 third-party assessment of water quality provides valuable insights for program improvement and achieving the JJM's goal of providing safe and adequate drinking water to all rural households.

Recommendation

To further strengthen the coverage and implementation of the FHTC, the following recommendations emerge from the findings of 2024 survey.

The water Quality is pulling down the overall functionality of tap connections in the households. Hence, there is need to strengthen this area and ensure better delivery. There is a disparity between positive public perception and on-the-ground realities concerning water quality. There is a need to implement robust monitoring and evaluation mechanisms to ensure that the perceived benefits align with actual service delivery.

To enhance community engagement, it's crucial to boost the participation of Village Water and Sanitation Committees (VWSCs) or Pani Samitis. Building capacity in managing operations and maintenance (O&M) is essential, with a focus on sustainability across all States and Union Territories (UTs). Implementing a robust monitoring system could significantly improve these efforts.

Prioritizing the training of individuals for the O&M of piped water supply schemes is necessary to ensure the reliable provision of services. Establishing skilled panels at the village or district levels would create a resource pool to address technical challenges effectively.

Generating demand through community involvement is key, with Information, Education, and Communication (IEC) and Social and Behavioral Change Communication (SBCC) playing a vital role in the long-term sustainability of these schemes.

Quality water in public institutions (Health centres, Anganwadi centres and Schools) needs attention. There is also a need for strengthening the health centre infrastructure, considering the role of safe drinking water in public health.

To enhance transparency and accountability in scheme implementation, there is a need to strengthen the implementing body at the S tate and district level. This body should streamline processes, enhance accountability, and ensure effective execution of the mission's objectives. Further, there is a need to define and enforce clear processes and policies at both the central and State levels.

Annexures

ANNEXURE 1:
Approval of the Sampling Plan by Technical Committee

W–11016/3/2023–JJM.IV–DDWS
Government of India
Ministry of Jal Shakti
Department of Drinking Water and Sanitation
National Jal Jeevan Mission

'Antyodaya' Bhavan,
CGO Complex, Lodhi Road,
New Delhi-110003
Dated: 28th June, 2024

OFFICE MEMORANDUM

Sub: Minutes of the 7th meeting of Technical Committee constituted for providing technical assistance regarding finalization of sampling plan and questionnaire under 'Assessment of functionality of tap connections in rural areas' - reg.

The undersigned is directed to circulate the minutes of the 7th meeting of above-mentioned committee, held on 20th June, 2024, for kind information of all members of TC. A copy of the sample plan, sampling methodology and questionnaire as approved by the TC is also enclosed.

3. This issues with the approval of competent authority.

28/6/24

(Manoj Kumar Jha)
Under Secretary to the GoI
e-mail: manojkumar.jha@gov.in

Encls: As Above.

Minutes of the 7th meeting of Technical Committee held on 20th June, 2024, for review/ finalization of sample plan and questionnaire for 'Assessment of functionality of household tap connections in rural areas'

The 7th meeting of the Technical Committee under the chairmanship of AS&MD (NJJM), held on 20th June, 2024, at Ministers Conference Hall in DDWS. The primary agenda was to review and approve the sample plan and questionnaire submitted by the agency as per the observations given in the 6th meeting of TC. The list of participants is at **Annex.**

2. At the outset, Director (JJM.IV) welcomed the participants and with permission of the chairman, asked the agency to present the revised questionnaire, sampling methodology and sample plan as finalised in 6th TC meeting. The Committee deliberated upon the questionnaires and sample plan presented by the agency, at length and found the same in order. However, after detailed deliberations, it was decided to make following modifications in the questionnaire and household sampling methodology:

I. Household Sampling Methodology for HGJ Villages:

Step 1: With the help of the Sarpanch/ village representatives, a rough layout may be prepared by the agency indicating following:

(i) All hamlets/ habitations in the village along with the number of households in each hamlet/ habitation.
(ii) Draw the PWS distribution flow diagram from source to end of the village. In case of multiple schemes, then draw the same on the map for each scheme.
(iii) Mark the location of AWC, School, Health Centre, PWS, OHT/SUMP, Inlet of MVS etc on the map.
(iv) Mark on the map the location which is to be considered as Head end and Tail end of each PWS scheme. This will help select the household which falls in these locations as Head and Tail ends for water sample collection.

Step 2: the total number of households in the village may be calculated by the agency (i.e., sum of all households in all hamlets/ habitations).

Step 3: Basis the total number of households in each hamlets/ habitation, the number of sample households to be covered in each village will be decided by the agency as follows:

Number of sample households to be covered in each hamlets/ habitation

= {(Number of households in the hamlet/ habitation)/(Total number of households in the village)}*(12 sample households to be covered in each sample village)

Step 4: Selection of households: Geographical spread to be maintained by the agency while selecting households in the hamlet/ habitation. This would ensure sample spread and proper representation.

II. Household Sampling Methodology for Partially covered/ not covered villages

a) For villages having less than 240 Households:

Step 1: With the help of the Sarpanch/ village representatives, a rough layout may be prepared by the agency indicating following:

(i) All hamlets/ habitations in the village along with the number of households in each.
(ii) Draw the PWS distribution flow diagram from source to end of the village. In case of multiple schemes, then draw the same on the map for each scheme.
(iii) Mark the location of AWC, School, Health Centre, PWS, OHT/SUMP, Inlet of MVS etc.
(iv) Mark on the map the location which is to be considered as Head end and Tail end of each PWS. This will help select the household which falls in this location as Head and Tail for water sample collection.

Step 2: Agency may calculate the total number of households in the village (i.e., sum of all households in all hamlets/ habitations).

Step 3: Basis the total number of households in each hamlets/ habitation, the number of sample households to be covered in each village will be decided by the agency as follows:

Number of sample households to be covered in each hamlets/ habitation

= {(Number of households in the hamlet/ habitation)/(Total number of households in the village)}*(12 sample households to be covered in each sample village)

Step 4: Selection of households: Geographical spread to be maintained by the agency while selecting households in the hamlet/ habitation. This would ensure sample spread and proper representation.

Step 5: It will be additionally ensured that the sample households will be drawn in the proportion of coverage in the village. For Example: if 70% of households are covered with tap water supply in village, then 8 sample households should be covered from the households with tap connection and 4 from the households without tap connection.

b) For villages having more than 240 Households:

A. If the village has more than 240 households, then the village will be divided into segments/ subgroups based on the households in the villages as mentioned in below table:

Households of the village	No. of subgroups/ segments
Less than 240	1
More than and equal to 240 and less than 480	2
More than or equal to 480 and less than 720	3
More than or equal to 720 and less than 960	4
More than or equal to 960 and less than 1200	5
.....and so on	.....

B. Upon the successful preparation of these segments in a sample village-partially covered or not covered, a subgroup/ segment will be selected randomly. For partially covered villages, the segment that adequately represents both households with and without tap connections will be selected.

C. Subsequently, 12 households within this selected segment will be chosen following the steps mentioned above (i.e., Step 1 to Step 5 as above)

III. Water Sample Collection for Quality measurement (Households, Public Institutions and Source/Scheme)

Household: Water sample would be collected from two households (i.e., Head household: - Household which is nearest to the source and trail household: - Household which is farthest from the source) per scheme in each village. Water samples is to be tested for Total Coliform & E. Coli bacteria in NABL accredited labs.

Public Institution: Water sample would be collected from approx. two public institutions (i.e., AWC, School, Health Centre) in each village. Water samples is to be tested for Total Coliform & E.Coli bacteria in NABL accredited labs.

Source/Scheme: Water sample would be collected from all PWS Source/Scheme in each village. Water samples is to be tested for chemical parameters in NABL accredited labs. In case the delivery point of Source/Scheme in each village doesn't have an outlet to measure quality of water, then water sample for testing water quality will be taken from first household of the particular multi-village/ regional scheme/ Source/Scheme.

In addition to all PWS sources, 10% of other source of water supplying water to HHs having no tap connection will be tested for both chemical and bacteriological parameters in NABL accredited labs.

IV. Water Quantity Measurement (Household and Source)

Households: Water Quantity Measurement will be done in one household per hamlet/ habitation in each village. The agency to select household randomly from each hamlet/ habitation.

Source/Scheme: Water Quantity Measurement will be done for all PWS sources in each village. If the village/ habitation is getting water from multi-village/ regional scheme, the measurement of quantity of water being supplied to the village will be done at the delivery point into the village.

The agency will ensure, as far as possible that all hamlets/ habitations will be covered in the survey.

V. Other points:

a) In the excel sheet of sampling plan, the agency will add the census population of each state beside the population mentioned as per JJM-IMIS database.

b) Since, in Tamil Nadu, the data on JJM-IMIS is available only for GPs and not villages, it was decided to adopt following procedure for selection of villages:

i.) Visit the sampled Gram Panchayat taken from JJM-IMIS;
ii.) With the help of the Sarpanch/ Gram Panchayat member, identify & list the villages in the Gram Panchayat;
iii.) Using simple random sampling method, a single village will be selected from the list for survey.

c) **Flow Rate**: For household water quantity measurement (i.e., Flow Rate) in a village, it was decided that one household per hamlet/ habitation in each village will be randomly selected.

d) **Questionnaire**:

(i.) The questions regarding "assessment of sufficient quantity of drinking water" to be asked for each source/scheme under village questionnaire;

(ii.) In the village questionnaire for each scheme, below to be asked:

a. Scheme ID
b. Number of households covered under the scheme.

(iii.) It was decided to remove the observation question from the village question which captures photos of households which don't have tap connections.

e) **Desk Review:**

(i.) It was decided that in the coming week (i.e., 24th June 2024 onwards), DDWS to coordinate with State and schedule a video conference and agency to

present the findings and discrepancies found in the IMIS data for HGJ certified villages.

(ii.) DDWS would inform agency well in advance regarding the States scheduled for video conference so that the presentations could be prepared with updated village details and evidence.

f) Data Analysis and Presentation: The agency will prepare and share a first cut analysis presentation on few selected indicators (to be decided in consultation with DDWS) for few states in the first week of August, 2024.

3. Subject to the compliance on above observations by the agency, the TC approved the sample plan, methodology and questionnaire.

4. The meeting ended with vote of thanks to the chair.

ANNEXURE 2:
State-Wise Sampled and Estimated Household After Applying Weights

State	Sampled Har Ghar Jal Households	Estimated Har Ghar Jal Households
Andaman & Nicobar Islands	792	75491
Andhra Pradesh	7560	2773473
Arunachal Pradesh	6837	436808
Assam	8372	1697524
Bihar	17352	17038709
Chhattisgarh	8100	591755
D&NH and D&D	588	98127
Goa	672	312681
Gujarat	14868	10736378
Haryana	9282	3481912
Himachal Pradesh	4176	2591079
Jammu & Kashmir	4860	262978
Jharkhand	6660	834976
Karnataka	8928	2433400
Kerala	1264	568397
Ladakh	564	28575
Lakshadweep	48	5858
Madhya Pradesh	15094	3834887
Maharashtra	12276	6474146
Manipur	1884	64448
Meghalaya	3242	247769
Mizoram	3072	159902
Nagaland	3936	266445
Odisha	9000	2833514
Puducherry	564	138689
Punjab	8688	4014040
Rajasthan	12168	1349202
Sikkim	1080	25720
Tamil Nadu	12996	7379404
Telangana	11844	6230719
Tripura	636	49351
Uttar Pradesh	25544	8935658
Uttarakhand	3492	1026860
West Bengal	6252	1582085
Total	232691	8,85,80,962

ANNEXURE 3:
State-Wise Sampled and Estimated Village After Applying Weights

State	Sampled Har Ghar Jal Households	Estimated Har Ghar Jal Households
Andaman & Nicobar Islands	66	260
Andhra Pradesh	630	4688
Arunachal Pradesh	574	5082
Assam	698	6181
Bihar	1446	32196
Chhattisgarh	675	2243
D&NH and D&D	49	96
Goa	56	373
Gujarat	1239	17867
Haryana	774	6500
Himachal Pradesh	348	17793
Jammu & Kashmir	405	923
Jharkhand	555	3822
Karnataka	744	5479
Kerala	106	106
Ladakh	47	149
Lakshadweep	4	4
Madhya Pradesh	1258	13147
Maharashtra	1023	17119
Manipur	157	598
Meghalaya	274	2193
Mizoram	256	623
Nagaland	328	984
Odisha	750	11908
Puducherry	47	90
Punjab	724	11797
Rajasthan	1014	4545
Sikkim	90	110
Tamil Nadu	1083	5835
Telangana	987	9451
Tripura	53	58
Uttar Pradesh	2128	23286
Uttarakhand	291	8013
West Bengal	521	3340

ANNEXURE 4:
State-Wise Survey Period

State	Survey start date	Survey end date
Andaman & Nicobar Islands	13-Aug-24	13-Sep-24
Andhra Pradesh	04-Jul-24	30-Oct-24
Arunachal Pradesh	16-Jul-24	28-Oct-24
Assam	17-Jul-24	26-Oct-24
Bihar	13-Jul-24	29-Oct-24
Chhattisgarh	11-Jul-24	30-Oct-24
D&NH and D&D	12-Aug-24	26-Sep-24
Goa	29-Jul-24	23-Sep-24
Gujarat	09-Jul-24	30-Oct-24
Haryana	05-Jul-24	29-Oct-24
Himachal Pradesh	22-Jul-24	31-Oct-24
Jammu & Kashmir	27-Jul-24	29-Oct-24
Jharkhand	09-Jul-24	29-Oct-24
Karnataka	09-Jul-24	30-Oct-24
Kerala	10-Jul-24	31-Oct-24
Ladakh	01-Sep-24	15-Sep-24
Lakshadweep	27-Sep-24	01-Oct-24
Madhya Pradesh	10-Jul-24	31-Oct-24
Maharashtra	08-Jul-24	30-Oct-24
Manipur	22-Jul-24	29-Oct-24
Meghalaya	30-Aug-24	29-Oct-24
Mizoram	25-Jul-24	31-Oct-24
Nagaland	01-Aug-24	31-Oct-24
Odisha	05-Jul-24	28-Oct-24
Puducherry	26-Jul-24	03-Aug-24
Punjab	05-Jul-24	30-Oct-24
Rajasthan	03-Jul-24	31-Oct-24
Sikkim	05-Aug-24	31-Aug-24
Tamil Nadu	12-Jul-24	29-Oct-24
Telangana	05-Jul-24	09-Oct-24
Tripura	24-Jul-24	27-Oct-24
Uttar Pradesh	05-Jul-24	30-Oct-24
Uttarakhand	13-Jul-24	29-Oct-24
West Bengal	17-Jul-24	31-Oct-24

ANNEXURE 5:
Questionnaire

Questionnaire for Household with Tap Connection

S. No.	Indicator	Mode of information	Probable questions
1	Village profile	IMIS data (Note variation if any as per ground truthing)	State District Block Gram Panchayat Village Name: Village characteristic (Select multiple) a. HGJ reported/ HGJ certified b. SC concentrated c. ST concentrated d. SAGY e. Others_____
2	Respondent details (member of household present)	Response & IMIS data	1. Are you head of the HH? b. Yes c. No 2. Gender of the head of the HH a. Male b. Female c. Transgender 3. Name of the respondent 4. Age of the respondent (in completed years) 5. Gender of the respondent a. Male b. Female c. Transgender 6. Contact telephone number 7. GPS Coordinates of sample HH location (To be captured automatically)
3	Household profile	Response & IMIS	8. Dwelling unit type a. Owned b. Rented 9. Name of the habitation/ Mohalla/ Hamlet etc 10. Social category of head of household a. General b. Scheduled Caste (SC) c. Scheduled Tribe (ST) d. OBC 11. Total number of members/persons in the household (permanently residing in the village) a. No. of Male Members (18 and above) b. No. of Female Members (18 and above) c. No. of Children Members (Below 18) d. Total Members (Auto Calculate)
4	Availability of FHTC	Response & direct observation	12. Do you have tap water connection in your house? ***(Capture Photo of tap connection)*** a. Yes b. No ****If response is "No" then ask Q.no 25 and 26 and move to Q.no 32 to 42 and Terminate Interview**** 13. Name of person in whose name tap connection has been taken. ***(Ask only if response to the above Question number 12 is "Yes")*** a. Head of the Household b. Husband of the Head of Household (If head of the household is female) c. Wife of the Head of Household d. Father of the Head of the Household e. Mother of the Head of the Household f. Son of the Head of Household g. Daughter of the Head of Household h. If Others Specify "_____" i. Don't Know / Can't Say

S. No.	Indicator	Mode of information	Probable questions
The below questions to be asked to people who say Yes to Q.no 12			
5	Tap connection profile	Response & direct observation	14. Since how long the tap connection has been provided (in months)? a. Less than 1 month b. 1-3 Months c. 3-6 Months d. 6-12 Months e. 1-2 Years f. 2-3 Years g. 3-4 Years h. More than 4 Years 15. Have you received water through tap connection in last one week? a. Yes b. No***If response is "No" then ask Q.no 16*** 16. If Q15= No, then what is the reason for not receiving water through tap connection in last one week? a. Pump failure b. Source drying up/ frozen. c. Damage to pipe network d. Unavailability of electric supply e. low voltage electricity supply f. Disconnection on non-payment of electricity bills g. Scheme yet to be commissioned. h. Scheme on testing/pilot phase/Pipe is there water supply not yet started i. Others Specify "_____" 17. Is tap connection firm? **(Capture photo of tap connection in both cases)** a. Yes b. No 18. Is the water pressure from your tap satisfactory? a. Yes b. No 19. Is the household's daily requirement of water for all purposes, met by the tap connection? **Note to assessor:** Daily requirement includes water for drinking, cooking, bathing, cleaning, washing, livestock feeding a. Yes b. No 19.1. Does your household have a booster pump installed on the water pipeline? a. Yes b. No
6	% of households receiving > 55 LPCD of water.	Actual measurement at tap connection	19.2. What type of infrastructure (related to tap water connection) do you have in your household? a. A tap is available in my household premise, dwelling/yard or plot where the water is available during supply timings b. The connection is directly linked to the storage tap and there is no external tap outside before the water flows to the storage tank c. Flowrate is not being measured 20. ***Ask Q20 only if Q19.2="a"***. Measure the flow rate at which the water flows out of the HH tap (by opening the tap to the full for a minute and collect the water in a measuring cylinder/ container). Stopwatch if container gets filled before 1 minutes. ***(Capture two photos – one photo while collecting water and other photo after collecting the water)*** ***Flow rate in lpm*** a. Duration of stopwatch running (in seconds) Maximum 60 seconds b. Volume of water collected (in liter)

S. No.	Indicator	Mode of information	Probable questions
			Ask Q20.1 only if Q19.2="b". 20.1. What is the location and shape of the storage tank? a. Cylinder above the surface of the ground or placed in the roof of the house b. Cylinder below the surface of the ground /underground c. Cube/Cuboid above the surface of the ground or placed in the roof of the house. d. Cube/Cuboid below the surface of the ground/ underground **Ask if Q20.1 is coded "a" then ask 20.2** 20.2. What are the dimensions of the tank? a. Height of the tank (only numeric) _____ b. Circumference of the tank (only numeric) ____ **Ask if Q20.1 is coded "b" then ask 20.3** 20.3. What are the dimensions of the tank? a. Height of the tank (only numeric) _____ b. Diameter (only numeric) _____ **Ask if Q20.1 is coded "c and d" then ask 20.4** 20.4 What are the dimensions of the tank? a. Length of the tank (only numeric) _____ b. Breadth of the tank (only numeric) _____ c. Height of the tank (only numeric) _____ **Ask Q20.5 and Q20.6 only if Q19.2="b".** 20.5. Stop the valve to restrict the flow of water to the storage tank and dip a 5 feet long rod, mark the level of the water table and record the height of the mark: Height (A) (Only Numeric) _____ 20.6. Open the valve to the connection and allow the water to flow inside the storage for 10 minutes. Now again dip the rod to record the height of water table: ***Scripter Instruction: Response in Q20.6 should be greater than Q20.5*** New Height (B) (Only Numeric) _____
7	Supply of water on regular basis.	FGD/Individual response	21. Do you get regular water supply as per decided schedule? a. Yes b. No 22. How many days a week water is supplied? a. 0 Day b. 1 Day c. 2 Days d. 3 Days e. 4 Days f. 5 Days g. 6 Days h. 7 Days 23. How many times a day is the water supplied on the day of supply? (Note: Average Number of Times) a. Number of times b. Don't Know / Can't Say 24. ***Loop basis the number of times water is supplied as reported in Q.no 23 ** Timing of water supply in your HH (provide timing for each spell of supply)** a. Start time (12 hrs format) b. End time (12 hrs format) c. Duration (minutes) (calculated)
8	Quality of water from tap connection provided for drinking water	Response	25. Are you satisfied with the overall quality of water from the main source of drinking water? a. Yes b. No 26. If answer to Q-25 is No, then detail the issue: a. Dirty b. Foul smell c. Hard d. Salty e. Other (please specify)

S. No.	Indicator	Mode of information	Probable questions
9	% of households receiving potable water quality (BIS 10500). FHTC	Actual testing in labs (from the HHs decided as per the methodology in every village)	27. Is the sample of water collected from this household? a. Yes b. No 27.1. If Q27 = Yes, please fill the bottles as per protocol and check the boxes ***(Capture photo of bottle filled with water sample):*** a. 100 ml bottle □ 27.2. If Q27 = Yes, scan the bar code for bottle (capture photo of bottle after pasting the bar code) 27.3. If Q27 = Yes, using the field kit test, measure and carefully enter the readings against the following two parameters of HH tap's water quality ***(Capture photo of field kit showing result)*** a. Chlorine i. 0 ii. 0.05 iii. 0.1 iv. 0.2 v. 0.4 vi. 0.7 vii. 1 viii. 2 ix. 3 x. 4 xi. 5 b. PH i. 4 ii. 5 iii. 5.5 iv. 6 v. 6.5 vi. 7 vii. 7.5 viii. 8 ix. 8.5 x. 9 xi. 9.5 xii. 10
10	% of households paying water user charges	Response & click photo of bill if "Yes"	28. What is the average monthly user charge? a. INR b. Don't Know/ Can't Say c. Not Applicable **Skip Q.No 29 if "c" is selected 29. Does the household pay water user charges? ***(Capture photo of bill/receipt)*** a. Yes b. No
11	Grievance redressal (to be asked to HH who respond "yes" to Q.no. 12)	Response & verification of records	29.1. Are you aware of any mechanism for reporting complains about any problem with you HH tap connection? a. Yes Aware and reported/complained b. Yes, Aware but not reported/complained c. No, Haven't faced any problem 30. Whom do you report/complain about any problem with your HH tap connection? (Select Multiple) ****If coded "a" in Q.No. 30.1 then ask this question**** a. Helpline number b. Pump operator c. Reporting to VWSC/Pani Samiti d. Reporting to GP functionaries e. Reporting to block functionaries f. Reporting to district PHED or other authorities g. Reporting through portal (online) h. Other (Specify____) 31. Are you satisfied with the grievance redressal mechanism? a. Very satisfied b. Satisfied c. Somewhat dissatisfied d. Not satisfied at all e. No system in place

S. No.	Indicator	Mode of information	Probable questions
12	Coping mechanism	Response & verification of records	32. Do you use other house-level methods to make water safe for drinking? (Multiple choice is allowed) a. No treatment needed b. Boil c. Let it stand & settle d. Strain through cloth e. Use ceramic water filter f. Solar disinfection g. Electronic purifier h. Add chlorine/ bleach i. Alum (Fitkari) j. Others, please specify. 33. During period of insufficient water or natural calamity or inadequate supply of water, how does the household cope? (Multiple Choice) a. Regularly store and reserve water b. Access water-sources at a distance c. Spend more time to collect water d. Buy water from tankers e. Buy water from RO plants f. Buy canned/bottled water g. Access public water sources h. Use unimproved sources i. Use water from neighbours j. Use of Booster Pump k. No coping mechanism l. Haven't faced any problem of insufficient water
13	Grey Water	Response+ Direct observation	34. Where does most of used water go? a. Kitchen garden b. Soak pit c. Drain d. Others, please specify
14	Water conservation	Response+ Direct observation	35. Have you seen any signage/ IEC message that drinking water should not be wasted? a. Yes b. No 36. Does your water connection have tap (bib-cock)? ***(Capture Photo of tap in both cases)*** a. Yes b. No 37. Do you close tap after use? a. Yes b. No
15	Main source of drinking water	Response & direct observation	38. (JMP1/W1) What is the main source of drinking water for members of your household? a. Piped into house/ dwelling. b. Piped into yard, compound, plot c. Piped to neighbour d. Public tap / standpipe e. Tube Well / Borehole f. Protected dug well g. Unprotected dug well h. Protected spring i. Unprotected spring j. Rainwater k. Tanker-truck l. Cart with small tank m. water kiosk n. Surface water (river, dam, lake, pond, stream, canal, irrigation channel) o. Bottled water p. Sachet water q. Large bottle / dispenser refill

S. No.	Indicator	Mode of information	Probable questions
			38.1 (JMP4/W5) In the last month, has there been any time when your household did not have sufficient quantity of drinking water when needed? a. Yes, at least once b. No, always sufficient c. Don't know 38.2. If "a" in Q.No.38.1 then Please mention the number of days? Scripter Instruction: The response should not be zero Open ended (Numbers ranging from 1 to 31 days) 38.3. In the last 12 months, has there been any time when your household did not have sufficient quantities of drinking water when needed? a. Yes, at least once b. No, always sufficient c. Don't know 38.4. If "a" in Q.No.38.3 then Please mention the number of months ? Instruction: Scheme not functional to be considered in months only if the scheme remained nonfunctional for more than 15 days in a month Open ended (Numbers ranging from 0 to 12 months) 38.5. If "a" in Q.No.38.3 and "0" in Q38.4 then Please mention the average number of days household did not have sufficient quantities of drinking water in the month? Open ended (Numbers ranging from 1 to 31 days) **If not coded "a and b"in Q.No. 38 then ask Q.No. 38.6** 38.6. Please mention the reason for not using tap water for drinking? a. Insufficient supply b. Quality not acceptable c. Prefer other source despite sufficient & safe supply d. If others, please specify.
16	Located on premises	Response & direct observation	39. (JMP2/W3) Where is the drinking water source mentioned above (Q38) located? a. In own dwelling b. In own yard/ plot c. Elsewhere 40. (JMP3/W4) If answer question above is (c) then, How long does it take for members of your household to go there, get water, and come back? a. Members do not collect b. Time taken in minutes __ __ __ c. Don't know
17	Health	Response	41. Has/have there been any incidence(s) of Diarrhea in your household in last 15 days? a. Yes b. No 42. Has/have there been any incidence(s) of Diarrhea in your household among children aged under 5 years in last 15 days? a. Yes b. No

Village questionnaire

S. No.	Indicator	Mode of information	Probable questions
1	Respondent profile	Response	1. Are you? ***(Multiple Choice)*** a. Sarpanch b. GP member c. VWSC chairman d. VWSC member e. Any other (Specify) 2. Name of the respondent 3. Age of the respondent (in completed years) 4. Gender of the respondent i. Male ii. Female iii. Transgender 5. Contact telephone number 6. GPS Coordinates of location of interview (To be captured automatically)
2	Village profile	Response & IMIS data	7. Village profile: a.1. Whether the village is HGJ village or partial-HGJ village? i. HGJ Village ii. Partial HGJ Village iii. Non HGJ Village (If this is selected then ask Q.No. 7 a to e and h and then skip to Q.No. 22.1 to Q. No 22.6 and Terminate Interview) a. Population size b. Total Households c. SC Households d. ST Households e. PVTG Households f. Total Household Tap Connections g. No. of beneficiaries under JJM h. No. of habitations i. HGJ certified Availability **i. Yes, Document Available (Capture Photo)** ii. Yes, Document Not Available iii. No j. Completion certificate **i. Yes, Document Available (Capture Photo)** ii. Yes, Document Not Available iii. No k. Video **i. Yes, Video Available** ii. Yes, Video Not Available iii. No l. HGJ certificate **i. Yes, Document Available (Capture Photo)** ii. Yes, Document Not Available iii. No
3	% of villages with functional VWSCs.	Response & IMIS data	8. Does the village have a VWSC/ Pani Samiti a. Yes b. No **Skip to Q.no 11** 9. Status of VWSC in the village ***Scripter Instruction: (b+c) = (d+e+f)*** a. No. of meetings held b. Male members c. Female members d. GP member e. SC members f. ST members
4	% of villages with VWSCs having bank accounts.	Response & verification of records	10. Does VWSC/ Pani Samiti has a bank account? a. Yes b. No

S. No.	Indicator	Mode of information	Probable questions
5	**Number & status of PWS schemes (Information to be collected scheme-wise)**		
	Each source will be considered as a scheme		11. How many schemes of PWS are available in the village? ***If response to Q11 = 0, ask Q22.1 to Q22.6 and Q26 and terminate the interview***
	The below questions from Q11.1 to Q22 to be asked to the village where response to Q11 is greater than 0. **Loop basis the number of schemes mentioned in Q11.		
	Status of Scheme		11.1. Please enter the scheme number/ID_____ 11.2.Please enter the number of households covered under this scheme_____ 11.3 Type of scheme: a. SVS (Single Village Scheme) b. MVS (Multiple Village Scheme) c. Regional Village Scheme 12. What is the status of the scheme? ***(As on the day of survey)*** a. Functional b. Non-Functional c. Scheme yet to be commissioned. *****If this option is selected then terminate the interview*** d. Scheme on testing/ pilot phase. *****If this option is selected then terminate the interview*** e. Any other, please specify. *****If this option is selected then terminate the interview***
	Reasons of non-functionality	Response/ FGD	**Ask Q.No. 13 and Q.No. 13.1 only if "b" is coded in Q.No. 12** 13. What were the reasons for non-functionality of the scheme? ***(Multiple Choice)*** a. Pump failure b. Source drying up/ frozen. c. Damage to pipe network d. Unavailability of electric supply e. low voltage electricity supply f. Disconnection on non-payment of electricity bills g. Any other, please specify. 13.1. Please mention since when the scheme has been non-functional? ***Instruction: Scheme not functional to be considered in months only if the scheme remained nonfunctional for more than 15 days in a month*** a. Month **If this is selected capture number of months** (Range 1 to 12) b. Day**If this is selected capture number of days** (Range 1 to 31)
	Age of scheme	Response & IMIS	14. In which year was the scheme commissioned? a. Prior 2010 b. 2010 c. 2011 d. 2012 e. 2013 f. 2014 g. 2015 h. 2016 i. 2017 j. 2018 k. 2019 l. 2020 m. 2021 n. 2022 o. 2023 p. 2024

S. No.	Indicator	Mode of information	Probable questions
	Sign board of scheme	Direct observation & IMIS verification	15. Whether scheme information board (SIB) is available? ***Capture photo of scheme information board if "yes" is selected*** a. Yes b. No
	Functionality of scheme in last one month	Response/ FGD	16. How many times did the schemes remain non-functional, in the last month? ***Scripter Instruction: Dropdown from 0 to 31 to be given (Response shouldnt be "0" if coded "Non functional" in Q12)***
	Functionality of scheme in last one year	Response/ FGD	17. In the last 12 months, had there been any instances when this scheme remained non-functional? a. Yes b. No **If "a" is coded in Q.No.17 then ask Q.No. 17.1** 17.1. Please mention how many months/days the scheme/ source has been non-functional? *Instruction: Scheme not functional to be considered in months only if the scheme remained nonfunctional for more than 15 days in a month* a. Month **If this is selected capture number of months** (Range 1 to 12) b. Day**If this is selected capture number of days** (Range 1 to 31)
			18.1. What are the number of sources tagged to this scheme?_____
	The below questions from Q18 to Q22 to be asked. *****Loop basis the number of PWS sources mentioned in Q18.1***		
	Type of source of scheme	Response + direct observation	18.2. Capture the photo of the PWS Water Source? 18. What is the source of water in the scheme? a. Ground water b. Surface water c. Spring d. Any other, please specify
	% of villages with source sustainability measures.	Response + records	19. Whether the source was able to supply water throughout the year? ***Scripter Instruction: Response should be automatically "No" if Q12 = Non-Functional*** a. Yes b. No Ask if Q19=b 19.1 Mention months in which water in source was not available? ***(Multiple Choice)*** ***Scripter Instruction: Dropdown of name of all 12 months to be given***
	Testing water quality of source of water	Actual testing/observations at site Take sample at the outlet of WTP/ chlorinator etc.	***Note: In HGJ villages, all the sources of water are to be tested for chemical parameters*** 20. Is the sample of water collected from this source? a. Yes b. No *(Scripter Instruction: Provide space to write reason)* 20.1. If Q20 = Yes, please fill the bottles as per protocol and check the boxes ***(Capture photo of bottle filled with water sample):*** a. 500 ml bottle □ 20.2. If Q20 = Yes, scan the bar code for bottle and check the boxes ***(Capture photo of bottle after pasting the bar code)*** a. 500 ml bottle □

S. No.	Indicator	Mode of information	Probable questions
			20.3. If Q20 = Yes, using the field kit test, measure and carefully enter the readings against the following two parameters of HH tap's water quality ***(Capture photo of field kit showing result)*** a. Chlorine i. 0 ii. 0.05 iii. 0.1 iv. 0.2 v. 0.4 vi. 0.7 vii. 1 viii. 2 ix. 3 x. 4 xi. 5 b. PH i. 5 ii. 5.5 iii. 6 iv. 6.5 v. 7 vi. 7.5 vii. 8 viii. 8.5 ix. 9 x. 9.5 xi. 10
6	Assessment of quantity of water being supplied to village through PWS (m3/day)	Response/ FGD/ Direct observation	21. What is the mechanism to record the daily water supply in village? a. Flow Meter b. Manually based on number of times tank being emptied. c. Others, please specify. d. Nothing 22. If option, a, b and c selected in Q21 ask question 22 Measure the flow rate? ***Assessor Instruction: From the log book or any other record maintained by the village, record the total water supplied by the village in a day.*** ***Scripter Instruction: If option a is selected, option b should be disabled and vice versa*** *****Loop basis the number of sources mentioned in Q18.1*** ***Capture Photo of flowmeter with the reading*** a. Reading of flow rate from the flowmeter____ b. Number of times water is supplied in a day____ c. Duration of each time of supply per day_____ d. Number of days water is supplied in a week in the village_____
			Scripter Instruction: Ask if a.1="ii" or "iii" *22.1. Number of Non PWS Sources in the village_____* ***If response to Q22.1=0, skip to Q23*** *22.2. 10% of number of Non PWS Sources in the village (Scripter Instruction: This is to be calculated automatically (10% of number of sources mentioned in Q22.1) (Consider minimum 1 as source and based on decimal value to be round off)*
	The below questions from Q22.3 to Q22.6 to be asked. *****Loop basis the number of Non PWS sources mentioned in Q22.2***		

S. No.	Indicator	Mode of information	Probable questions
	Testing water quality of source of water	Actual testing/observations at site Take sample at the outlet of WTP/ chlorinator etc.	***Note: In Partial and Non HGJ Village 10% of total sources to be tested for chemical as well as bacteriological parameters. Accordingly, sample collection will take place as below sections:*** 22.3. Is the sample of water collected from this source? a. Yes b. No (Scripter Instruction: Provide space to write reason) 22.4. If Q22.3 = Yes, please fill the bottles as per protocol and check the boxes ***(Capture photo of bottle filled with water sample):*** a. 500 ml bottle □ b. 100 ml bottle □ 22.5. If Q22.3 = Yes, scan the bar code for bottle and check the boxes ***(Capture photo of bottle after pasting the bar code)*** a. 500 ml bottle □ b. 100 ml bottle □ 22.6. If Q22.3 = Yes, using the field kit test, measure and carefully enter the readings against the following two parameters of HH tap's water quality ***(Capture photo of field kit showing result)*** a. Chlorine i. 0 ii. 0.05 iii. 0.1 iv. 0.2 v. 0.4 vi. 0.7 vii. 1 viii. 2 ix. 3 x. 4 xi. 5 b. PH i. 5 ii. 5.5 iii. 6 iv. 6.5 v. 7 vi. 7.5 vii. 8 viii. 8.5 ix. 9 x. 9.5
			23. Does the village have a water reservoir which supply to FHTC? a. Yes b. No (If "No" skip to Q26) 24. **If Q23 = Yes**, number of water reservoirs supplying to FHTC in the village? 25. Details of water reservoirs (all) supplying to FHTC? ***Scripter Instruction: **Loop basis the number of water reservoirs mentioned in Q24*** a. Capacity of each reservoir b. Number of times each reservoir gets emptied daily. c. Number of days water is supplied in a week in the village 26. Is FTK available in the village? ***Capture photo of FTK if "Yes" selected (It should be optional)*** a. Yes b. No

S. No.	Indicator	Mode of information	Probable questions
7	Water user charges & financial sustainability for O&M	Response/ FGD Check from record	27. Does the GP/ village level institution levy water user charges? a. Yes b. No ***(If "No" is selected, skip to Q33)*** 28. What is the periodicity of collection of water user charges? a. Monthly b. Bi-monthly c. Quarterly d. Half yearly e. Annually
			29. Rate of water user charges: a. HH b. Shops c. Commercial properties d. Institutions e. Schools f. AWCs
			30. If answer to Q-27 is Yes, what was the total amount, for which the bills were generated in the last financial year? 31. How many bills (Physical) were generated as per record? 32. What was the total amount collected against these bills in the last financial year? 33. What was the total amount of expense incurred in the following heads for operation and maintenance of scheme/ all schemes in the village in the last financial year? (To be asked to the concerned O&M operator) a. Electricity_____ b. Chemicals_____ c. Manpower_____ d. Cost of repairs_____ e. Any other, please specify_____ f. Information not available_____ 34. In case of deficit, how were the additional funds being managed? a. Panchayat's reserve fund b. 15th FC c. Donations d. Any other
8	Water Treatment % of villages with chlorination mechanism	Response/ FGD	35. Is there a chlorination mechanism in the village? a. Yes-Functional b. Yes-Not Functional c. No ***(skip Q36 and Q37)*** 36. Is the chlorination method automated or manual? a. Automated b. Manual 37. Which chemical is used for chlorination? a. Bleaching powder b. Sodium hypochlorite c. Any other
9	O&M (Information to be collected scheme-wise) Villages with skilled human resource available	Response/ FGD	38. Who is responsible for O&M: a. VWSC b. PHED c. RWS d. Any other 39. How many trained person are available for O&M activities **(Mention Count)**: a. Pump operator b. Electrician c. Valve man d. Mason e. Plumber f. Others 40. Whether skilled/ trained manpower for O&M available locally? a. Yes b. No

S. No.	Indicator	Mode of information	Probable questions
10	% of villages having grievance redressal system.	Response/ FGD	41. Where can a HH report about any problem with PWS? a. Helpline number b. Reporting to block functionaries c. Reporting to district PHED or other authorities d. Reporting through portal (online) e. Other (Specify____) f. Don't know/can't say 42. What was the most frequent problem about? a. Leakage in the pipeline b. Replacement/adding new pipelines c. Inadequate water pressure d. Inadequate duration of water supply e. Irregular water supply f. Bad quality of water g. Other (Specify____)
11	IEC		43. What is the status of signages? a. Whether awareness slogans about safe water are printed with JJM logo a. Yes b. No b. Whether schematic diagram of water supply infrastructure has been displayed in the village? a. Yes b. No 44. How many times meeting happened for awareness on conservation in last one year? 45. How many meetings happened for judicious use of water in last one year?

ANNEXURE 6:

Availability of Tap Water Connection at Households - Households having PWS Scheme+ Households with their Own Arrangement with Premises

State	Numbers of Household with Tap Connection through PWS Scheme	HHs with their own arrangement within premises (Private Tap Connections)
INDIA	**224249**	**4711**
Andaman & Nicobar Islands	792	0
Andhra Pradesh	7304	137
Arunachal Pradesh	6813	13
Assam	8189	138
Bihar	15170	1452
Chhattisgarh	8006	56
D&NH and D&D	569	11
Goa	672	0
Gujarat	14799	37
Haryana	9105	107
Himachal Pradesh	4162	7
Jammu & Kashmir	4775	17
Jharkhand	6563	18
Karnataka	8846	25
Kerala	1240	8
Ladakh	564	0
Lakshadweep	48	0
Madhya Pradesh	14633	198
Maharashtra	11566	281
Manipur	1783	30
Meghalaya	3200	4
Mizoram	3055	12
Nagaland	3900	8
Odisha	8866	59
Puducherry	564	0
Punjab	6990	1514
Rajasthan	11968	74
Sikkim	1080	0
Tamil Nadu	12996	0
Telangana	11806	18
Tripura	607	15
Uttar Pradesh	24185	356
Uttarakhand	3287	67
West Bengal	6146	49

* We have excluded households into the calculation which reported “No” tap in Q121 but have reported either option a. “Piped into house/ dwelling” or option b. “Piped into yard, compound, plot” or if reported option e. “Tube Well / Borehole” in Q382 and e. “In own dwelling” & f, “In own yard/ plot” in Q393.

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Har Ghar Jal
Jal Jeevan Mission