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

Har Ghar Jal
Jal Jeevan Mission

Functionality Assessment of Household Tap Connections

State Report 2024 – Dadra & Nagar Haveli And Daman & Diu

Survey Period: Jul - 2024 – Oct - 2024

GOVERNMENT OF INDIA
MINISTRY OF STATISTICS AND PROGRAMME IMPLEMENTATION

Ipsos

Har Ghar Jal
Jal Jeevan Mission

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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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) 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

Chapter 1: State Factsheet

Functionality Assessment of Household tap Connections: Har Ghar Jal Survey	INDIA	Dadra & Nagar Haveli And Daman & Diu
Availability of Tap Water Connection at Households (Excluding Private Tap Connection)	98.1%	98.5%
Availability of Working Tap Water Connections at Households	86.5%	100.0%
Regularity of Water Supplied at Households (as per schedule)	83.6%	98.1%
Quantity of Water Supplied at Households (≥55 LPCD)	80.2%	77.3%
Quality of Water Supplied at Households (percentage of sample passed)	76%	13.6%
Functionality Status of Household Tap Connection	76%	13.6%

User Satisfaction	INDIA	Dadra & Nagar Haveli And Daman & Diu
User Satisfaction on Quantity of Water Supplied	83.1%	95.2%
User Satisfaction on Quality of Water Supplied	92.4%	97.3%
User Satisfaction on Pressure of Water Supplied	83.5%	92.4%

Village-Level Findings	INDIA	Dadra & Nagar Haveli And Daman & Diu
Availability of piped water schemes in villages	98.8%	100.0%
Availability of functional schemes in the villages on the day of survey	84.8%	100.0%
Institutional Management: Availability of VWSC/Paani Samiti at village level	55.2%	100.0%
Availability of Skilled manpower in the village for O&M	58.1%	96.8%
Availability of Field Test Kits (FTKs) in the Village	27.2%	1.0%
Households having seen Signage and IEC messages for water conservation	62.4%	73.1%
Water Disinfection Mechanism: Availability of Chlorination mechanism in the village	70.3%	93.7%

Assessment of Tap Connection at Public Institutions	INDIA	Dadra & Nagar Haveli And Daman & Diu
Availability of tap connection at public institutions	68.0%	96.6%
Quality of Water Supplied at Public Institutions (percentage of sample passed)	72.8%	12.4%

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. 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

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.

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.

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.

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 of the Study

To track the progress of the mission in providing functional household tap connection in rural India, Department of Drinking Water and Sanitation (DDWS) has been conducting a functionality assessment survey. In the year 2024, the third round of FHTC survey was done between July 2024 to October 2024. This survey aimed to track the progress and conduct a functionality assessment of households as well as pivotal public institute such as schools, Anganwadi centres, gram panchayat buildings, public health, and wellness centres. Through this assessment, the department seeks to drive meaningful improvements in water supply programs by conducting a thorough evaluation, engaging with the stakeholders for insights, and formulating actionable recommendations for enhanced functionality and efficiency. The study contributes to the broader goal of ensuring a reliable and accessible water supply for communities while promoting sustainable and effective program implementation.

Scope of the Survey:

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

Large scale survey of households for functionality assessment of tap connection

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

Daily Water quantity was calculated by multiplying flow rate by supply duration. If tap water isn't available daily, LPCD is calculated weekly

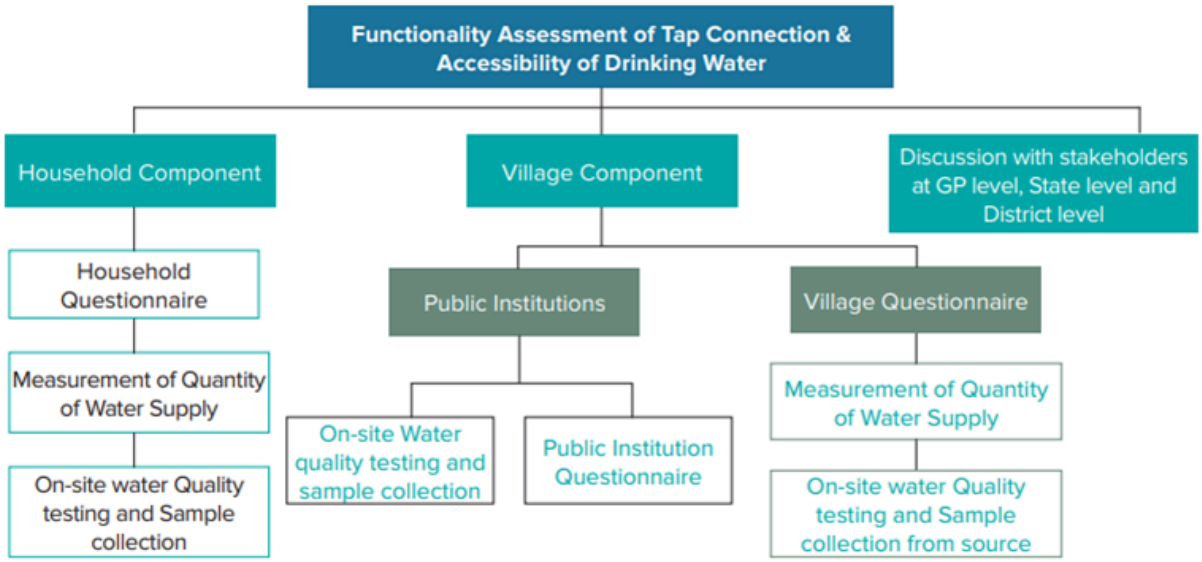
SILICA

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., 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 in each sampled 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) 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



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 advisory committee (TAC), 18,000±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 population 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 population 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 population) 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 18,000 (±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 1,000 individuals

b. C2 category: Includes villages with a population ranging from 1,000 to 5,000 individuals
c. C3 category: Includes villages with a population exceeding 5,000 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

Unlimited population:

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

where :
z is z score

$\hat{p}$ is the population proportion

n and n′ are sample size

N is the population size

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 Jul - 2024 to Oct - 2024

3.1.1. Selection of Household and Public Institution

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).

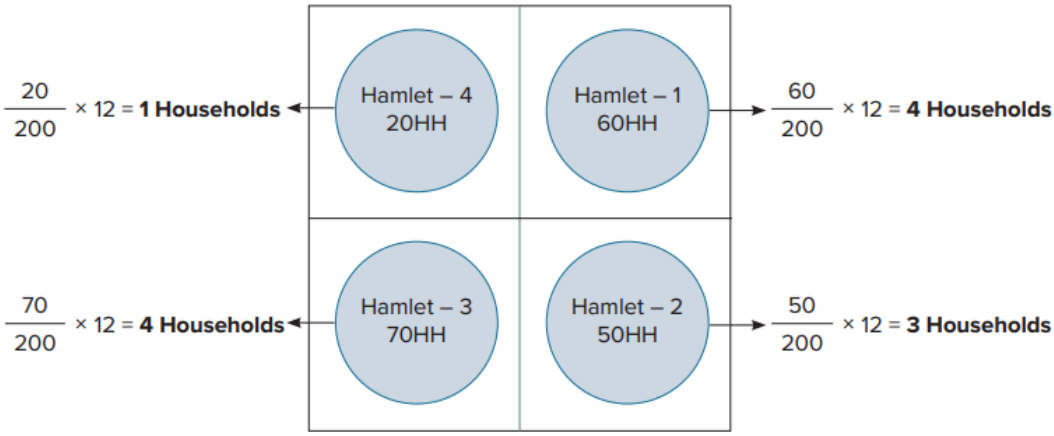
Step 2: The total number of households in each hamlets/ habitation was captured.

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.

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

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:

Guide for Segmentation (Hamlet):

IMIS Households of the village (Hamlet)	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., Step 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 screening 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 Residual Chlorine and 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

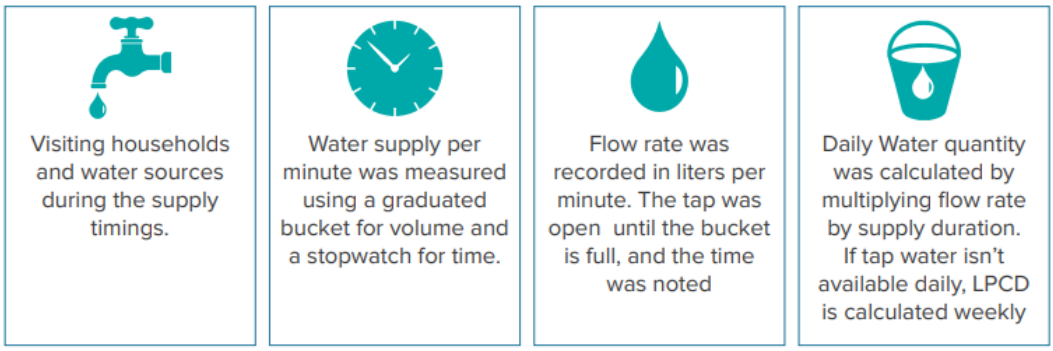
Selection of Public Institutions

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

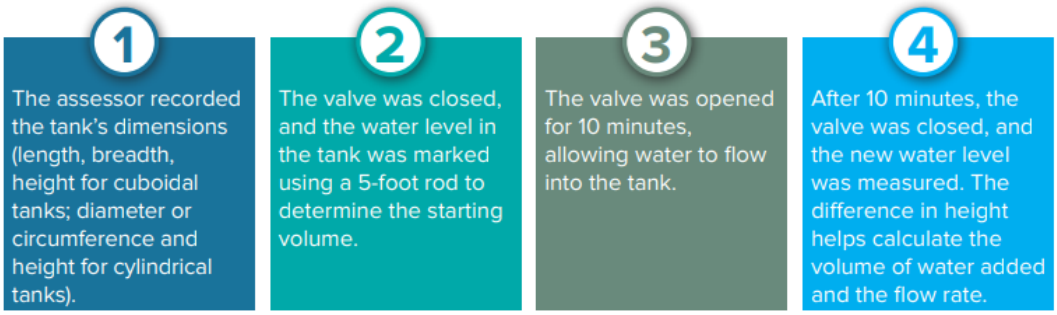
3.2. Approach to measuring quantity of water supplied

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



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:



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.

FIELD TEST KITS

Water Sample collection

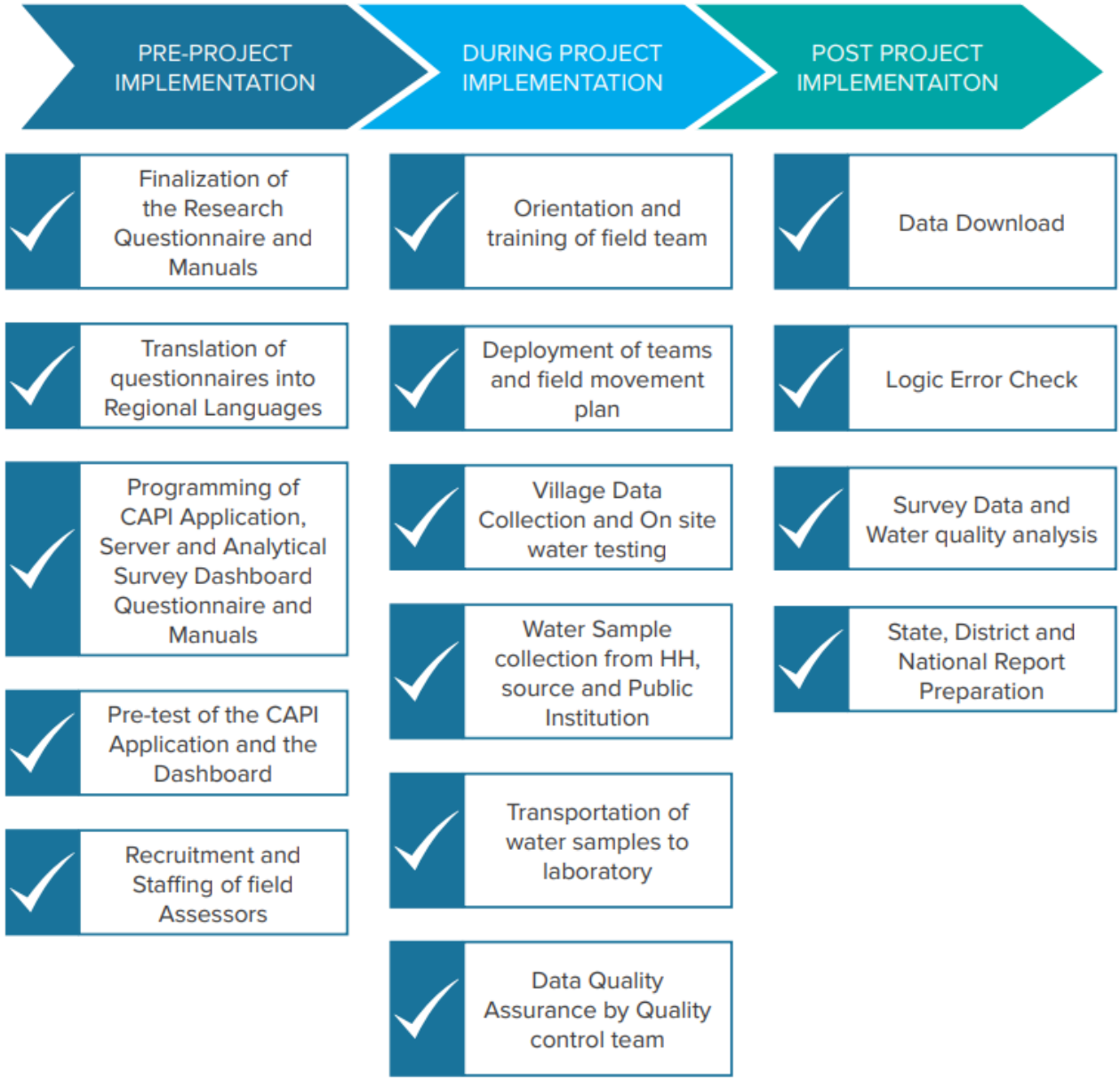
Household-level: Water samples was collected from two households per scheme in each village and tested for Microbiological Parameters in NABL - accredited labs.

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

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

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:



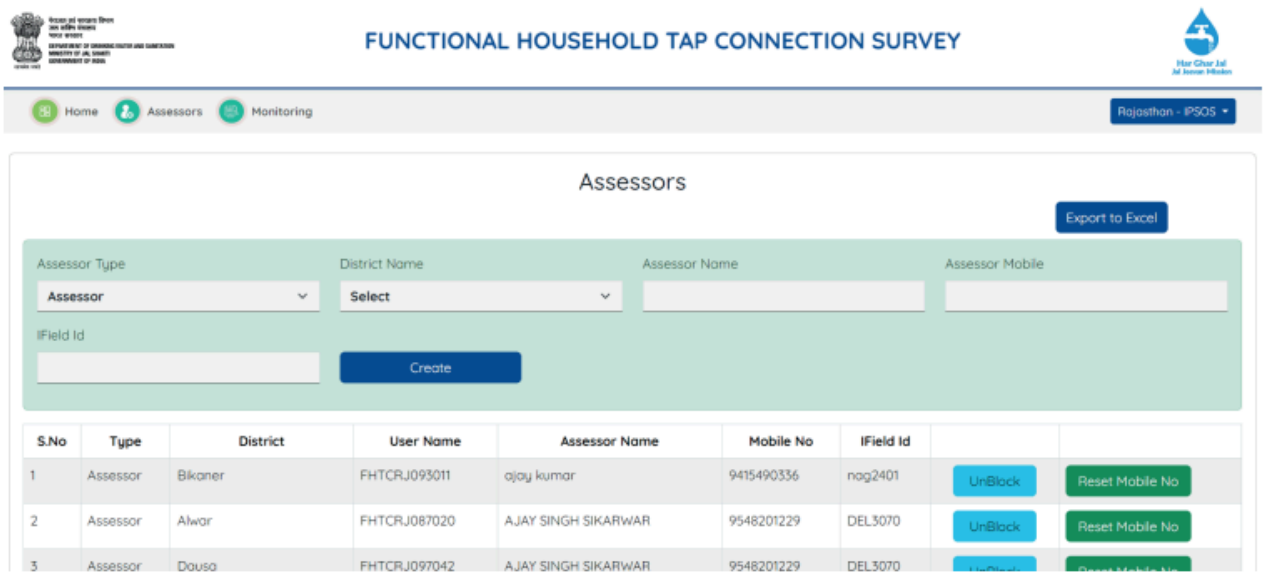
3.5. Survey Quality Assurance Mechanism

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.

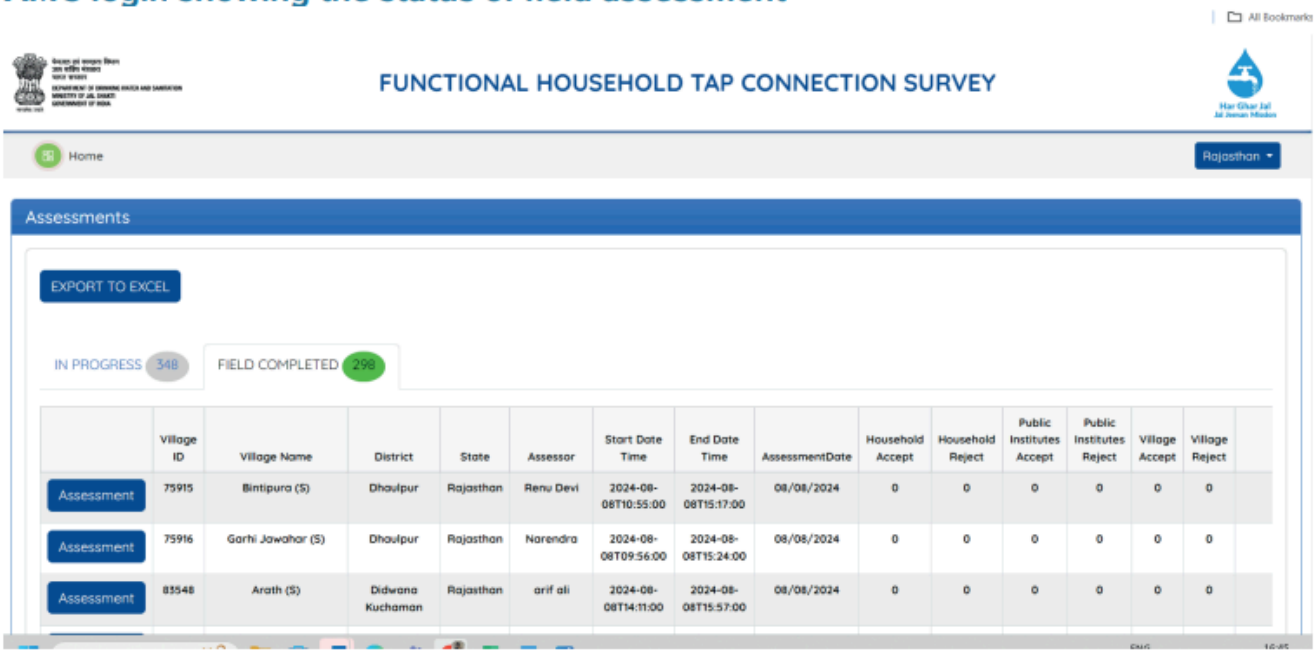
Different stakeholders had instant access to a range of metrices and updates related to the progress of the field work. The goal of implementing this real-time tracking and quality assurance system was to ensure that the data collected is of the highest quality possible.

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

AMC login showing the field assessor list



AMC login showing the status of field assessment



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.

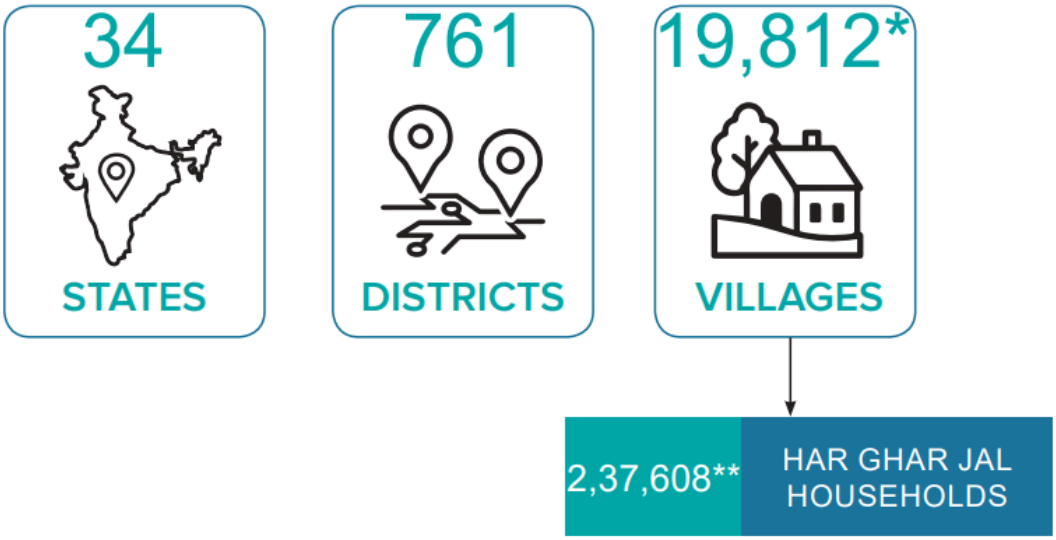
3.6. Limitation of the Survey

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's publication. For instance, a village where data was collected in June might have had its construction status changed from 'under construction' to 'completed and functional' by March 2025 when the report is finalized.

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

Below is the Sample Coverage for FHTC:



*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 1,000 individuals) ,C2 (villages with population ranging from 1,000 to 5,000 individuals) and C3 (villages with population exceeding 5,000 individuals). The weighting processes is furnished below: The PSU-level (Village - level) weights were calculated as below

PSU level weight = Nij/nij

Where, Nij = Number of PSUs (or stratum size) of the ith sub-staratum in the jth district nij= Number of PSUs selected from the ith stratum/sub stratum of the jth district

The final weight at household-level was calculated as below

(Nij÷nij) × (Hsij÷hsij)

Where, Hsij = total number of households in the sth PSU of the ith sub-stratum of the jth district hsij= total number of households selected surveyed from the sth PSU of the ith sub stratum of the jth district.

The household level analysis has been done by using the final weight mentioned above i.e., (Nij÷nij) × (Hsij÷hsij). 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 as sample proportions.

Estimated households after applying weights is shown in annexure 2

Chapter 4: State Snapshot: Dadra & Nagar Haveli And Daman & Diu

4.1. Demographics

Rural Population:	3,40,765
Total Household:	85,156
Total FHTC:	85,156
Total Number of District:	3
Number of HGJ District:	3
Number of HGJ (Har Ghar Jal) reported districts:	3
Number of HGJ (Har Ghar Jal) certified districts:	3
Number of Aspirational districts:	3
Number of SC/ST dominated districts:	1
Number of JE/AES (Japanese encephalitis (JE/ Acute encephalitis syndrome) affected district:	0
Number of districts with QA (Quality Affected) habitations:	0

4.2. Access to Tap Water Connection

Access to Tap Water Connection	Response
Type of system available in the State to apply for a household tap water connection:	Offline applications accepted
Time Required to set up a household tap water connection in the state:	No timeline
Maintenance of Consumer list at the state level:	Consumer list maintained at district level.
Is the Consumer list available Digitally:	Yes, Digitally available for Daman and Diu District and offline record is available for DNH District.

Note - The figure reported in chapter 4 is based on the State level interview

4.3. Water Infrastructure

Water Infrastructure	Response
Length of Supply network laid under JJM:	0
Number of Water Treatment Plants available:	14
Number of reservoir available:	149
Capacity of solar power for water supply system:	0

4.4. Status of Quantity of water produced at State level

volume of water produced

Type of Source	Quantity (in MCM)
Surface water	12
Ground water	10
Spring water	3

MCM= Million cubic meters

Cost incurred in last 1 year (in Rs. per Kilo Liter): 10

4.5. Status of asset Quality of drinking water at state level

Status of asset Quality of drinking water	Response
Frequency of Collection of water Samples for Quality Testing	Samples are collected on a daily basis
Has the state defined any role of Pani Samiti in testing & collection of water samples:	No role of Pani Samiti
Is there any SOP present for water quality monitoring	No
Type of monitoring system in place to deal with any contamination found in water sample:	The Water Treatment System is closely monitored, and the contamination cause is eliminated.
Type of monitoring system for Bacteriological parameters:	By testing the water sample at an NABL accredited laboratory
Type of disinfection system being used:	Alum, Chlorine.
Method of controlling disinfection in a water supply scheme:	Through Water Testing
Person in charge for monitoring the accreditation and performance of labs	WTP Engineer and Supervisor

4.6. Operations and Maintenance

Responsibility of O&M	Percentage
GP / VWSC directly	100
GP / VWSC through contract	0
PHED / RWS / PWD directly	0
PHED / RWS / PWD through contract	0
Others	0

Institutional arrangement to ensure effective operation of water supply schemes:

PWD in Daman and Diu District and District Panchayat in DNH District.

Structure of O&M at State level:

O&M is managed at various levels by the Chief Engineer, Superintending Engineer, Executive Engineer, Assistant Engineer, Junior Engineer, Supervisor, and Operators.

4.7 Water Source Reported

Water Sources Reported	Response
Surface water	12
Spring	1
Groundwater	102

4.8. Status of service delivery related grievances and redressal

Status of service delivery related grievances and redressal	Response
Type of Grievance	Grievance Redressal System Not Available

Status of service delivery related grievances and redressal	Response
Total number of grievances reported/ received in the last one year:	348
Total number of grievances resolved in the last one year:	333
Average time for resolution of complain:	24 Hours

4.9. Financial Sustainability

Total amount incurred & outstanding under the following head for the operation and maintenance in the last financial year	Amount Incurred (In Lakhs)	Amount Outstanding (In Lakhs)
Electricity		
Chemicals		
Manpower		
Cost of repairs		
Other's		

Chapter 5: Survey Results

5.1. Coverage of the Survey

- Number of districts Covered : 3
- Number of Village Covered : 49
- Number of Household Covered : 588

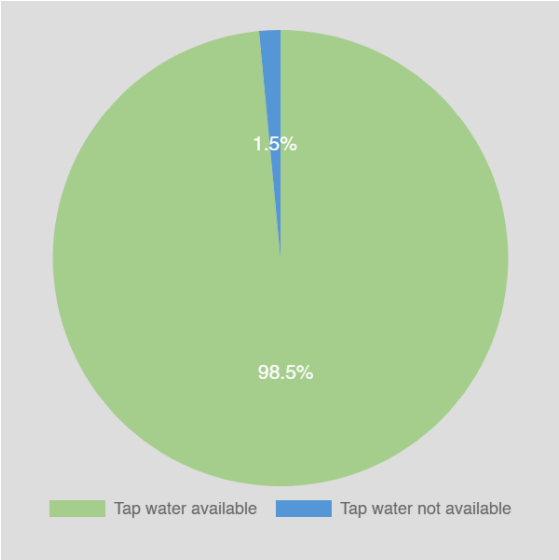
5.2. Functionality Assessment of Household tap Connections

5.2.1. Availability of Tap water Connection (Excluding Private Tap connection)

The objective of Jal Jeevan Mission is to provide tap water connection to households in a village. In this section the information related to the availability of water supply scheme and availability of tap water connection in the household is presented.

Availability of Tap Water Connection at HH (Excluding Private Tap connection)

At Household level 98.5% tap water connection was found available.



Availability of Tap Water Connection at HH- District Wise

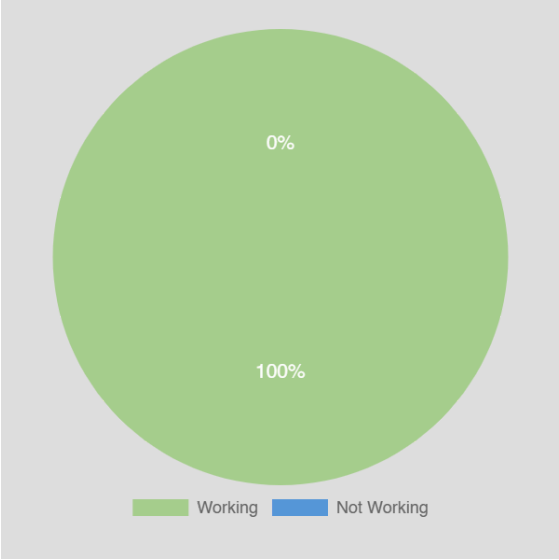
District	Availability of Tap Water Connection at HH
Dadra And Nagar Haveli	97.9%
Daman	99.5%
Diu	100.0%

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

District	Numbers of Household with Tap Connection through PWS Scheme	HHs with their own arrangement within premises
Dadra And Nagar Haveli	268	1
Daman	253	10
Diu	48	0

5.2.2. Availability of Working tap connection at Household

100.0% of household have working tap connection.



Working status of tap connection at household level District Wise

District	Availability of working tap connections
Dadra And Nagar Haveli	100.0%
Daman	100.0%
Diu	100.0%

5.2.3. 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.

Adequacy levels: ≥ 55 LPCD (Meets the required service level)).

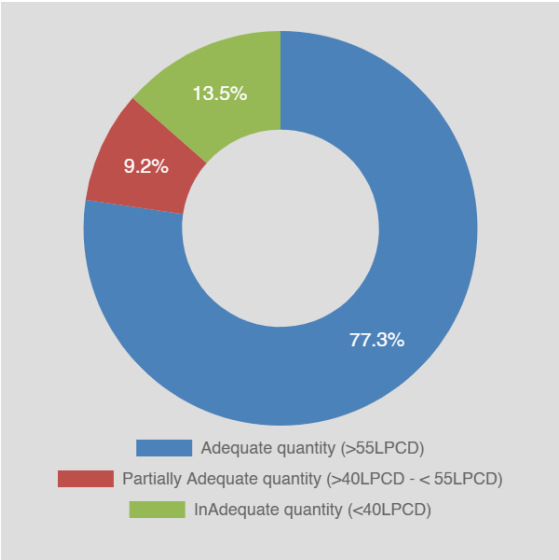
Partially Adequate: 40–55 LPCD (Falls below the standard but still provides some level of service.

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

Quantity of water Supplied at Households

The overall Adequate quantity (>55 LPCD) received at household level is 77.3%, 9.2% of the household receive Partially adequate quantity (> 40 LPCD -< 55 LPCD) whereas 13.5% of the household receive Inadequate quantity (<40 LPCD).



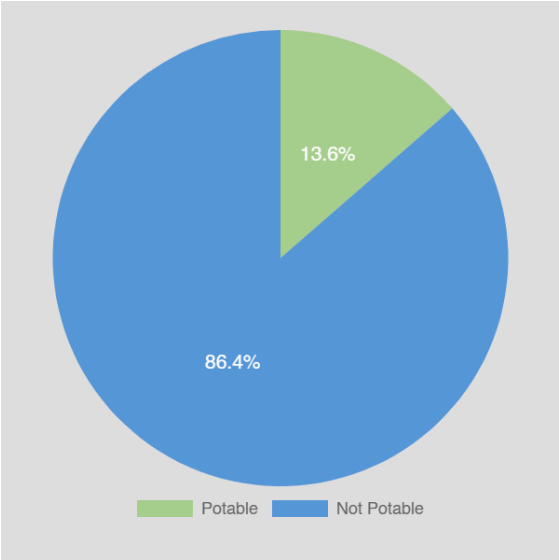
Quantity of water Supplied at Household

District	Adequate quantity (>55 LPCD)	Partially adequate quantity (> 40 LPCD -< 55 LPCD)	Inadequate quantity (<40 LPCD)
Dadra And Nagar Haveli	69.5%	9.7%	20.8%
Daman	81.7%	11.2%	7.0%
Diu	100.0%	0.0%	0.0%

5.2.4. 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 the NABL-accredited labs, and on-site testing for pH was conducted.

Quality of Water supplied at Household.

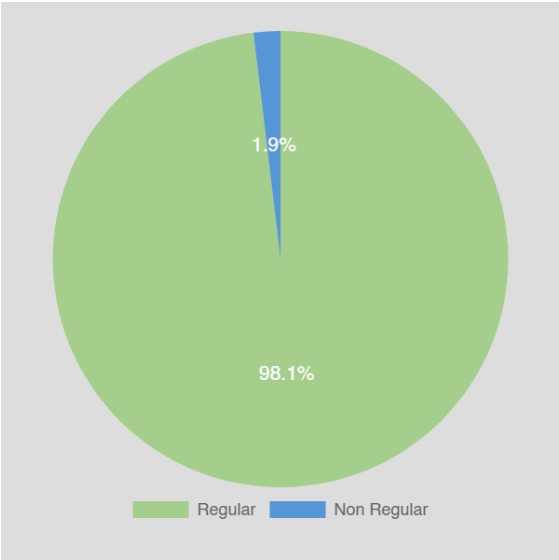


Quality of Water supplied at Household District Wise

District	Availability of potable water
Dadra And Nagar Haveli	1.0%
Daman	27.8%
Diu	100.0%

5.2.5. Regularity of Water Supplied at Households

Regular water supply as per schedule



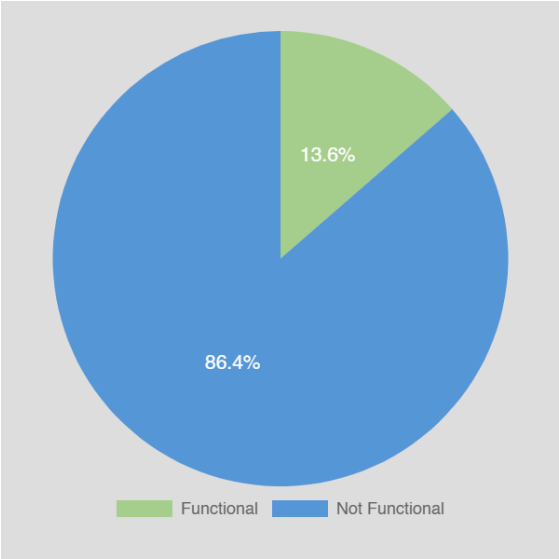
Household receiving regular water supply District Wise

District	Regular
Dadra And Nagar Haveli	97.7%

District	Regular
Daman	98.7%
Diu	100.0%

5.2.6. Functionality Status of Household Tap Connection

Functionality Status of Household Tap Connection.



Functionality Status of Household Tap Connection

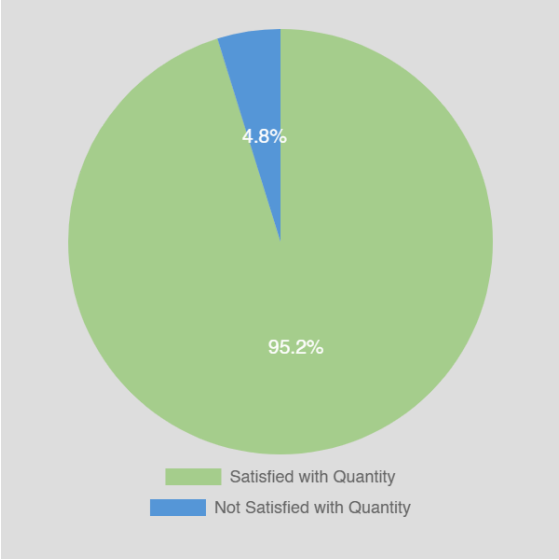
District	Availability of functional household tap connections
Dadra And Nagar Haveli	1.0%
Daman	27.8%
Diu	100.0%

5.3. User Satisfaction on Quality, Quantity and Pressure

5.3.1. User Satisfaction on Quantity of Water Supplied

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

Perception on Satisfaction with Quantity



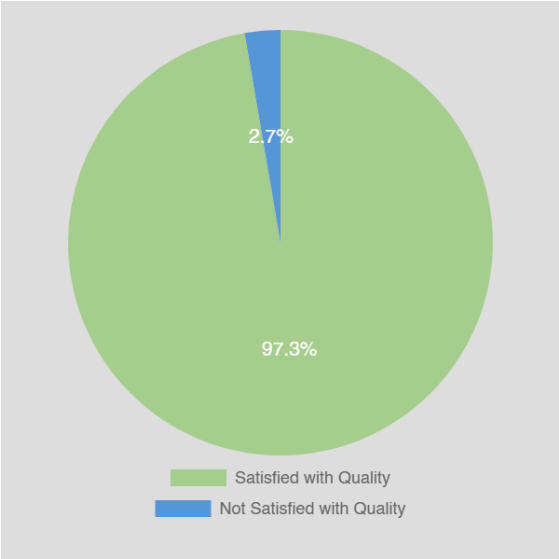
Perception on Satisfaction with Quantity District Wise

District	Satisfied with quantity
Dadra And Nagar Haveli	98.0%
Daman	87.2%
Diu	100.0%

5.3.2. User Satisfaction on Quality of Water Supplied

Respondent in the households were asked whether they are satisfied with overall quality of water supplied or not. 97.3% of households reported satisfied with quality of water.

Perception on Satisfaction with Quality



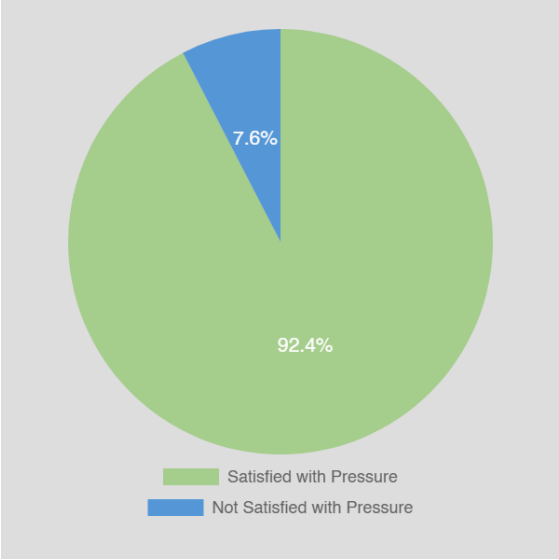
Perception on Satisfaction with Quality District Wise

District	Satisfied with quality
Dadra And Nagar Haveli	96.3%
Daman	99.1%
Diu	100.0%

5.3.3. User Satisfaction on Pressure of Water Supplied

Respondent in the households who reported having tap connections were asked whether they are satisfied with overall pressure of water or not. 92.4% were satisfied with the overall pressure of water.

Perception on satisfaction with Pressure



Perception on Satisfaction with Pressure District Wise

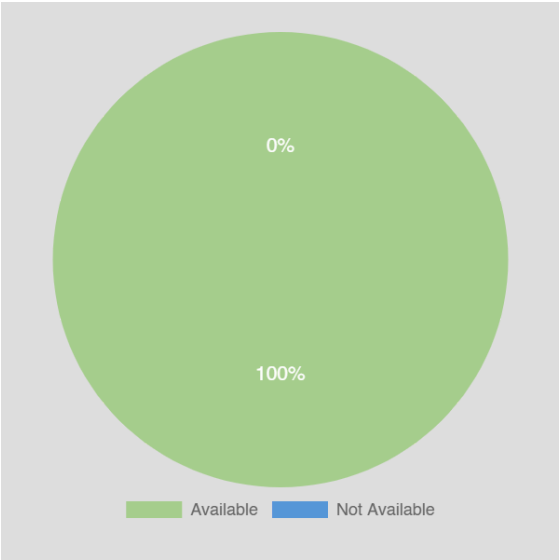
District	Satisfied with pressure
Dadra And Nagar Haveli	92.1%
Daman	91.5%
Diu	100.0%

5.4. Management of water service delivery at village level (O&M)

Operation & maintenance is important for ensuring functionality of household tap connections. Management and O&M of the water supply scheme by the Gram Panchayat and/ or its sub-committee, i.e. VWSC/ Paani Samiti/ User Group, etc., recovery of user charges and full O&M recovery will form the cornerstone of the long-term sustainability of the scheme.

5.4.1. Availability of VWSC/Paani Samiti

100.0% of villages have VWSC/Paani Samiti present.

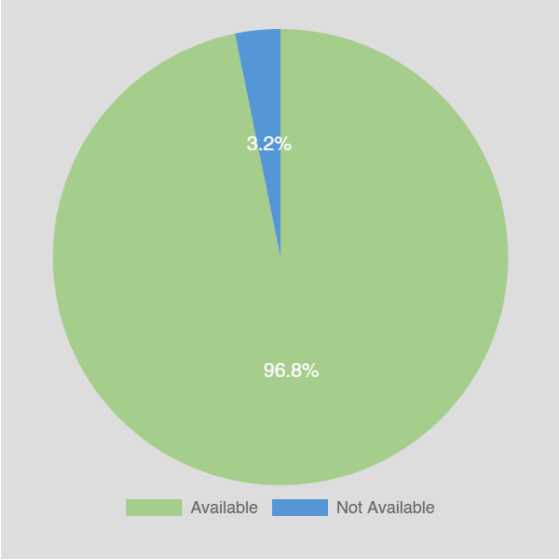


Availability of VWSC/Paani Samiti District Wise

District	Availability of VWSC/Paani Samiti in the village
Dadra And Nagar Haveli	100.0%
Daman	100.0%
Diu	100.0%

5.4.2. Availability of Skilled manpower in the village for 0&M

96.8% of skilled manpower in the village is available for O&M.

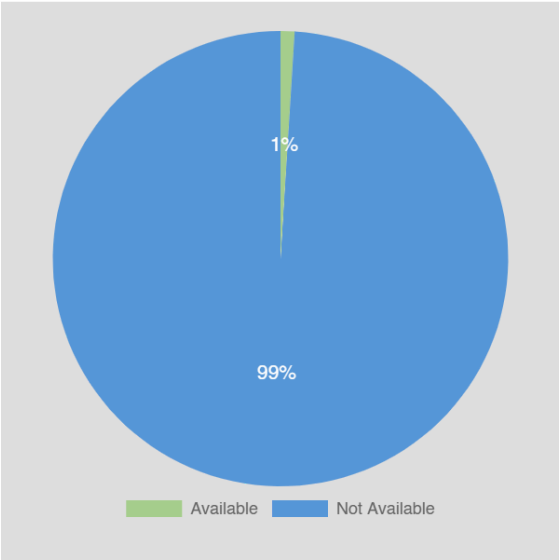


Availability of Skilled manpower in the village

District	Availability of Skilled Manpower District Wise
Dadra And Nagar Haveli	95.6%
Daman	100.0%
Diu	100.0%

5.4.3. Availability of field test kits (FTKs)

Availability of field test kits (FTK)



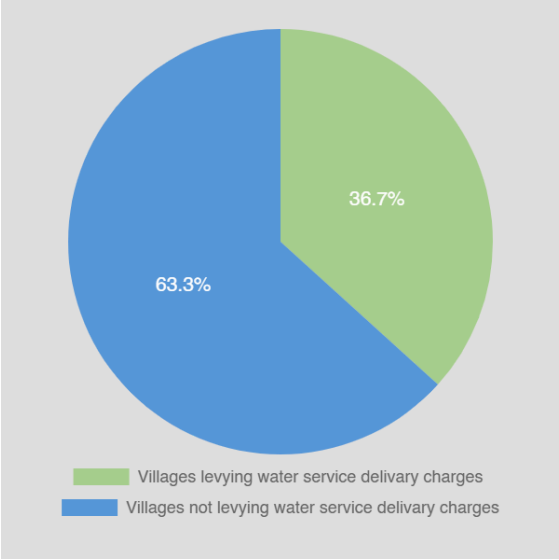
Availability of field test kits (FTKs) District Wise

District	Availability of FTKs
Dadra And Nagar Haveli	0.0%
Daman	0.0%
Diu	25.0%

5.4.4. Village levying water service delivery charges

As per the JJM guidelines, in a gram Sabha resolution, the village decides on a user charge to be levied for the water service delivery.

Villages levying water service delivery Charges

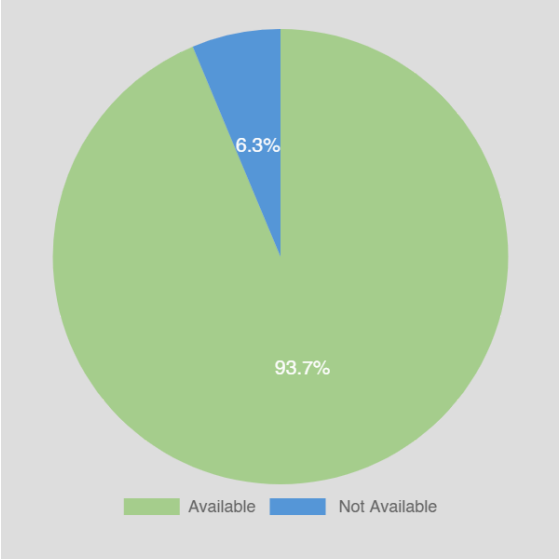


Villages levying water service delivery charges

District	Villages levying water service delivery charges
Dadra And Nagar Haveli	30.3%
Daman	63.6%
Diu	0.0%

5.4.5. Availability of Chlorination mechanism used at village level

Availability of Chlorination Mechanism in the village



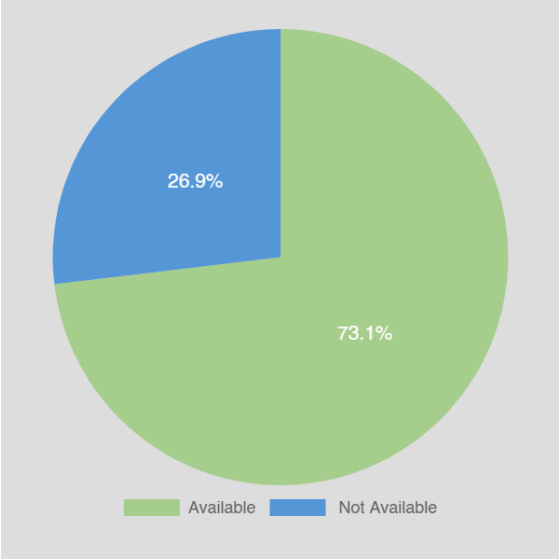
Availability of Chlorination Mechanism

District	Availability of Chlorination Mechanism
Dadra And Nagar Haveli	91.3%
Daman	100.0%
Diu	100.0%

5.4.6. Signage and IEC messages for water conservation

73.1% of households reported seeing signage of Information, Education, and Communication (IEC) messages on water conservation. While the Jal Jeevan Mission focuses on infrastructure, IEC messages play a crucial role in promoting responsible water use and ensuring long-term water security.

Signage and IEC messages for water conservation



Signage and IEC messages for water conservation District Wise

District	Signage and IEC messages for water conservation
Dadra And Nagar Haveli	59.7%
Daman	99.8%
Diu	100.0%

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.

To,

All members of Technical Committee.

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

State	Sampled Har Ghar Jal Household	Estimated Har Ghar Jal Household
Andaman & Nicobar Islands	792	75,491
Andhra Pradesh	7,560	27,73,473
Arunachal Pradesh	6,837	4,36,808
Assam	8,372	16,97,524
Bihar	17,352	1,70,38,709
Chhattisgarh	8,100	5,91,755
Dadra & Nagar Haveli And Daman & Diu	588	98,127
Goa	672	31,681
Gujarat	14,868	1,07,36,378
Haryana	9,282	34,81,912
Himachal Pradesh	4,176	25,91,079
Jammu & Kashmir	4,860	2,62,978
Jharkhand	6,660	8,34,976
Karnataka	8,928	24,33,400
Kerala	1,264	5,68,397
Ladakh	564	2,8575
Lakshadweep	48	5,858
Madhya Pradesh	15,094	38,34,887
Maharashtra	12,276	64,74,146
Manipur	1884	64,448
Meghalaya	3242	2,47,769
Mizoram	3072	1,59,902
Nagaland	3,936	2,66,445
Odisha	9,000	28,33,514
Puducherry	563	1,38,689
Punjab	8,688	40,14,040
Rajasthan	12,168	13,49,202
Sikkim	1,080	25,720
Tamil Nadu	12,996	73,79,404
Telangana	11,844	62,30,719
Tripura	636	49,351
Uttar Pradesh	25,544	89,35,658
Uttarakhand	3,492	10,26,860
West Bengal	6,252	15,82,085
Total	2,32,691	8,85,80,962

Annexure 3: Questionnaire

Questionnaire for HH 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	Respon-dent 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 observa-tion	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 /under-ground 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?

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