



Functionality Assessment of Household Tap Connection under National Jal Jeevan Mission - 2022



STATE REPORT: ASSAM
SURVEY DURATION: FEBRUARY TO APRIL 2022

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Abbreviations

AWC	Aanganwadi Centre
FHTC	Functional Household Tap Connection
GoI	Government of India
GP	Gram Panchayat
HF	Health Facility
HH	Household
HGJ	Har Ghar Jal
JJM	Jal Jeevan Mission
LPCD	Litres per Capita per Day
MVS	Multi-village Scheme
NJJM	National Jal Jeevan Mission
RC	Residual Chlorine
O&M	Operation and Maintenance
OHT	Over Head Tank
PSU	Primary Sampling Unit
PWS	Piped Water Supply
SVS	Single Village Scheme
VAP	Village Action Plan
VWSC	Village Water and Sanitation Committee
WQMIS	Water Quality Monitoring and Information System

Glossary

1. **Community** – Group of people living in one particular area or village/habitation
2. **Cross-sectional research** – A cross-sectional study is a type of research design in which data is collected from a relatively large and diverse group of people at a single point in time
3. **Drinking water source** – Groundwater (open well, borewell, tube well, handpump, spring, etc.)/ surface water (river, lake, pond, reservoir, etc.)/rainwater, available for drinking and domestic use
4. **Improved sources** – The following sources as considered improved by the National Family Health Survey definitions: Piped water into dwelling, yard/plot with a tap, piped water connected to public stand-posts, tube well or borewell, Hand pump, dug well–protected, Spring–protected, Rainwater, Water ATM/ Community RO plant/ Community Water Purification Plant (CWPP)
5. **Unimproved sources** – The following sources as considered unimproved by the National Family Health Survey definitions: Unprotected spring, unprotected dug well, cart with small tank / drum, Tanker/ truck, Surface water (river/ dam/ lake/ pond/ canal), and bottled water
6. **Functional Household Tap Connection (FHTC)** – A tap connection to a rural household for providing drinking water in adequate quantity of prescribed quality on regular basis.
7. **Functionality of FHTC** – Functionality of a tap connection is defined as having infrastructure, i.e., household tap connection providing water in adequate quantity, as presented:

Definitions	Fully functional	Partially functional	Non-functional
Quantity	≥ 55 LPCD	> 40 lpcd - < 55 LPCD	< 40 LPCD
Regularity	12 months or daily basis	9-12 months or $<$ daily basis	< 9 months or $<$ daily basis
Quality	Potable	Potable	Non potable

8. **Quantity (in litres)** of water received by households per person per day should meet the service level of 55 lpcd.
9. **Functionality Assessment** – An assessment of the functionality of rural household tap connections based on a sample survey
10. **Fully Regular** – Regularity of water is considered when a rural household receives water for 12 months on daily basis or as per schedule.
11. **Potability** – Potable water is water that is safe to be used as drinking water. Parameters of potable water are mentioned below:

Parameters for potable water tested in the survey	Unit	Acceptable Limit	Permissible Limit in the absence of alternative sources
i. pH (tested on site)	-	6.5 to 8.5	No relaxation
ii. Free residual chlorine (tested on site)	Mg/litre	0.2	1
iii. Turbidity	NTU	1	5
iv. Total hardness	Mg/litre	200	600
v. Total alkalinity	Mg/litre	200	600
vi. Chloride	Mg/litre	250	1000
vii. Ammonia	Mg/litre	0.5	No relaxation
viii. Phosphate	Mg/litre	0.3	1
ix. Iron (in hotspots only)	Mg/litre	1	No relaxation
x. Nitrate	Mg/litre	45	No relaxation
xi. Sulphate	Mg/litre	200	400
xii. Total dissolved solids	Mg/litre	500	2000

xiii.	Fluoride	Mg/litre	1	1.5
xiv.	Arsenic (in hotspots only)	Mg/litre	0.01	No relaxation
xv.	Bacteriological test for Total coliform bacteria and E. coli or thermotolerant coliform bacteria		Shall not be detectable in any 100 ml sample	

12. **Sampling** – Selection of a subset of individuals from within a statistical population to estimate water service delivery among the population. In the current study, households have been sampled to estimate the representation of the village and subsequently of the district as well as of the state.
13. **Types of schemes:** Following are the piped water supply schemes that were assessed
- Mini-solar based piped water supply scheme in isolated/tribal hamlets
 - Single Village Scheme (SVS) in villages having adequate groundwater that needs treatment
 - Single village scheme (having adequate groundwater/ spring water/ local or surface water source of prescribed Quality)
 - Retrofitting of ongoing schemes taken up under erstwhile NRDWP for the last mile connectivity/ retrofitting of completed rural water supply schemes to make it JJM compliant
 - Multi-village PWS scheme - with water grids/ regional water supply schemes
14. **Village Action Plan (VAP)** – Plan prepared by Gram Panchayat and/ or its sub-committee, i.e., VWSC/ Paani Samiti/ User Group, etc. based on baseline survey, resource mapping and felt needs of the village community to provide FHTC to every rural household, treat the generated greywater and plan its reuse, undertake surveillance activities, etc. VAP also indicates the fund requirement and timelines for completion of work under the Mission and will be approved by the Gram Sabha. Irrespective of the source of funding, all drinking water-related works in the village are taken up based on the VAP.
15. **Source Sustainability** – includes measures such as aquifer recharge, rainwater harvesting, increased storage capacity of water bodies, reservoirs, de-silting, etc. improve the lifespan of water supply systems
16. **Har Ghar Jal (HGJ)** – An administrative unit wherein all HHs are provided with water supply through FHTCs is called “Har Ghar Jal”.
17. **Public Institutions** – The public institutions in the survey include Aanganwadi Centre (AWC), Health Facilities, Schools, Gram Panchayat, and government buildings.
18. **Working tap connection** – A tap connection supplied water at least one day in the week, preceding of survey
19. **Functional Scheme** – A scheme is said to be functional if it was reported to be working for all 12 months in a year.

Note: The detailed analysis of data at the district level has been incorporated in the District Reports presented separately. The State Reports are to be read in concurrence to the District Reports.

Executive Summary

Jal Jeevan Mission (JJM) was launched on the 15th of August 2019 with the objective to provide functional household tap connections (FHTCs) to all rural households. NJJM, GoI engaged HTA Kantar Public to conduct the 'Functionality Assessment' of the tap connection at households as well as public institutions/ buildings such as schools, anganwadis, gram panchayat buildings, public health facilities, and wellness centers in all the rural districts for the financial year 2021-22.

A cross-section research design was adopted for this functionality assessment study. As per the design, all villages having a piped water scheme (PWS) with 20 or more functional household tap connections were included in the sample frame. There after the required number of villages were randomly selected villages such that these are statistically significant at the district level.

In this study, data was collected from the households, and public institutions (i.e., schools, anganwadis, gram panchayat buildings, public health facilities and wellness centers, etc.) in the randomly selected villages. Water quantity and quality were also tested in the sampled households and public institutes. Quality testing was conducted for various parameters, out of which pH and residual chlorine were tested on the ground and for the remaining 12 different quality parameters water sample was collected and sent to the nearest NABL accredited district labs for testing.

The state of Assam lies on the north-eastern part of India and has a population of 3,12,05,576 (Census 2011). It has 33 districts and 25335 villages where 10901 villages have PWS schemes. The state lies on the Eastern Himalayan region and receives an average annual rainfall of about 2134.6mm. Among the villages with PWS schemes, 8664 villages (34.20%) have more than 20 households with functional tap connections. The state is yet to achieve the Har Ghar Jal status.

In the assessment among sampled villages, 63% of villages have only one scheme, 30% of villages have 2-3 schemes, and 8% of villages have 4 and more schemes. Mostly all schemes across the state were found functional.

At the state level, 72% of the HHs were satisfied with the regularity of the supply, 76% with the quality of the water supplied, 76% with the colour of the water supplied, and 78% with the taste of the supplied tap water.

Overall functionality status of Assam

At the state level, 81% of HHs received water on the day of the survey. While 58% of the HHs were found to have fully functional tap water connections within the premises. Out of which 78% received an adequate quantity of water, 73% reported receiving a fully regular supply of water, and 91% HHs received potable water.

It was found that more than 75% of households received water all 7 days a week and 14% received at least 3 to 4 days, while 7% of the HHs received water once a week. The average duration of water supply across the state was reported to be 1 hour per day.

In Assam, 18% of the villages have reported that water is directly supplied to the households and the remaining 82% reported that water was supplied via an overhead tank, sump, or both.

During the roll-out of the data collection in the state, all-district level NABL accredited laboratories (labs) extended their support in accepting and testing water samples from HHs

and public institutions. One of the challenges identified by the labs was the capacity to test more than 30-40 samples within 24 hours given the shortage of technicians and availability of necessary reagents in the required quantity. In Assam, 10422 samples of water were submitted, and 9808 were tested at the labs. The turnaround time of testing of water sample was more than 48 hours in most cases. Given this feedback, it can be conferred that these labs have limited scope to take up samples from the general public at large on a regular basis. The different quality parameters of the collected water samples that were tested were turbidity, total hardness, total alkalinity, chloride, iron, nitrate, sulphate, total dissolved solids, bacteriological test, arsenic, and fluoride.

Residual chlorine was found within the permissible limit only in 4% of the HHs. The percentage was relatively higher in HFs, and Schools (more than 10%), wherein there is a possibility of additional chlorine being added locally for the purification of water. Even if 88% of samples passed in bacteriological parameter the RC was found only in 12%, which means the protection against the risk of bacteriological contamination from source to point of consumption is not provided to HHs. A monitoring system to ensure the correct dosing of chlorine in the pipe water supply system is necessary for assuring potable water.

Out of the 12786 HHs sampled for the FHTC assessment, a water quality test was carried out in 10320 due to the non-availability of water in 19% HHs on the day of the survey. pH was found within the acceptable limit in 95% of households. Among the public institution, pH was found in the acceptable limit of more than 95% in all the public institutions.

10% of villages in the state reported having available field test kits. And 15% of these reported to have either VWSC/Pani Samiti or pump operators trained to use field test kits for testing the quality of water on-site.

Water quality management in village

It was found that 58% of villages in the state reported having a VWSC or a Pani Samiti out of which 15% of the VWSC/Pani Samitis reported to have more than 50% female members. In the state, 11% of villages reported that VWSC/ Pani Samiti is responsible for the operation and maintenance of pipe water supply.

14% of villages reported having identified skilled manpower for O&M of PWS schemes. 6% of villages in the state reported having faced challenges with respect to O&M of PWS schemes.

54% of HHs reported that they are aware of any grievance redressal mechanism w.r.t. HH tap water through PWS, but only 3% HHs have reported a complaint in the last year and only 2% of complaints have been resolved. Among those who reported complaints (i.e., 3% HHs, 212 HHs), 67% of the HHs reported their complaints to the pump operators besides other reporting channels.

Overall, 8% of villages in the state levy charge for water service delivery to households whereas 10% HHs reported paying water service delivery charges at the households.

59% of HHs reported that their daily requirement of water was being met by HH tap connections.

Overall, 41% of HHs reported using an improved source of drinking water, as their primary source. The state also needs to further strengthen communication for the quality of water supplied so that every household can use the same for drinking purposes.

Overall, 7% HHs reported using booster pumps to maximize the water flow through their piped water connections.

It was found that 30% of the villages have schemes that are based on groundwater sources, while 11% on surface water sources.

Age-wise functionality of the schemes indicates improvement in 'always functional' schemes and a decrease in the 'non-functional scheme' in the state since 2012. 13-% point increase in the fully functional scheme was recorded from 2012 to 2013-18. In 2019 and later 4% increase in fully functional schemes occurred, however, 67% of schemes have been reported to be always functional and 8% as partially functional (i.e., a total of 75% of schemes).

Impact of JJM

Across the state, only 4% HHs reported having an incidence(s) of water-borne diseases in the last year.

Since having a functional HH tap connection, 15% HHs across the state have reported that there has been a change in the no. of employment days of the adult HH members while 55% HHs reported no change.

Out of the HHs reported (i.e., 4338) that female members used to fetch water before HH tap connection, 44% reported that post-installation of HH tap connection helped reduce of time and effort in collection of water.

Across the state, 4% HHs reported that since having a functional HH tap connection the attendance of the girls going to schools has increased, while 6% HHs reported no change in attendance which could possibly be an impact of shutting down of schools due to COVID-19 related lockdown during the survey period.

Functionality Status of Har Ghar Jal Districts

At the state level for Har Ghar Jal districts, 87% of households received water on the day of the survey. While 59% of the households were found to have fully functional tap connections. Out of which 80% received an adequate quantity of water, less than three-fourth reported receiving a fully regular supply of water and 91% received potable water.

Since having a functional HH tap connection, less than one-fifth reported that there has been a change in no. of employment days. Out of the HHs in which female members used to fetch water before HH tap connection, 48% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the Har Ghar Jal district, 9% HHs reported that since having a functional HH tap connection their income has directly benefitted.

Functionality Status of Aspirational Districts

At the state level for aspirational districts, 71% of households received water on the day of the survey. While 52% of the households were found to have fully functional tap connections. Out of which 68% received an adequate quantity of water, more than two-third reported receiving a fully regular supply of water and 91% received potable water.

Since having a functional HH tap connection, 14% reported that there has been a change in no. of employment days. Out of the HHs in which female members used to fetch water before HH tap connection, 60% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the aspirational district, 13% HHs reported that since having a functional HH tap connection their income has directly benefitted.

Functionality Status of JE-AES Districts

At the state level for JE-AES districts, 81% of households received water on the day of the survey. While 58% of the households were found to have fully functional tap connections. Out of which 88% received an adequate quantity of water, three-fourth reported receiving a fully regular supply of water and 83% received potable water.

Since having a functional HH tap connection, 15% reported that there has been a change in no. of employment days. Out of the HHs in which female members used to fetch water before HH tap connection, 44% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the JE-AES district, 12% HHs reported that since having a functional HH tap connection their income has directly benefitted.

1. State Factsheet

Functionality status of tap connection at households	India	Assam
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	86	81
Quantity ¹ of water received by households		
Adequate quantity (>55 LPCD) (%)	85	78
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	5	7
Inadequate quantity (<40 LPCD) (%)	10	15
Regularity ² of water received by households		
Fully Regular Supply (as per schedule) (%)	80	73
Partially Regular Supply (not as per schedule) (%)	14	20
Irregular Supply (less than 9 months' supply) (%)	6	7
Potable ³ (Quality) water received by households (%)	87	91
Overall functionality ⁴ (%)	62	58

Service delivery parameters	India	Assam
Overall user satisfaction on regularity at the household level (%)	83	72
Overall user satisfaction on quality at the household level (%)	82	76
Households receiving water supply daily-7 days a week (%)	74	75
Daily HH requirement of water being met by FHTC (%)	80	59
Households paying water service delivery charges (%)	35	10
Households aware of grievance redressal mechanism (%)	71	54
Households reported a reduction in time and effort in collecting water (%)	79	44
Average no. of times water is supplied in a day	1	1
Households reported incidence of water-borne diseases in the last year (%)	2	4
Households purifying water before drinking (%)	57	66
Residual Chlorine (RCL) detected with in permissible limits (%)	24	5
Villages with Field Test Kits (%)	30	10
Villages in which bacteriological test was done in last 1 year by VWSC/ Pani Samiti (%)	29	26
Villages reported to have a mechanism for chlorination (%)	21	19

Service delivery parameters	India	Assam
Village reported having presence of VWSC/ Pani Samiti (%)	38	58
Villages in which VWSC/ Pani Samiti is responsible for Operation & Maintenance of PWS schemes (%)	14	11
Villages in which persons are trained to use Field Test Kits (%)	31	15
Villages levying water service delivery to households (%)	34	8
Villages having skilled manpower for Operation & Maintenance of PWS schemes (%)	31	14
Community monitoring of water wastage in villages (%)	19	10
Villages in which signages about JJM were observed (%)	15	50

¹ Quantity (in litres) of water received by households per person per day should meet the service level of 55 lpcd

² Regularity is receiving water for 12 months or daily basis as per schedule

³ Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological parameters (within acceptable/ permissible range) and onsite testing of pH.

⁴ Overall functionality has been computed as the intersection of Adequate Quantity, Fully Regular Supply and Potable (Quality) for households wherein water supply was available at the time of survey

Functionality status of tap connection at households in Har Ghar Jal Districts	India	Assam
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	91	87
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	88	80
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	4	7
Inadequate quantity (<40 LPCD) (%)	8	13
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	84	74
Partially Regular Supply (not as per schedule) (%)	11	19
Irregular Supply (less than 9 months' supply) (%)	5	7
Potable (Quality) water received by households (%)	90	91
Overall functionality (%)	69	59

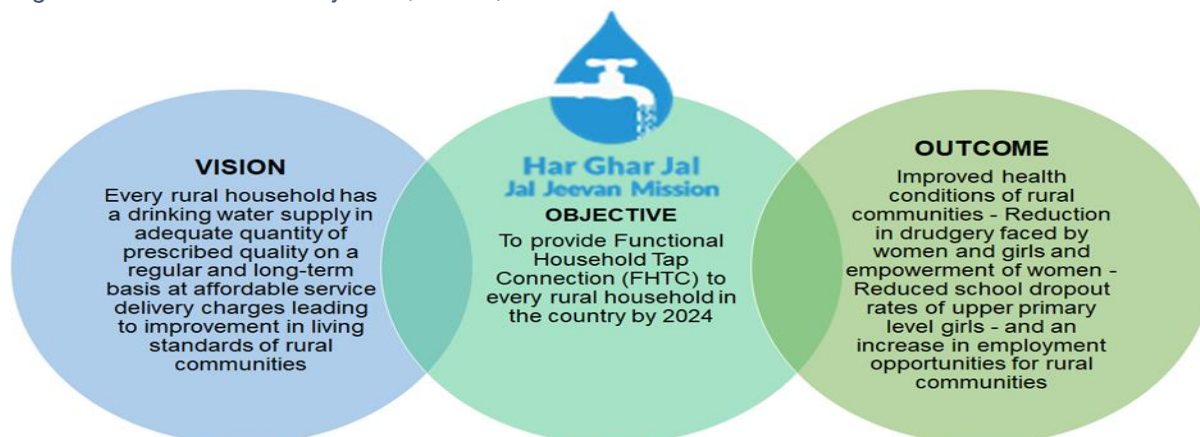
Functionality status of tap connection at households in Aspirational Districts	India	Assam
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	78	71
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	85	68
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	5	10
Inadequate quantity (<40 LPCD) (%)	10	22
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	77	72
Partially Regular Supply (not as per schedule) (%)	14	18
Irregular Supply (less than 9 months' supply) (%)	9	10
Potable (Quality) water received by households (%)	88	91
Overall functionality (%)	62	52

Functionality status of tap connection at households in JE-AES Districts	India	Assam
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	79	81
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	95	88
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	2	5
Inadequate quantity (<40 LPCD) (%)	3	7
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	80	75
Partially Regular Supply (not as per schedule) (%)	13	17
Irregular Supply (less than 9 months' supply) (%)	7	8
Potable (Quality) water received by households (%)	89	83
Overall functionality (%)	69	58

2. Context

Jal Jeevan Mission (JJM) was launched on the 15th of August 2019 with the objective to provide functional household tap connections (FHTCs) to all rural households.

Figure 1: Har Ghar Jal - Objective, Vision, & Outcome



In accordance with the overall objectives as specified in the Operational Guidelines for the implementation of the NJJM, GoI carried out a sample survey to assess the functionality of household tap connections. As part of this endeavour, NJJM, GoI engaged HTA Kantar Public to conduct the 'Functionality Assessment' of the household as well as public institution/buildings such as schools, anganwadis, gram panchayat buildings, public health facilities, and wellness centers in all the rural districts for the fiscal year 2021-22.

2.1. State snapshot: Assam

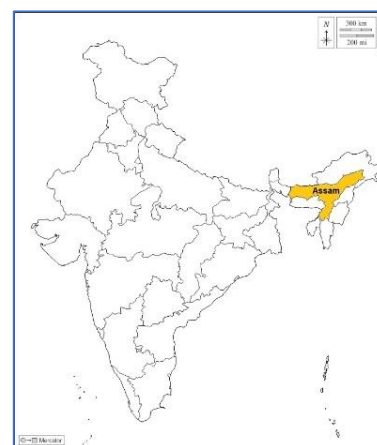
The state of Assam lies on the north-eastern part of India and has a population of 3,12,05,576 people. It has 33 districts and 25335 villages where 10901 villages have PWS schemes. The state lies on the Eastern Himalayan region and receives an average annual rainfall of about 2134.6mm. Among the villages with PWS schemes, 8664 villages (34.20%) have more than 20 households with functional tap connections. The state is yet to achieve the Har Ghar Jal status.

Presented here are state level information collated from the DDWS-IMIS:

Figure 2: State IMIS Status & Map

IMIS status:

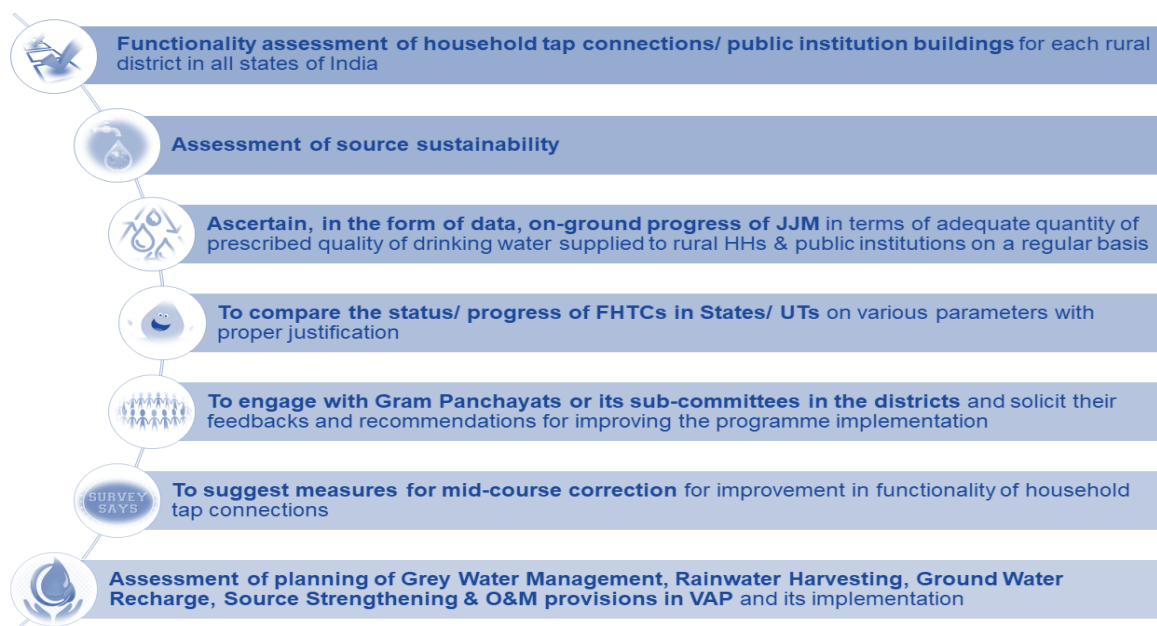
- Not a Har Ghar Jal state.
- 30 districts are Iron & 6 districts are Fluoride affected
- 8664 (34.20% of all) villages with PWS more than 20 FHTC
- 7.92% villages covered under HH tap connections under HGJ



2.2. FHTC Assessment Objectives

The overall objectives of the FHTC assessment are as presented:

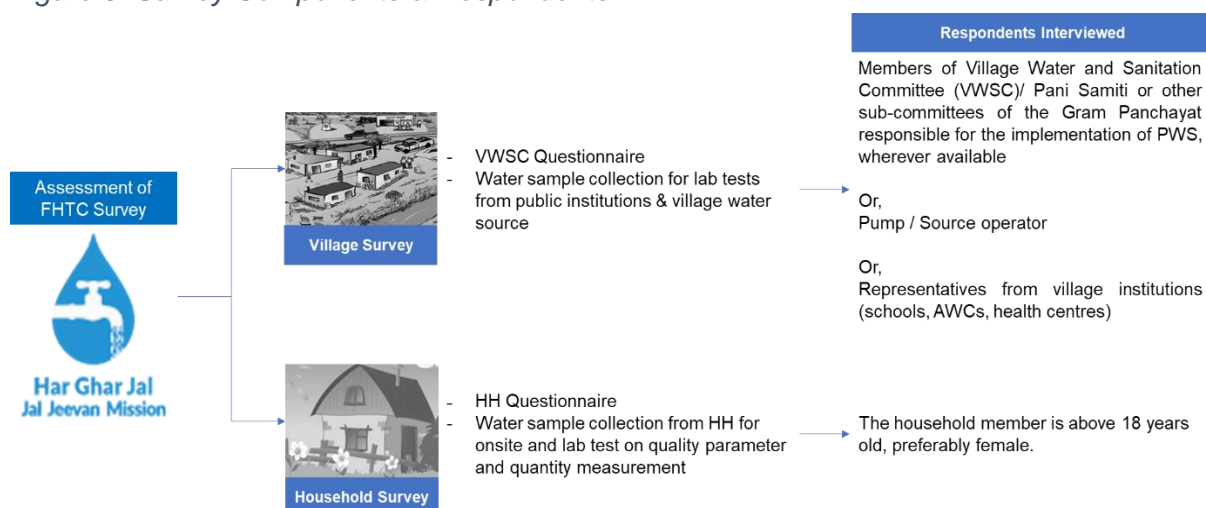
Figure 4: FHTC Assessment Objectives



2.3. Assessment Methodology

A cross-section research design has been used for this functionality assessment study. Quantitative data were collected from villages and households across all states/UTs using the CAPI (Computer Assisted Personal Interviewing) mode. The survey includes two components, village, and household.

Figure 5: Survey Components & Respondents



2.4. Sample Size

The sample size was calculated to provide estimates with a 95% confidence interval (CI) and 5% margin of error (MoE) after incorporating the correction factor for a finite population considering the total number of geographic units having FHTCs.

- Village sample is estimated to be representative at the state level

- HH sample estimated to be representative at the district level
- Number of Har Ghar Jal (HGJ) villages were proportionately sampled at the district level
- All PWS schemes (up to 4) were covered per village. Per scheme approximately 9 (3 each from the head, middle, and tail HHs) or 18 households (6 each from head, middle, and tail HHs) were sampled to achieve the desired sample at the district level.

2.5. Sampling Methodology

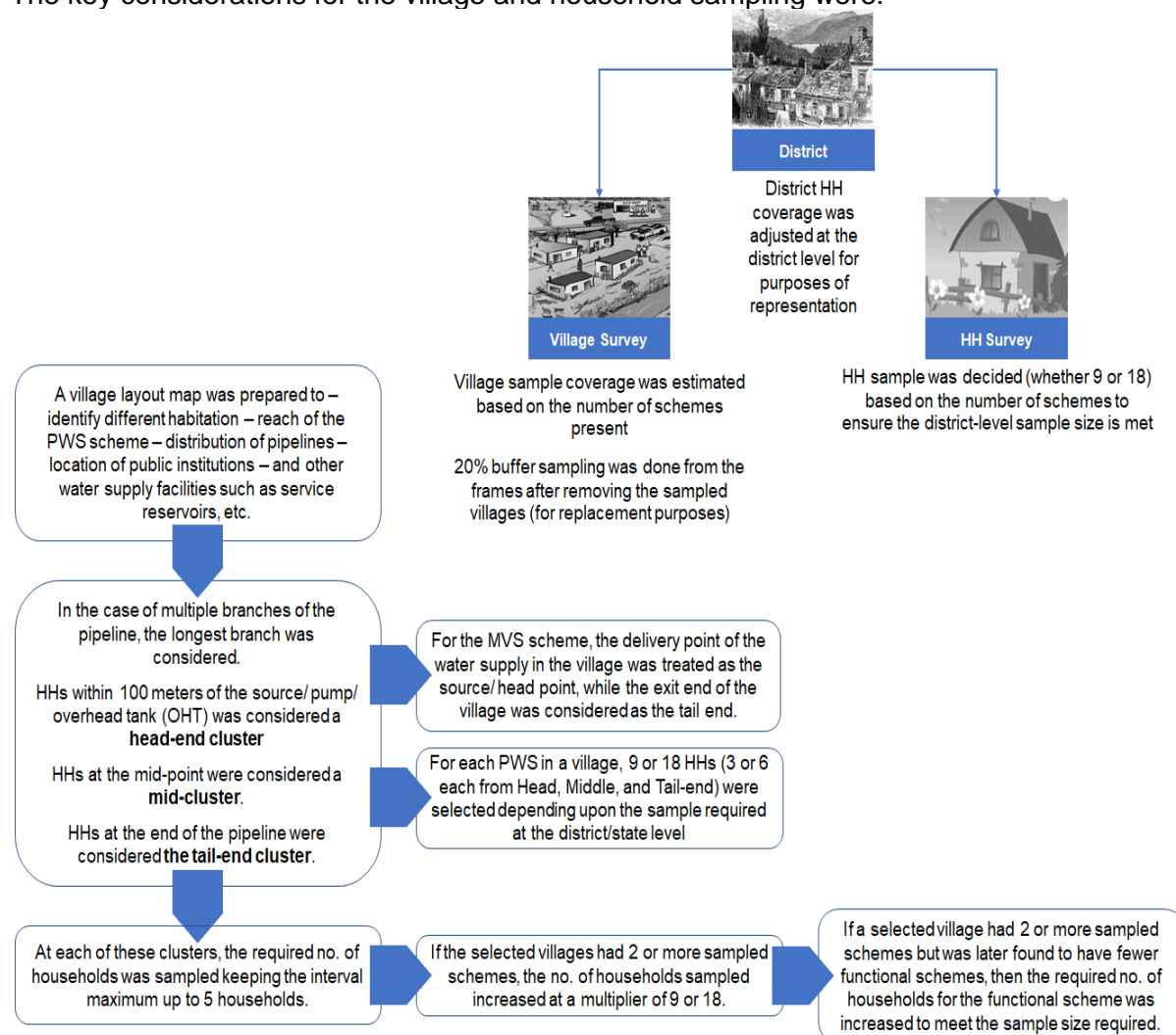
As per the design, all villages having a PWS scheme with 20 or more functional household tap connections were included in the sample frame. The probability proportionate to size (PPS) method was used for village selection in each district. The steps for random selection of villages using PPS are presented below:

Figure 6: Steps for Random Sampling of Villages



Figure 7: Household Selection

The key considerations for the village and household sampling were:

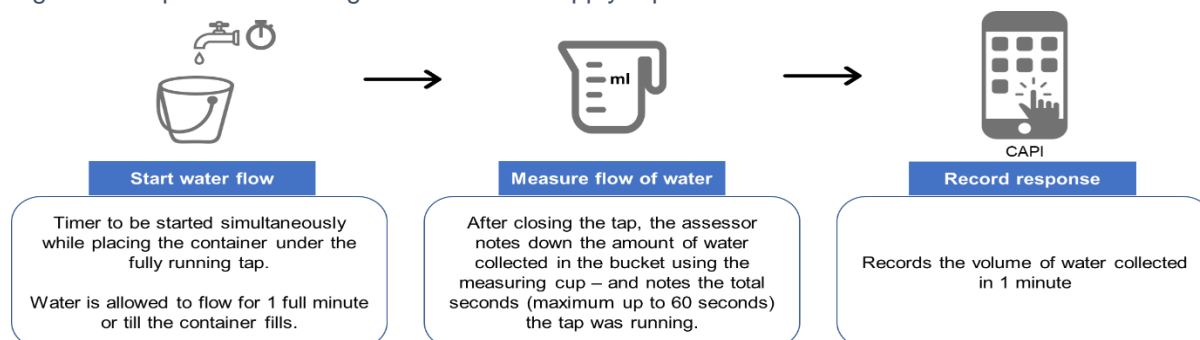


The record of all district-wise village replacements is maintained and reported as part of the annexure.

2.6. Methodology for Water Quantity Measurement at Households

The flow rate of the water supply was measured using a container with gradual markings (either 5 litres or 1 litre, based on the flow of the tap) and a stopwatch/timer-watch. The process followed is as described in Figure 6.

Figure 8: Steps for Measuring Flowrate from Supply-tap at HHs



In the case of households where the FHTC is connected directly with the storage tank, the following steps were adopted to measure the quantity:

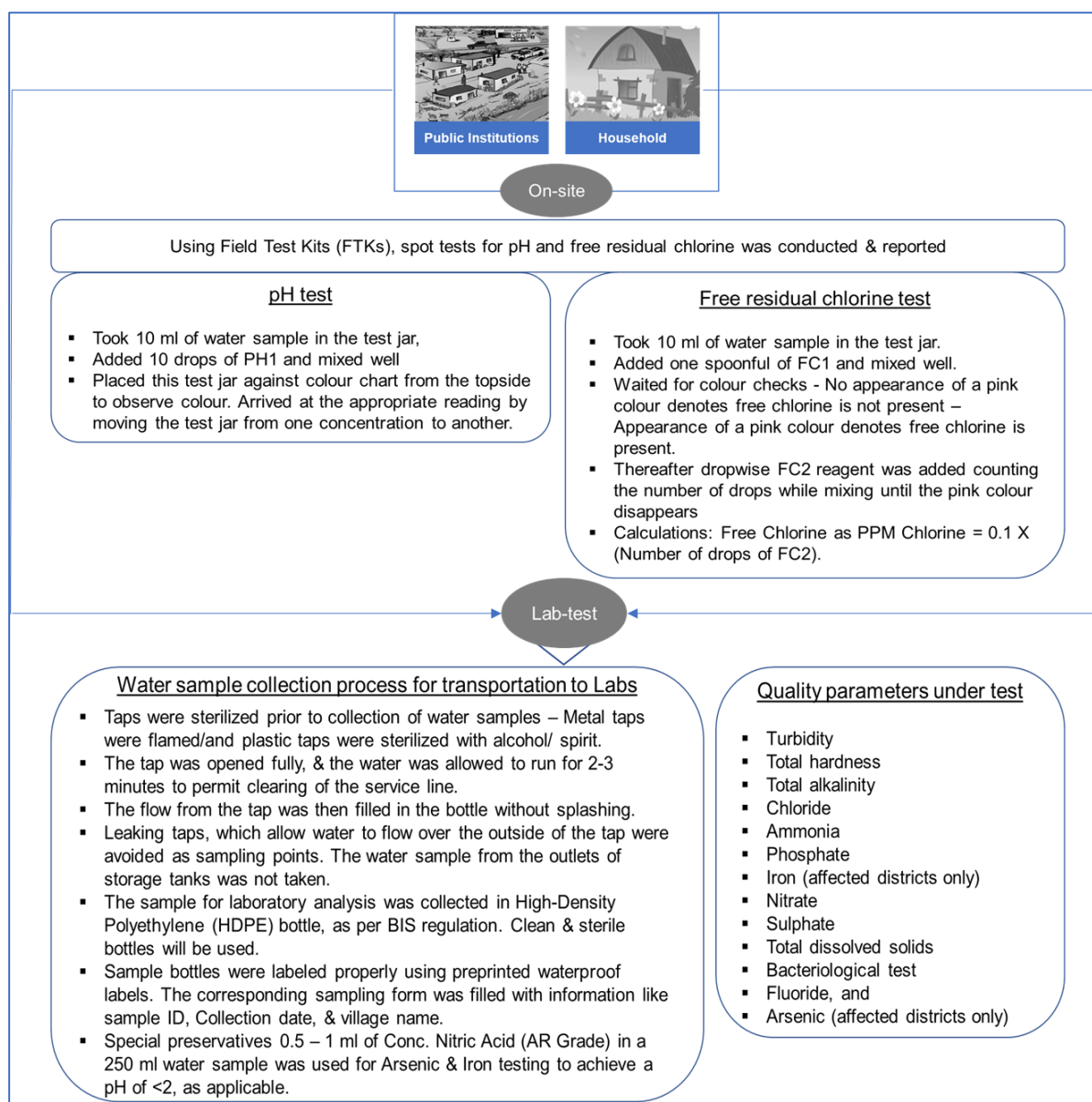
- Assessor first asked and recorded length, breadth, and height.
- Assessor dipped a 5 feet long rod, marked the level of the water table, and calculated the volume – length x breadth x-height of water.
- Next the assessor opened the valve of the connection and allowed the water to flow inside the storage for 10 minutes.
- After 10 mins, the valve was closed, and the assessor again dipped the rod and recorded the new height of the water inside the tank. Based on this new 'height' and the CAPI calculated the changed volume.
- The difference in the volume of water in 10 minutes divided by 10 provided the flow rate of the water supply per minute.

The water flow rate was not measured for village-level public institutions.

2.7. Methodology for Water Quality Measurement

Water quality was tested for all public institutions available in the villages, including schools, AWCs, gram panchayat buildings, public health facilities, and wellness centers, and at the selected households. Two types of quality tests were carried out – a) spot test for pH and free residual chlorine, and b) water sample was collected and transported to labs for testing against 13 quality parameters (total 15) as specified in Figure 7.

Figure 9: On-site & Laboratory-Based Quality Test

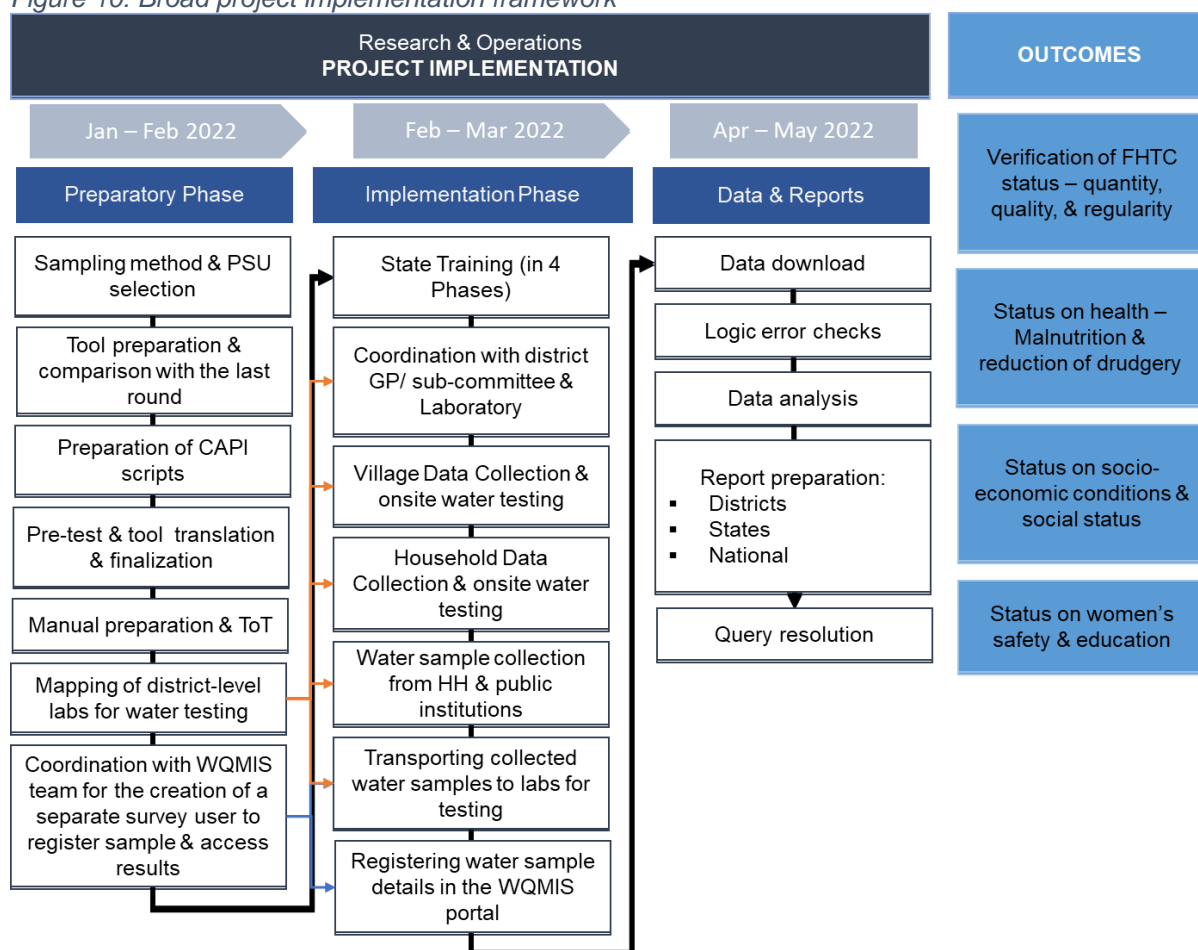


JJM, with the support of the BMI Division of ICMR, enabled a new interface on the WQMIS portal for “Functionality Assessment (FA) User” to enable seamless harmonization of water sample registration, and sample submission for testing, and sharing of results as per the applicable quality parameters.

2.8. Project Implementation

An overview of the project implementation is as presented:

Figure 10: Broad project implementation framework



A total of 10 teams (comprising 10 supervisors, 60 assessors, and 10 water collection assistants) were recruited, trained, and deployed to complete the survey across the states of Assam. One survey team covered approximately 2 – 3 districts. The state-wise team deployment and fieldwork dates were as presented:

Table No. 1: Team deployment and data collection start & end dates

States	Teams deployed	Start date	End date	Total data collection days
Assam	10 Teams	21 st February	8 th April	45 Days

A four-tier quality control (QC) system was put in place. At the ground level, the data collection exercise was done using a computer-aided Personal Interview (CAPI) application which contained all logic and skip-checks inbuilt. Also, 5% of the total samples were accompanied by the supervisors. Sub-targeted QC was done by the state field managers (5%) and the central project management team (5%). Apart from this, the central research team monitored the data trend and as per requirement debriefed data collection teams to improve quality.

2.9. Sample coverage

Table No. 2: Sample covered							
State	Targeted sample			Achieved sample			
	District	Village	HH	District	Village	HHs	PIs
India	712	13,300	3,00,000	712	13,299	3,01,389	16,148
Assam	33	440	12,735	33	440	12,786	102

2.10. Sampled village and household profile

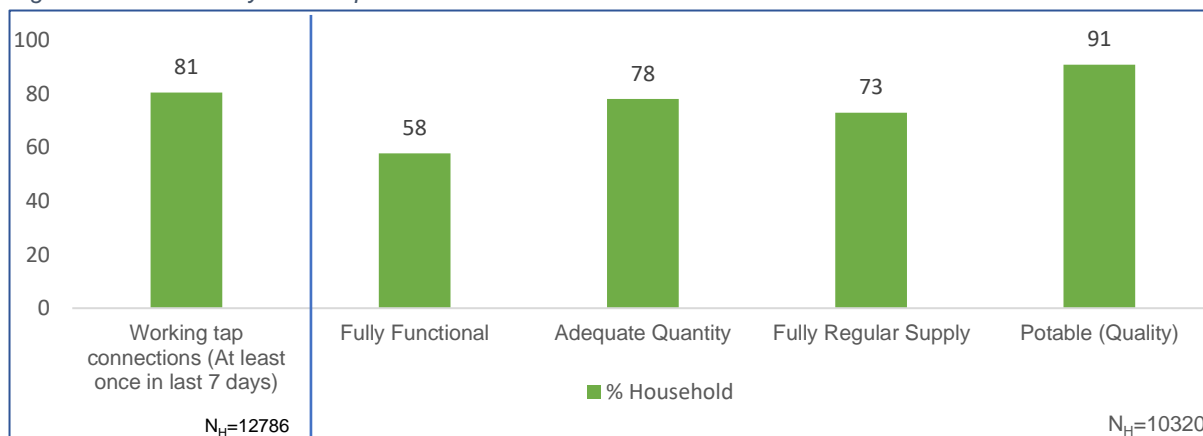
SAMPLED VILLAGES	SAMPLED HOUSEHOLDS
<ul style="list-style-type: none"> Total no. of villages covered in the state – 441 Percentage of SC dominated villages covered in the State is 6.8% (while at national level the average is 12.6%) Percentage of ST dominated villages covered in the State is 20.9% (while at national level the average is 20.2%) Higher proportion of pump operator interviewed at the village level 3.9% of the villages reported to have any historical incidence of water contamination 	<ul style="list-style-type: none"> Total no. of households covered in the state – 12786 (Respondents: Male 6100, Female 6684 & Transgender 2) Proportion of General – 38.6%, SC 10.1%, ST 21.1%, OBC 30.1% households 52.3% of the FHTC connections are under the name of a female member Average household size – 4.9 100% positive user experience in 4/5 measures

3. Findings

3.1. Functionality status of FHTC at household level

A. Overall Functionality* (in %)

Figure 11: Functionality of HH tap connection



* Fully Functional has been computed as = Adequate Quantity \cap Fully Regular Supply \cap Potable (Quality)

Please note: Henceforth, $N_H=10320$ implies all HHs where water was found on the day of the survey.

It has been found that 81% of the sampled HHs ($N=10320$) had working tap connections. Moreover, 3 out of 4 households (78%) received adequate (≥ 55 LPCD) water supply and almost 3 out of 4 received regular supply (73%) of water. The on-site testing for pH and all the different quality parameters in the water tested in laboratories indicate that 92% of the sampled households in the state receive potable water.

Out of the 12786 HHs sampled for the FHTC assessment, water quantity and quality test was carried out in 10320 due to non-availability of water in 19% HHs on the day of survey.

Table No. 3: Quantity, Regularity, and Quality of FHTC at the district level (%HH)

S. No.	District	Working tap connections for 7 days preceding the survey (%HH)	Quantity ≥ 55 LPCD (% HH)	Regularity (% HH)	Potability# (% HH)
1.	Chirang	100	96	77	92
2.	Bongaigaon	100	100	87	92
3.	Baksha	100	48	60	98
4.	Nalbari	100	94	92	97
5.	Golaghat	100	85	81	99
6.	Majuli	100	90	66	99
7.	Sivasagar	100	96	97	91
8.	Morigaon	98	85	87	100
9.	Hojai	96	74	76	83
10.	Barpeta	95	100	100	99
11.	Dibrugarh	95	90	43	72
12.	Kokrajhar	93	88	84	91
13.	Lakhimpur	91	91	74	82
14.	Charaideo	91	85	77	100
15.	Karimganj	89	39	47	96
16.	Goalpara	86	69	53	82
17.	Jorhat	86	96	62	97
18.	Cachar	86	48	80	100

Table No. 3: Quantity, Regularity, and Quality of FHTC at the district level (%HH)					
S. No.	District	Working tap connections for 7 days preceding the survey (%HH)	Quantity ≥ 55 LPCD (% HH)	Regularity (% HH)	Potability# (% HH)
19.	ASSAM	81	78	73	91
20.	Kamrup Metropolitan	80	67	71	98
21.	North Cachar Hills	80	93	85	100
22.	Karbi Anglong	79	82	85	94
23.	Dhubri	76	60	83	100
24.	West Karbi Anglong	73	73	44	79
25.	Dhemaji	72	82	93	82
26.	Hailakandi	71	36	41	99
27.	Kamrup	69	44	43	100
28.	Sonitpur	62	78	66	83
29.	South Salmara Mancachar	60	61	68	71
30.	Tinsukia	58	49	34	82
31.	Biswanath	55	87	62	93
32.	Udalguri	52	88	95	57
33.	Nagaon	50	90	96	98
34.	Darrang	22	83	84	99
# Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological as given in Table 5 parameters (within acceptable/ permissible range) and onsite testing of pH. The details of laboratory test are mentioned in the table given above in the glossary.					
JE-AES Affected		Aspirational Districts	Aspirational & JE-AES Affected		

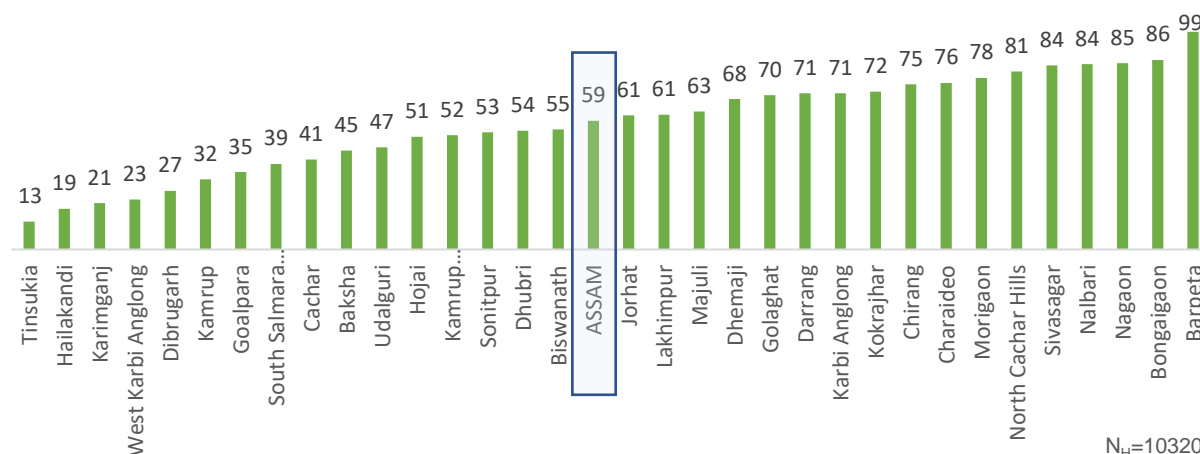
District level comparison across the districts indicate that North Cachar Hills, Karbi Anglong, West Karbi Anglong, Dhemaji, Dhubri, Hailakandi, Kamrup, Sonitpur, South Salmara Mancachar, Tinsukia, Biswanath, Udalguri, Nagaon, and Darrang reported functionality less than the state average. The districts of Barpeta, Sivasagar and Jorhat FHTC provide more than 55 LPCD of water in more than 95% HHs.

More than 95% HHs in the districts of Barpeta, Sivasagar, Nagaon, and Udalguri reported to regularly receive water through FHTC. Regular supply of water is less than 50% in the districts of Karimganj, West Karbi Anglong, Dibrugarh, Kamrup, Hailakandi and Tinsukia.

Potability of water was found to be more than 10% in the districts of Hojai, Biswanath, Dibrugarh, Lakhimpur, Cachar, Nalbari and Hailakandi, with highest in Hojai (17%). Whereas in all other districts of Assam the potability of water was found to be less than 10%.

B. District wise functionality status

Figure 12: District wise Functionality of HH tap connection

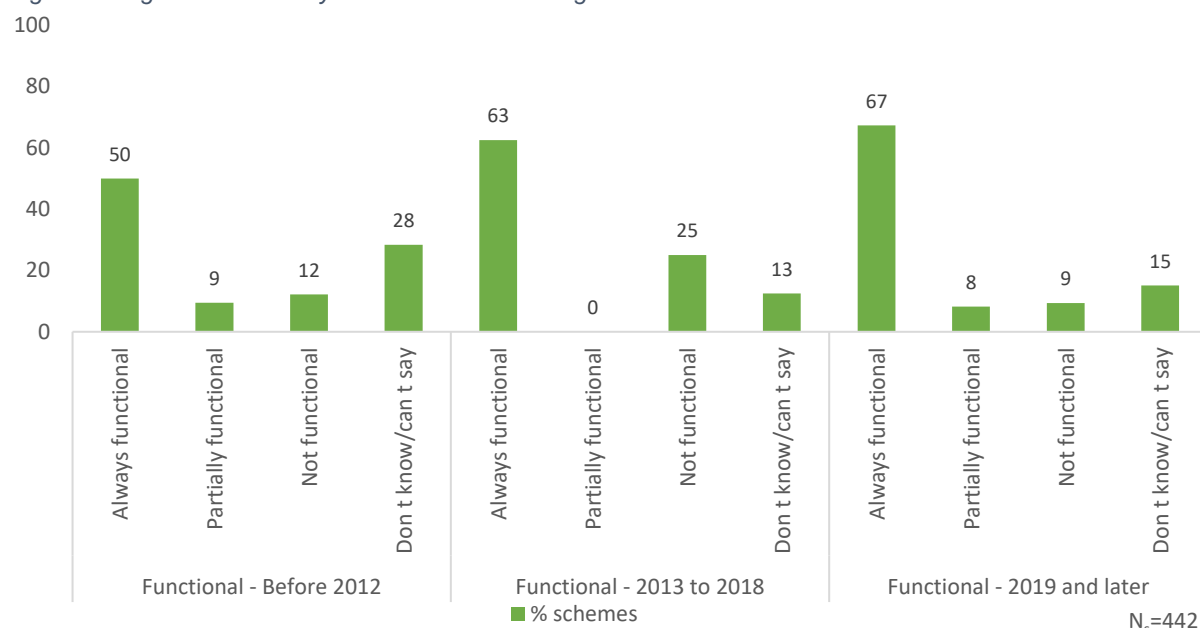


* 'Functionality' has been computed as the intersection of Quantity, Quality and Regularity for households wherein water supply was available at the time of survey, i.e., 10320 HHs.

59% HHs in the state were found to have functional HH tap water connection. Barpeta district reported 99% functional households in the state, followed by Bongaigaon, and Nagaon with more than 85% functionality. In the districts of Kamrup, Tinsukia, Karimganj, Dibrugarh, West Karbi Anglong and Hailakandi less than one-third of the households have functional HH tap water connection highlighting scope for improved service delivery.

C. Age vs functionality of schemes in the villages

Figure 13: Age vs functionality of schemes in the villages



5 out of 10 schemes are functional since 2012, which reflects a 13-point increase in till 2018 and a 4-point increase in 2019 and later.

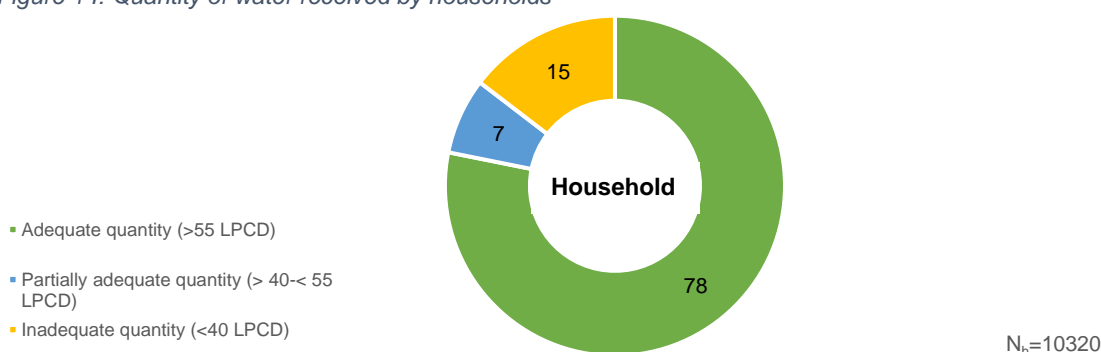
3.2. Quantity, Regularity, and Quality of Water

Under JJM, functionality is defined as having infrastructure, i.e., household tap connection providing water in adequate quantity (55 LPCD or more) of prescribed quality on regular basis (every day or as decided by GP and/ or its sub-committee) with adequate pressure. It also includes long-term source and system sustainability. For the purposes of this survey, the quality parameters are defined and measured on a set of 15 indicators (of which 2 indicators are tested on-site and for 13 indicators water samples have been sent to the laboratories), as mentioned in the glossary section.

A. Water quantity measured as LPCD (Litres per Capita per day)

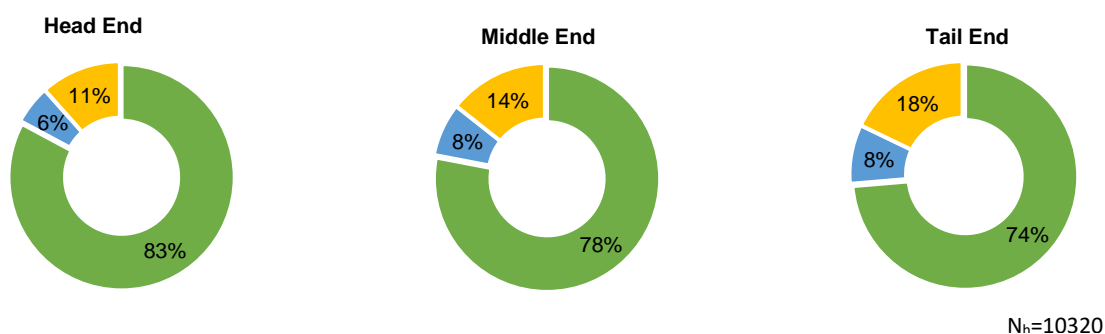
78% HHs reported receiving more than 55 LPCD of water.

Figure 14: Quantity of water received by households



Quantity of water received across head, mid, and tail end HHs

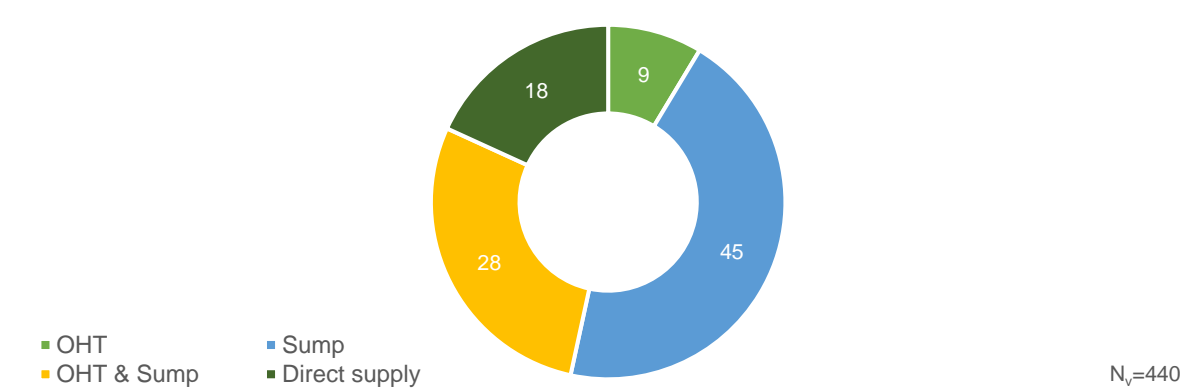
Figure 15: Quantity of water received across head, middle and tail end households



The quantity of water received across the tail end was observed to have declined, and about four-fifth (78%) of the sampled households received water in adequate quantity, i.e., greater than or equal to 55 LPCD.

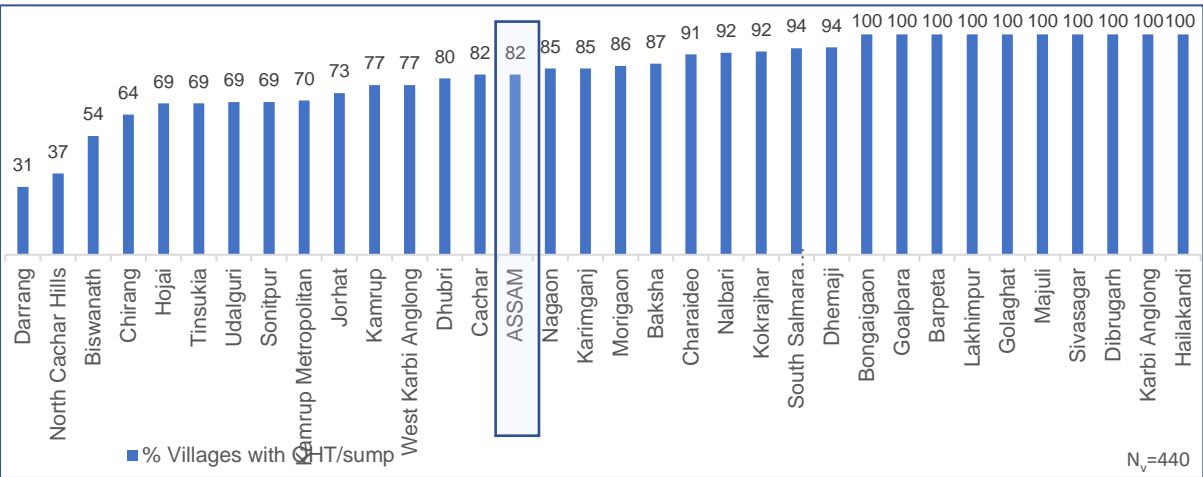
Types of water storage arrangements (in%)

Figure 16: Pipe water supply storage available in village



Less than out of two respondents in the state reported water being stored in sump. And in 28% reported water being stored in sump and overhead tanks.

Figure 17: District wise water storage arrangements at village level (% villages with OHT/ Sump)

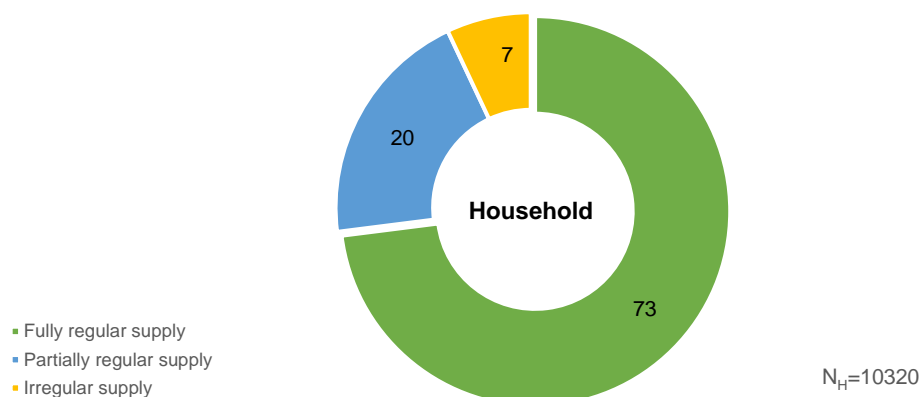


82% villages in the state have either an OHT or a sump for storing water for supplying to the households. Darang is the only district where less than one-third (31%) of the households in the districts have either an OHT or a sump.

B. Regularity of water supply in households

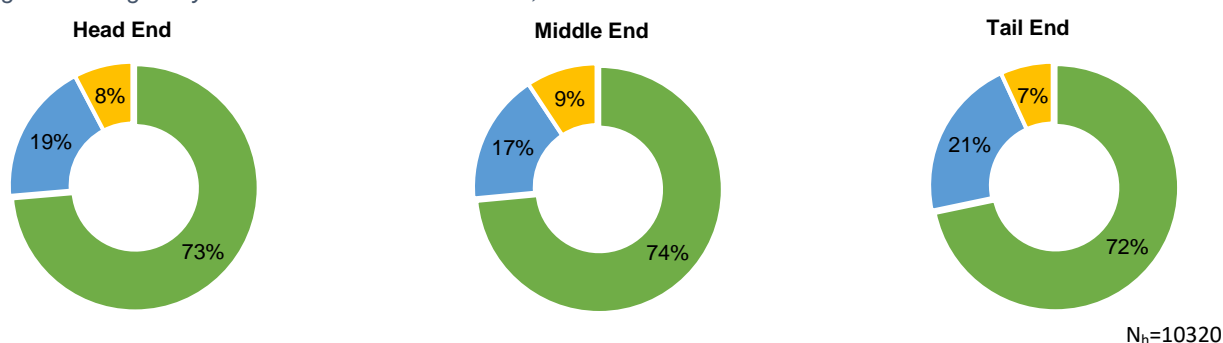
73% HHs receive a regular supply of water (as per agreed schedule).

Figure 18: Regularity of water received by households



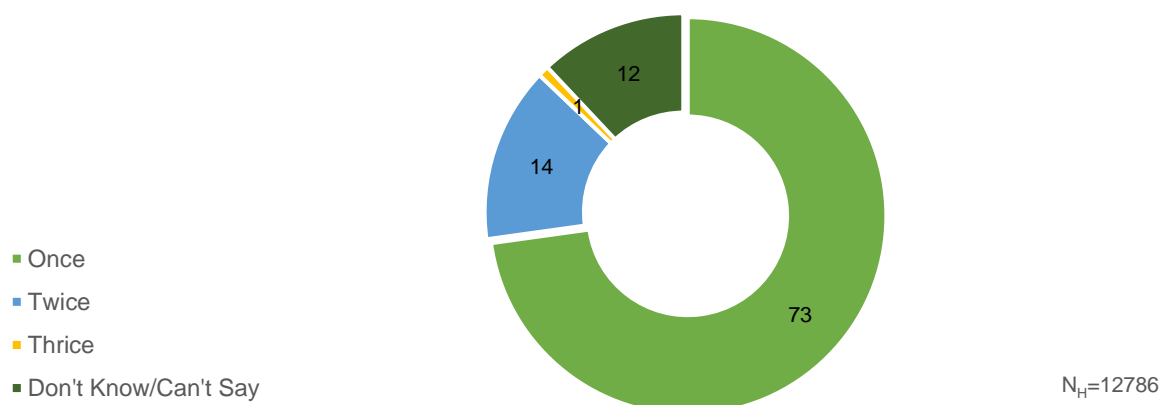
Regularity of water received across head, mid, and tail end

Figure 19: Regularity of water received across head, middle and tail end households



Water is more regularly available at the middle-end households of the PWS in comparison to the head and tail end.

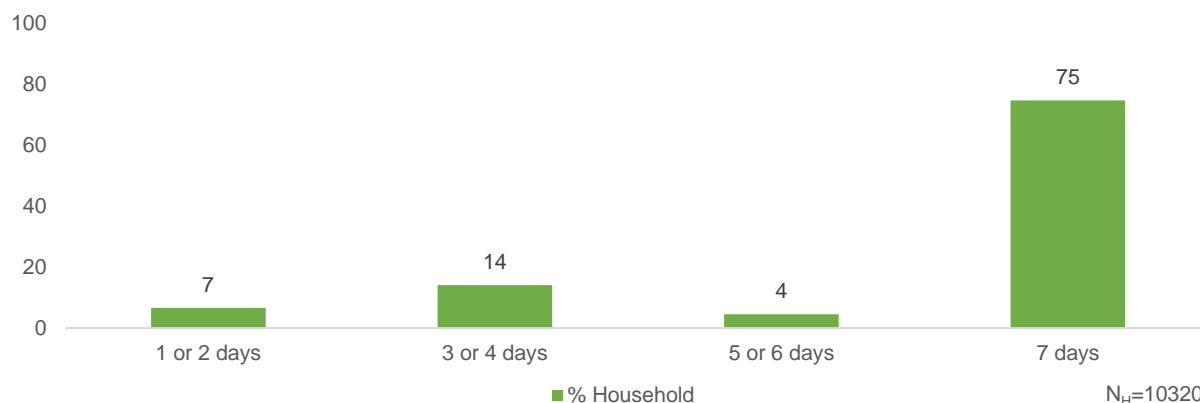
Figure 20: Average no. of times water is supplied in a day



HHs in **73% of districts** receive water once a day. The average duration of water supply across the state was reported to be **1 hour per day**.

Average water supply days in a week to households

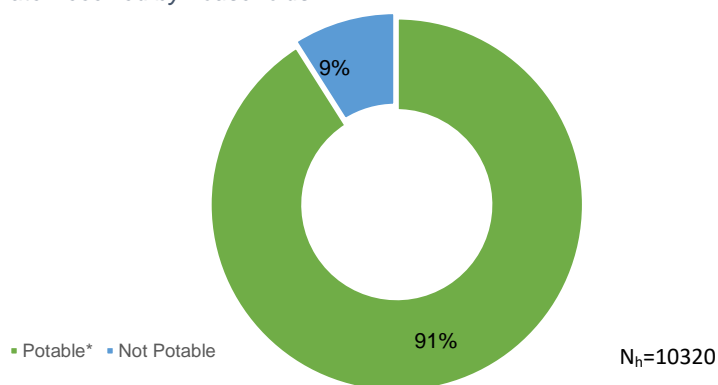
Figure 21: Average number of days households receive water supply in a week (in %)



75% of HHs reported receiving water for all 7 days in a week (daily)

C. Water quality – Potability

Figure 22: Potable water received by households



**Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical and bacteriological as given in Table 5 parameters (within acceptable/ permissible range) and onsite testing of pH. The details of laboratory test are mentioned in the table given above in the glossary.*

Among the sampled households in Assam where water was found on the day of the survey, the potability of water was found to be 92%.

Table No. 4: Village quality parameters reported within permissible range (% sample within permissible range)

Quality Parameters (N _v =440)	Water Samples Tested from Public Institutes			
	AWC	HF	Schools	Others
pH (on-site)	97	100	100	100
Turbidity	94		99	95
Total Hardness	100		100	100
Total Alkalinity	100		100	100
Chloride	100		100	100
Ammonia	Not Tested			
Iron	100		98	95
Nitrate	100		99	100
Sulphate	100		100	100
Total Dissolved Solids	100		100	100
Bacteriological Test (Absence)	100		100	100
Fluoride	100		100	100
Arsenic	100		100	100

Table No. 5: Household water quality parameters reported within permissible range (in % sample within permissible range)

The number of water samples submitted to the laboratory for the calculation of the different parameters was the same as mentioned in the rest of the report (sample size for HH water submitted to labs=10320). However, the below data are presented based on the results received from the laboratories and the respective base sizes are mentioned for each of the parameters separately.

Quality Parameters	No of water samples tested	% Samples within permissible range
pH (on-site)	10320	95
Turbidity	8919	97
Total Hardness	9130	100
Total Alkalinity	8628	100
Chloride	8235	100
Ammonia	Not Tested	
Iron	8397	97
Nitrate	8444	100
Sulphate	6574	100
Total Dissolved Solids	7535	100
Bacteriological Test (Absence)	8507	100
Fluoride	1643	100
Arsenic	4016	100

Safeguarding piped water supply for unforeseen bacteriological contamination- Presence of Residual Chlorine (RC)

The Residual Chlorine (RC) in the state of Assam was found in 5% samples. Also, 1% samples were having RC outside range and 94% samples, had no RC. All of the water samples passed the bacteriological contamination test.

The Residual Chlorine in piped water supply is one of the most important preventive actions to assure quality of water against bacteriological contamination from source to consumption. The presence of residual chlorine within permissible limits is indicator of well-maintained and healthy piped water supply system.

It is advised that behavioural change communication campaigns on appropriate dosage of residual chlorine is held in all villages and monitoring system for chlorine dosing is established. The FTK must have residual chlorine testing facility for effective WQM&S.

Comment on functioning of District Lab:

The district lab tested water samples for 12 water quality parameters. 10422 water samples were submitted, and 9808 water samples were tested, and reports made available. The turnaround time for testing was more than 48 hours in most cases. Given this feedback, it can be conferred that these labs have limited scope to take up samples from the general public at large on a regular basis.

Table No. 6: Performance of Labs						
Sl. No	District	Lab available	HH surveyed	Samples submitted	Report received	Overall lab experience
1	Dhubri	Yes	380	292	277	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
2	Kokrajhar	Yes	387	360	360	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
3	South Salmara Mancachar	Yes	383	237	234	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
4	Chirang	Yes	380	380	375	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
5	Bongaigaon	Yes	396	396	396	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc

Table No. 6: Performance of Labs						
Sl. No	District	Lab available	HH surveyed	Samples submitted	Report received	Overall lab experience
6	Goalpara	Yes	397	344	341	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
7	Baksha	Yes	379	379	378	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
8	Barpeta	Yes	379	361	360	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
9	Nalbari	Yes	386	389	380	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
10	Kamrup Metropolitan	Yes	380	308	290	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
11	Kamrup	Yes	420	288	279	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
12	Darrang	Yes	401	91	87	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
13	Udalguri	Yes	415	217	216	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
14	Sonitpur	Yes	378	234	229	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
15	Biswanath	Yes	396	217	216	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc

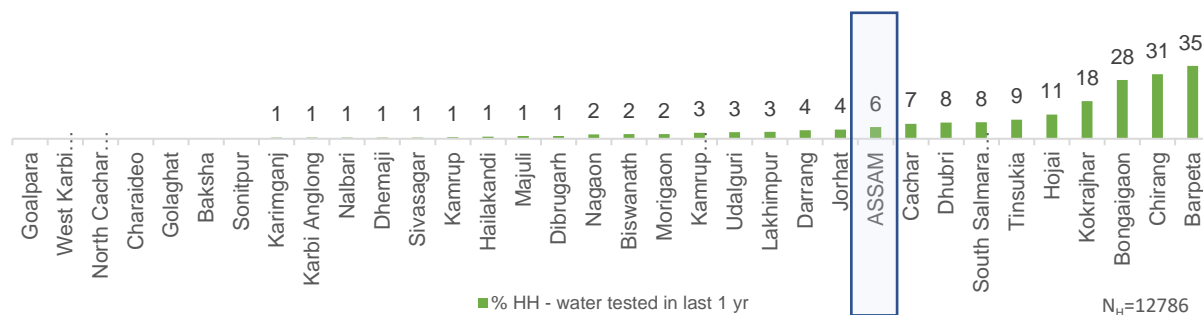
Table No. 6: Performance of Labs						
Sl. No	District	Lab available	HH surveyed	Samples submitted	Report received	Overall lab experience
16	Lakhimpur	Yes	396	361	355	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
17	Dhemaji	Yes	379	273	269	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
18	Morigaon	Yes	395	386	287	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
19	Nagaon	Yes	396	199	185	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
20	Hojai	Yes	377	362	228	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
21	Golaghat	Yes	387	400	398	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
22	Jorhat	Yes	396	349	347	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
23	Majuli	Yes	396	405	404	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
24	Sivasagar	Yes	379	390	367	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
25	Charaideo	Yes	397	364	360	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc

Table No. 6: Performance of Labs						
Sl. No	District	Lab available	HH surveyed	Samples submitted	Report received	Overall lab experience
26	Dibrugarh	Yes	396	384	375	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
27	Tinsukia	Yes	377	225	197	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
28	Karbi Anglong	Yes	394	313	294	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
29	West Karbi Anglong	Yes	348	256	233	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
30	North Cachar Hills	Yes	364	290	127	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
31	Karimganj	Yes	395	357	356	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
32	Hailakandi	Yes	379	278	275	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
33	Cachar	Yes	378	337	333	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc

Households reported that their HH tap-water was collected and tested in the last one year

6% of HHs reported that their HH tap-water was collected and tested in the last one year.

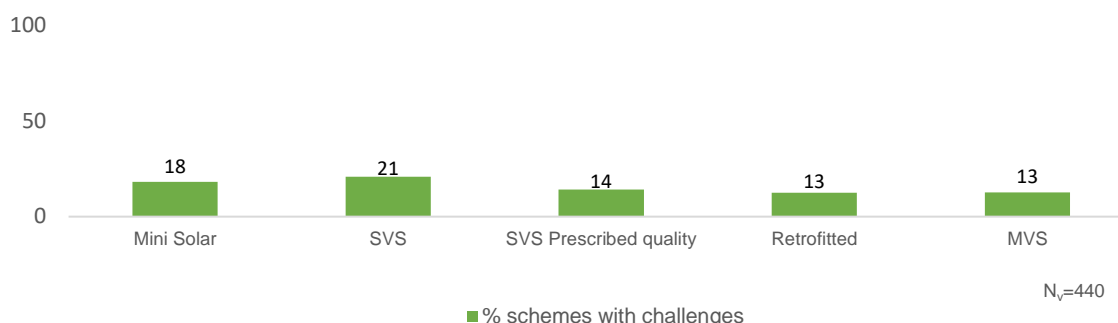
Figure 23: Households reported that their HH tap-water was collected and tested in the last one year



3.3. Operation and Maintenance (O&M) of schemes at village level

The Mini Solar scheme faced the most challenges (18%) in comparison to the other schemes in the state

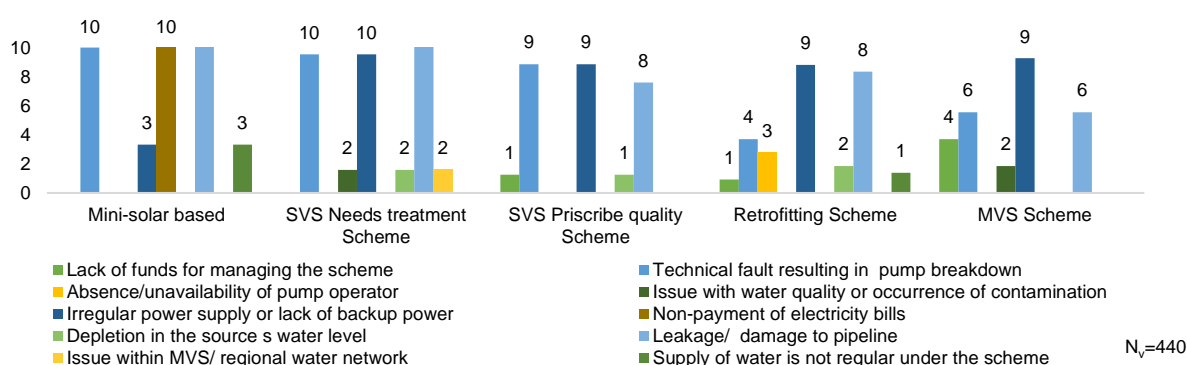
Figure 24: Schemes reported to have faced challenge in village



Type of challenge faced by the schemes

The most faced problem varied from one scheme to another. However, 'leakage/damage to pipeline' is a problem that was found unanimously in all the schemes.

Figure 25: Type of challenge faced by the schemes



A. Presence of VWSC/Pani Samiti

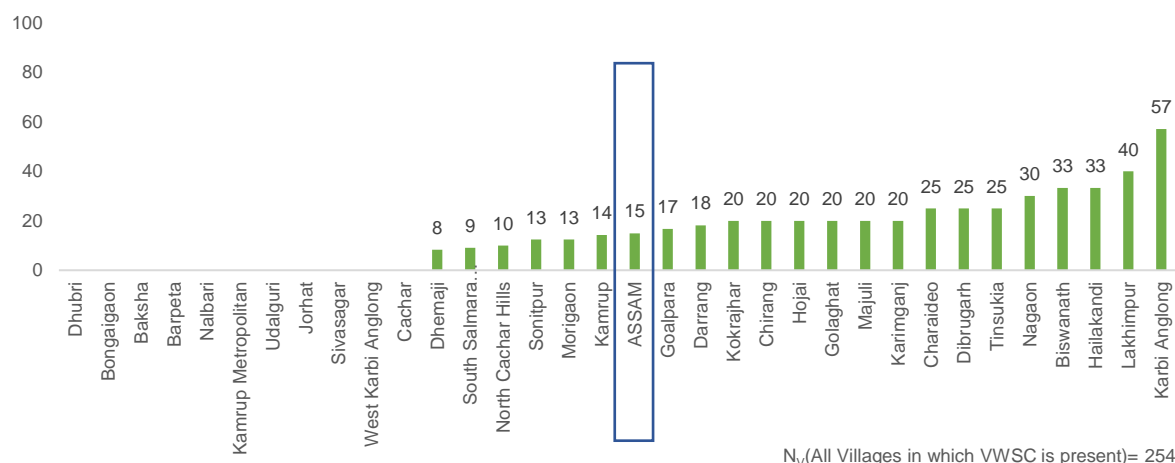
Figure 26: Villages where VWSC/ Pani Samiti is present



58% of villages in the state reported to have a VWSC or a Pani Samiti.

B. VWSC/Pani Samiti with more than 50 percent female members

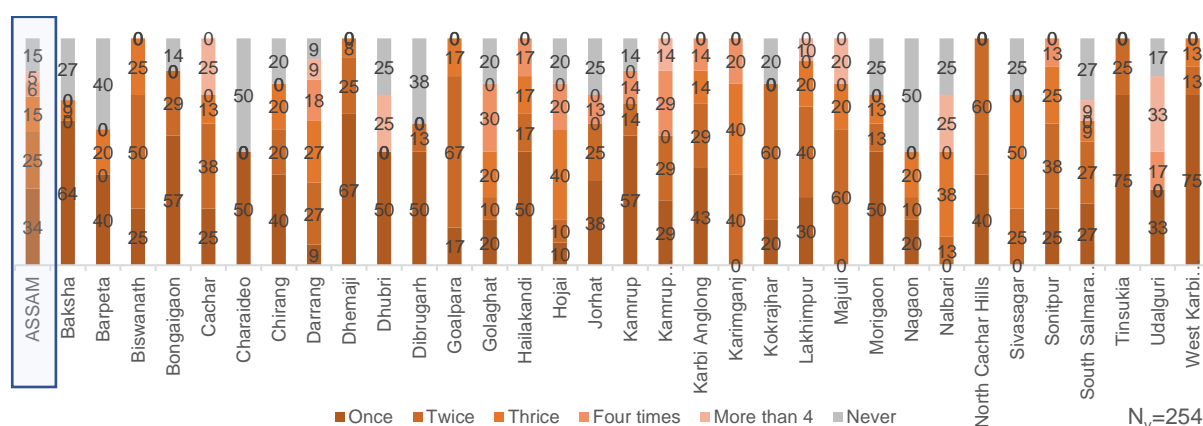
Figure 27: VWSC/ Pani Samiti with more than 50 percent female members



15% of villages in the state reported to have a VWSC or a Pani Samiti with more than 50% female members.

C. VWSC Meetings in last one year

Figure 28: VWSC meetings held in last one year

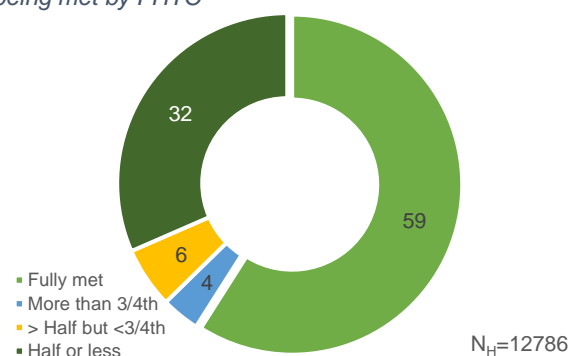


Across the villages in the state, that reported to have VWSC/Pani Samitis (254 villages), one meeting in last one year was reported the most (34%)

3.4. Utilization of water at HHs for drinking and other activities

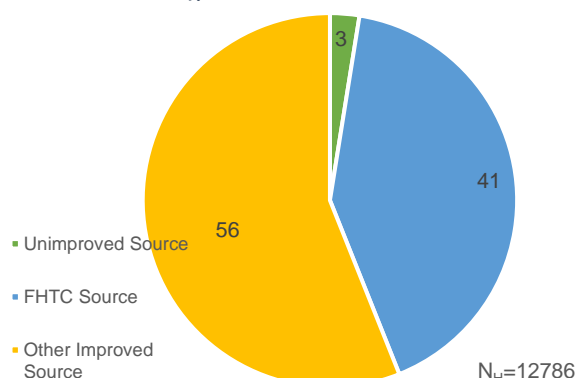
59% of HHs reported that their daily requirement of water was being met by HH tap connections

Figure 30: Daily household's requirement of water being met by FHTC



41% HHs reported HH tap connections as their primary source of drinking water

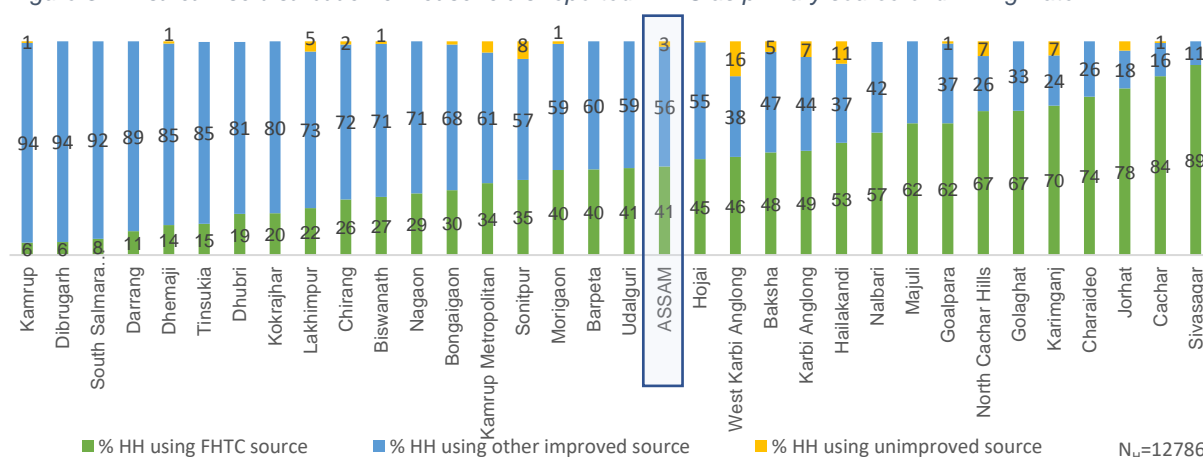
Figure 29: Households reported FHTC as primary source of drinking water



More than 3 out of 5 (59%) HHs reported their daily requirement of water being fully met by the HH tap connections. And 41% HHs reported used household tap connection for drinking water (primary source). About 13% of the HHs even though have reported household tap connections to fully meet their requirements, were not found using the same for drinking purposes.

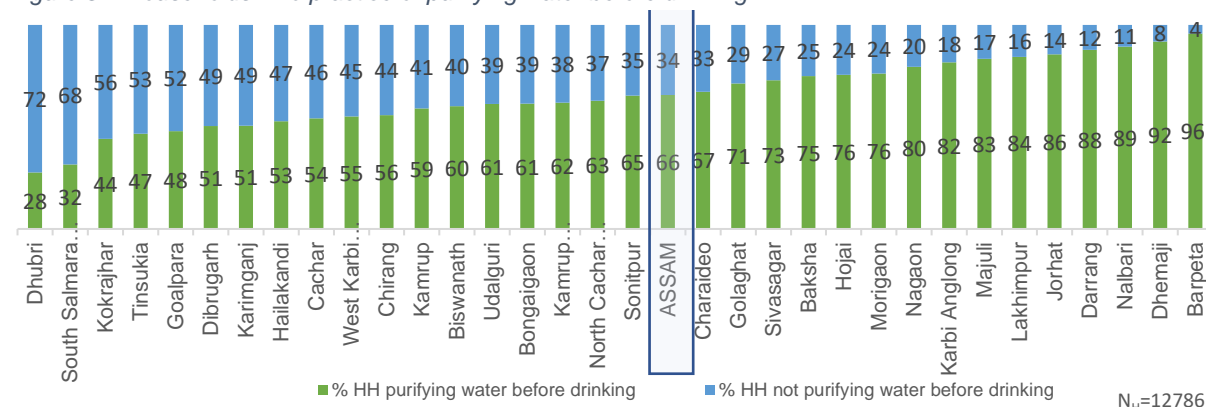
Overall, **97% of HHs** reported using improved primary source of drinking water, out of which **41% of HHs** reported HH tap water as their primary source.

Figure 31: District wise distribution of household's reported FHTC as primary source of drinking water



A. Households who practice purifying of water before drinking

Figure 32: Households who practice of purifying water before drinking

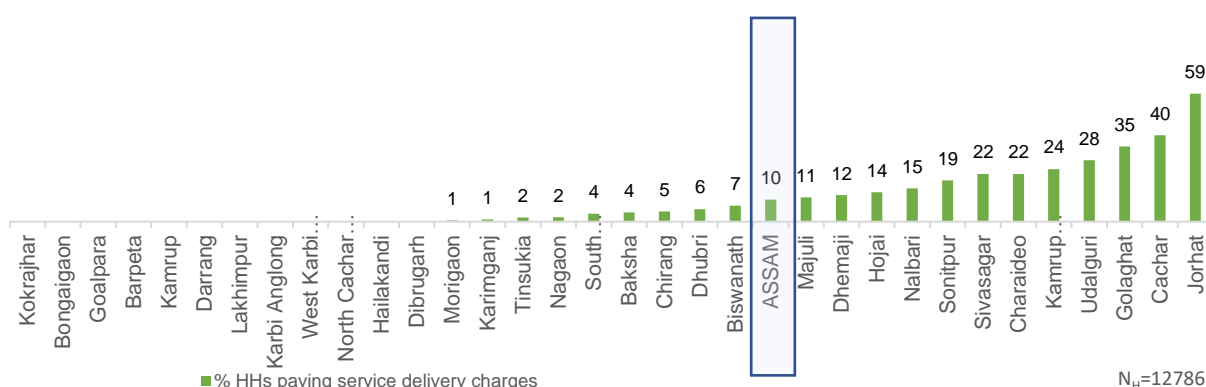


Practice of purifying water before drinking was reported the most in Barpeta (96%) where 40% HHs reported using HH tap water as primary drinking water source, while the least was reported in Dhubri (28%) where% HHs reported using HH tap water as a primary drinking water source.

B. Households paying water service delivery charges

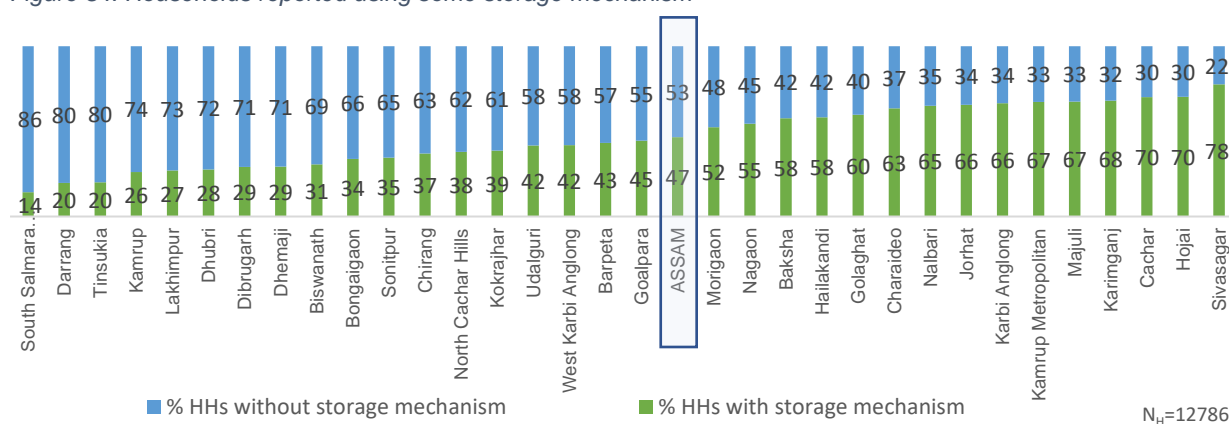
In Assam, around 10% of the sampled households were found to be paying service delivery charges, Jorhat being the district with the highest percentage of such households (59%).

Figure 33: Households paying water service delivery charges



C. Storage mechanism used by households

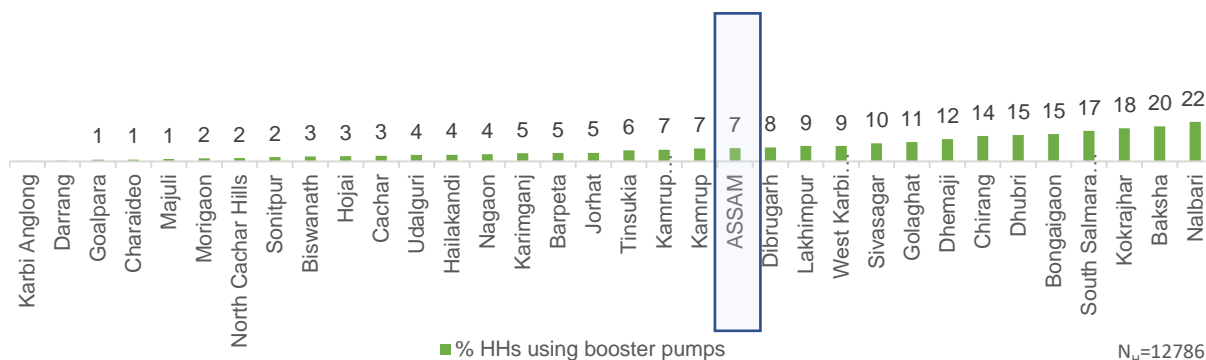
Figure 34: Households reported using some storage mechanism



D. Households using booster pumps

Overall, **7% HHs** reported using booster pumps to maximize the water flow through their piped water connections. Nalbari and Baksha reported 22% and 20% of HHs using booster pump in the state while Karbi Anglong and Darrang reported zero booster pumps.

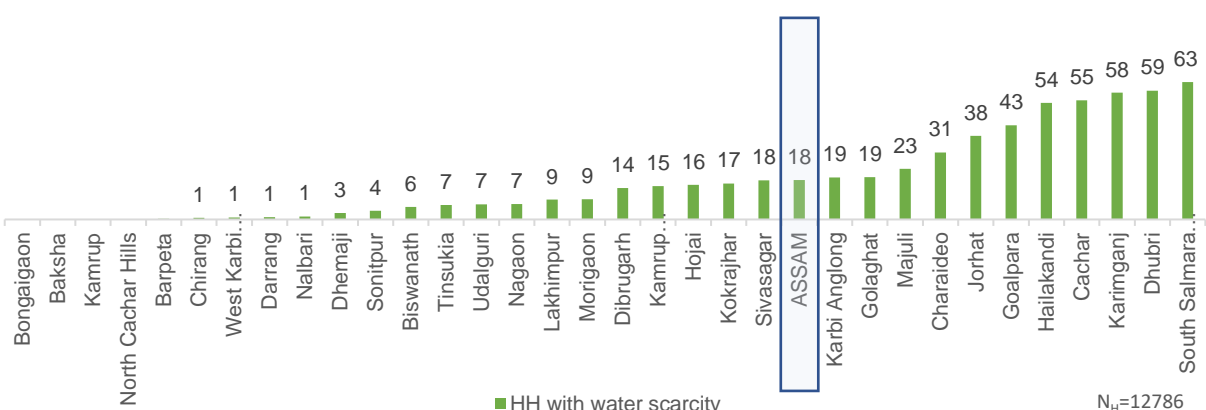
Figure 35: Households reported to use of booster pumps



E. Households who faced shortage of water

In the state, **68% HHs** faced shortage of water during any time of the year.

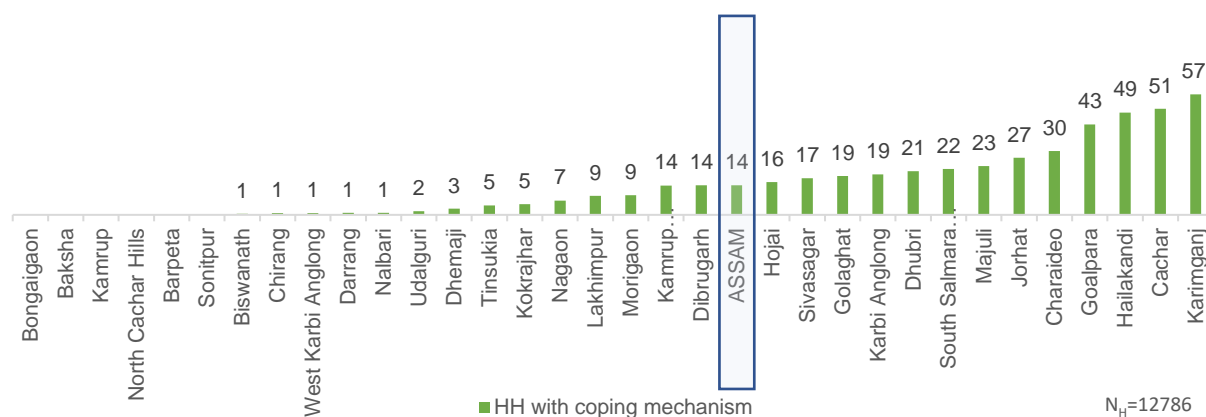
Figure 36: Households who faced water scarcity



F. Households with coping mechanism during scarcity of water

In the state, **18% HHs** faced shortage of water during any time of the year, while **14% HHs** reported having some mechanism to cope with scarcity of water.

Figure 37: Households who faced water scarcity

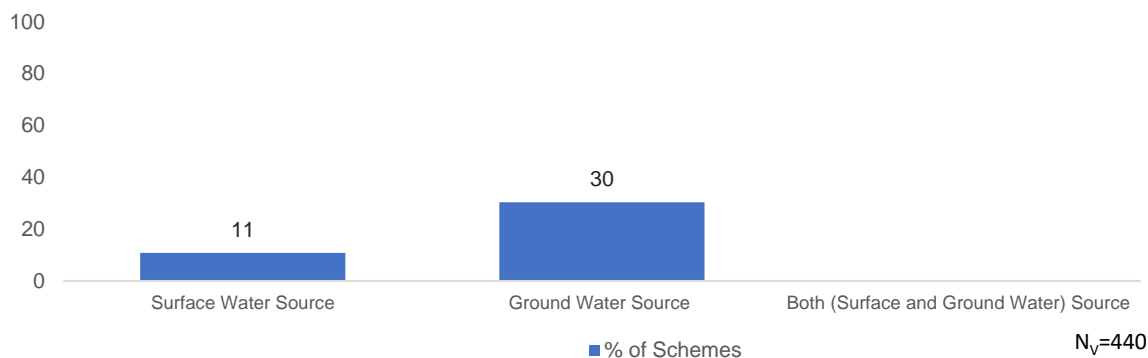


3.5. Source sustainability at the village level

Schemes based on surface and ground water

11% of schemes reported to be based on surface water source while **30% of schemes** reported to be based of ground water sources.

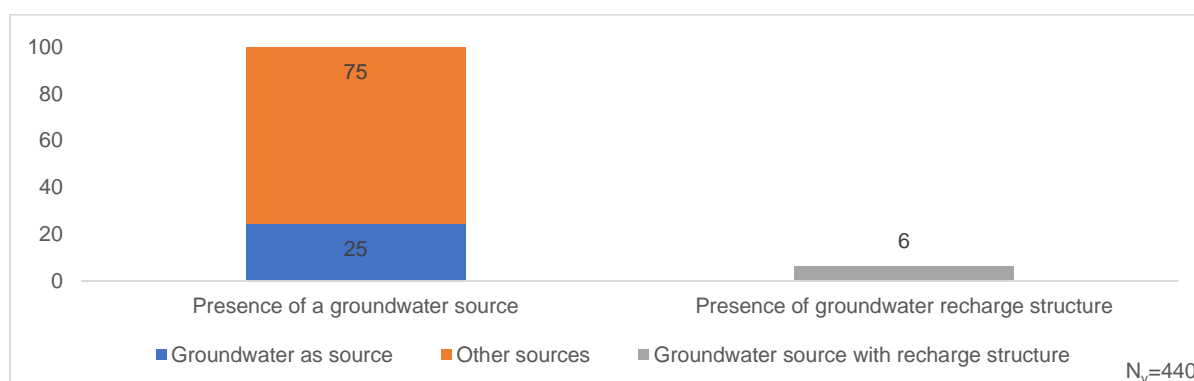
Figure 38: Schemes based on water source in village



*'Surface Water Source' is Stream, Spring, Glacier, River, lake, pond etc. and Groundwater Source is open well, borewell, tube well, handpump, spring, etc.

Villages reported having presence of a groundwater source

Figure 39: Villages reported the presence of groundwater sources and among those how many reported to have a recharge structure

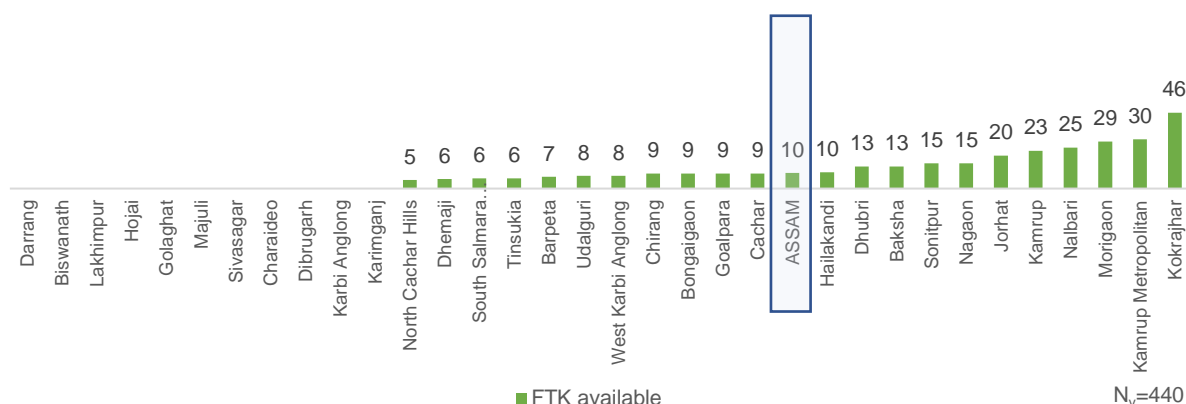


In the state, **25% villages** reported the presence of groundwater sources like improved dug wells and borewells. Out of which, 6% of villages reported (i.e., 27 villages) reported having a recharge structure.

3.6. Water quality monitoring and surveillance in the villages

A. Water quality management by VWSC: Availability of FTK with the Pani Samiti/ VWSC

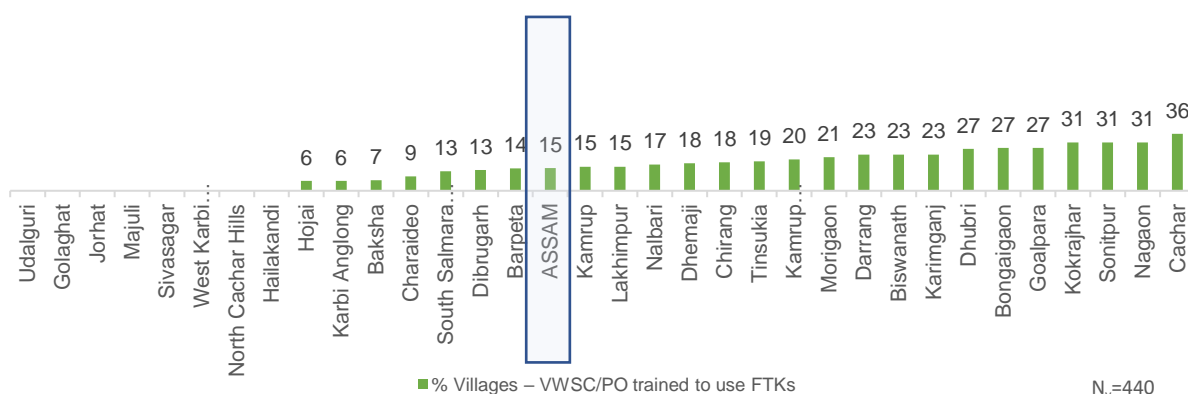
Figure 40: Availability of field test kits with VWSC/ Pani Samiti



With regards to water quality testing in the village by VWSC, 10% villages in the state reported having available field test kits. Kokrajhar reported 46% villages having available field test kits for water quality testing, while Akrimganj, Karbi Anglong, Dibrugarh, Charaideo, Sivasagar, Majuli, Golaghat, Hojai, Lakhimpur, Biswanath, and Darrang reported zero percent.

B. Persons trained to use field test kits

Figure 41: Persons trained to use field test kits

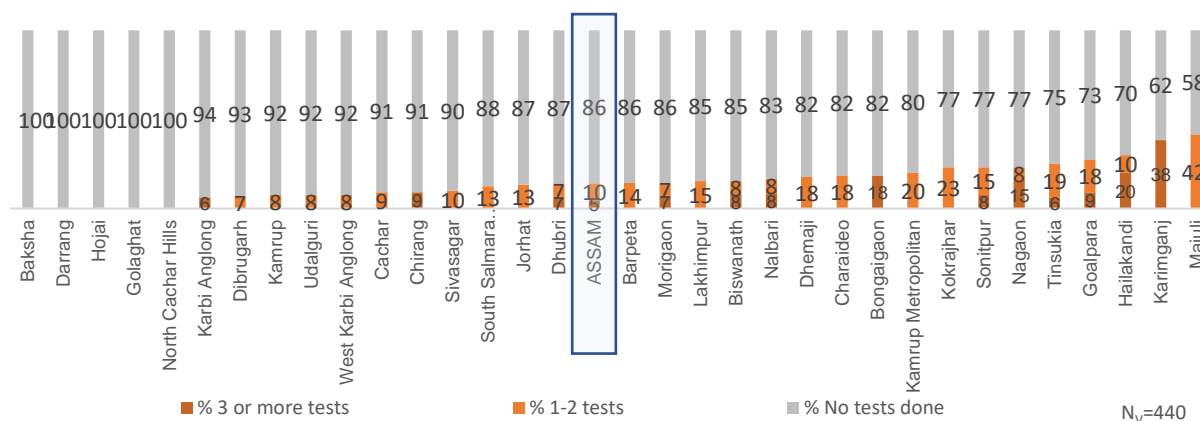


Overall, **15% of villages** in the state reported to have either VWSC/Pani Samiti or pump operator trained to use field test kits for testing the quality of water on-site. Cachar, Nagaon, Sonitpur, and Kokrajhar reported more than 30% VWSC/Pani Samiti or pump operator trained to use field test kits while Hailakandi, North Cachar Hills, West Karbi Anglong, Sivasagar, Majuli, Jorhat, Golaghat and Udalguri reported zero percent.

C. Water quality management by VWSC: Frequency of testing using FTK

Across the state, about one-twentieth of the total sampled villages (5%) reported that the quality of water (at different points in the respective villages) was checked at least three times using FTKs in last one year. Among the districts, Karimganj had the highest proportion of such villages, wherein 38% of its villages reported using FTKs three or more times in last one year.

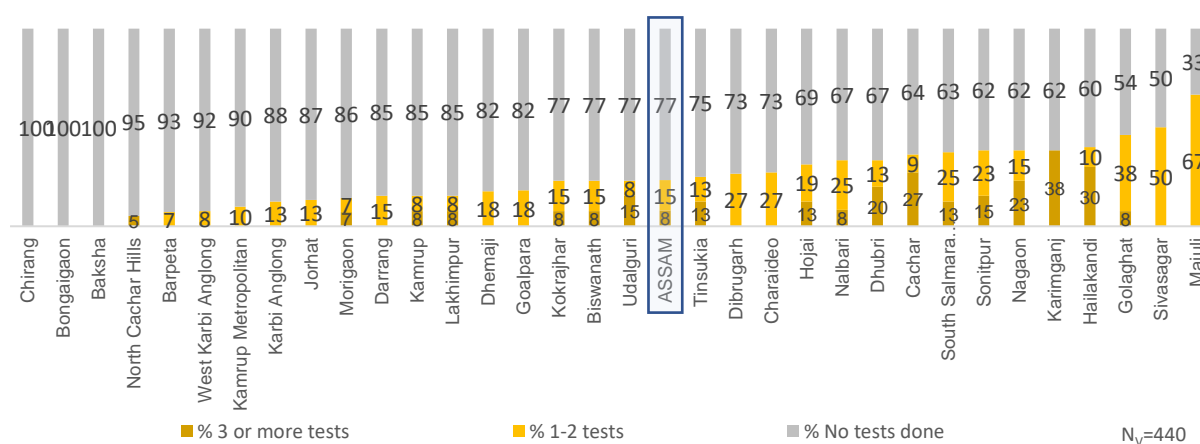
Figure 42: Frequency of testing using FTK in villages



D. Water quality management by VWSC: Frequency of lab testing

Across the state, about one-tenth of the total sampled villages (8%) reported that the quality of water (at different points in the respective villages) was checked at least three times through laboratories in last one year. Among the districts, Karimganj had the highest proportion of such villages, wherein 38% of its villages reported tests through laboratories - three or more times in last one year.

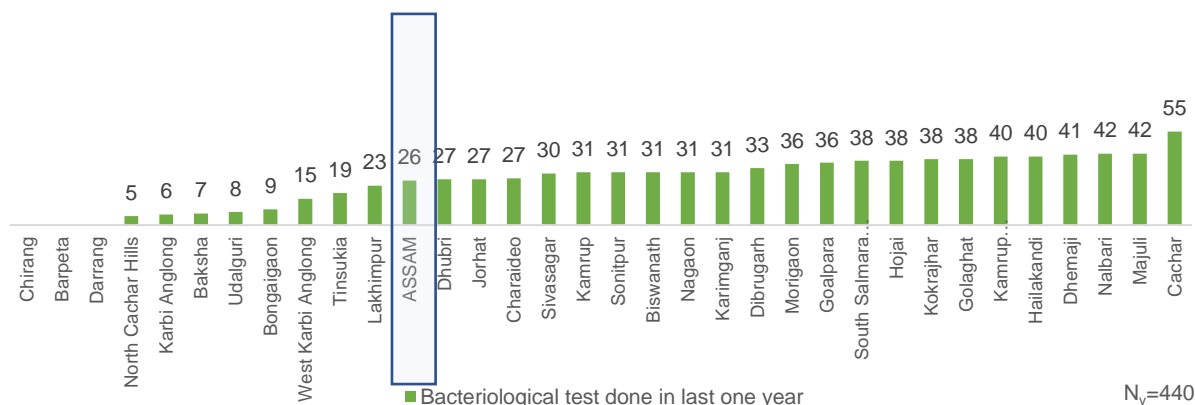
Figure 43: Frequency of lab testing



E. Water quality management by VWSC: Bacteriological test done in last one year

With regards to water quality testing in the village by VWSC, **26% villages** in the state reported having bacteriological test done in the last one year.

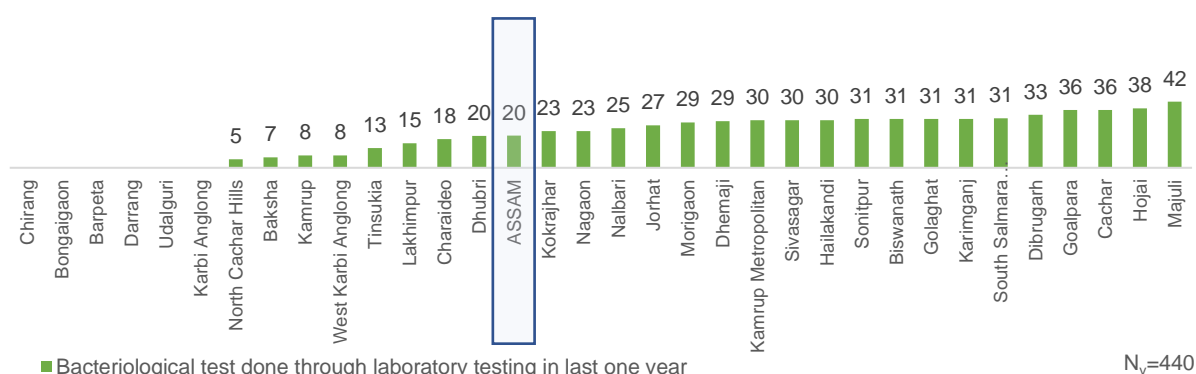
Figure 44: Percent villages in which Bacteriological test was done in the last one year



F. Water quality management by VWSC: Bacteriological test done through laboratory testing in the last one year

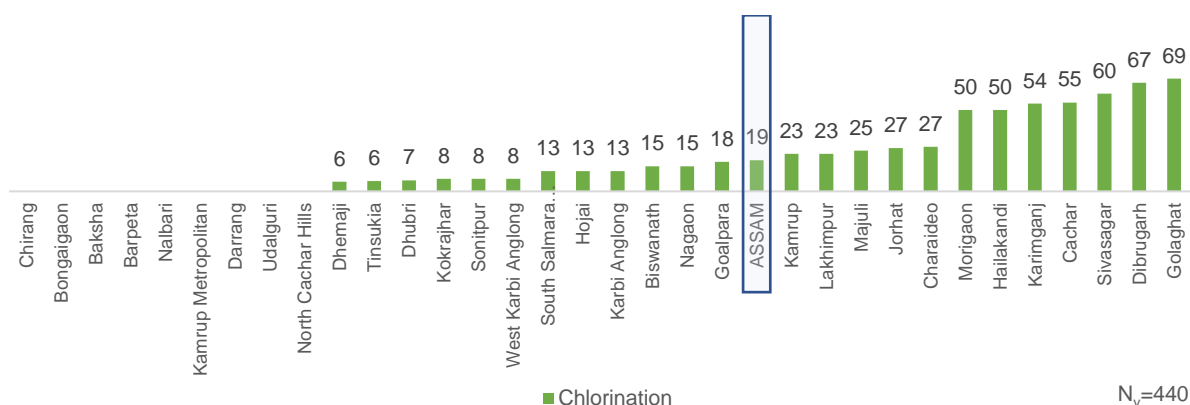
Laboratory based bacteriological tests, in last one year, was reported by 20% of sampled villages. Majuli reported 42% of sampled villages to have had bacteriological tests done through laboratories in last one year.

Figure 45: Bacteriological test done through laboratory testing in the last one year



G. Water quality management by villages: Availability of chlorination mechanism in the village

Figure 46: Villages having a mechanism for chlorination

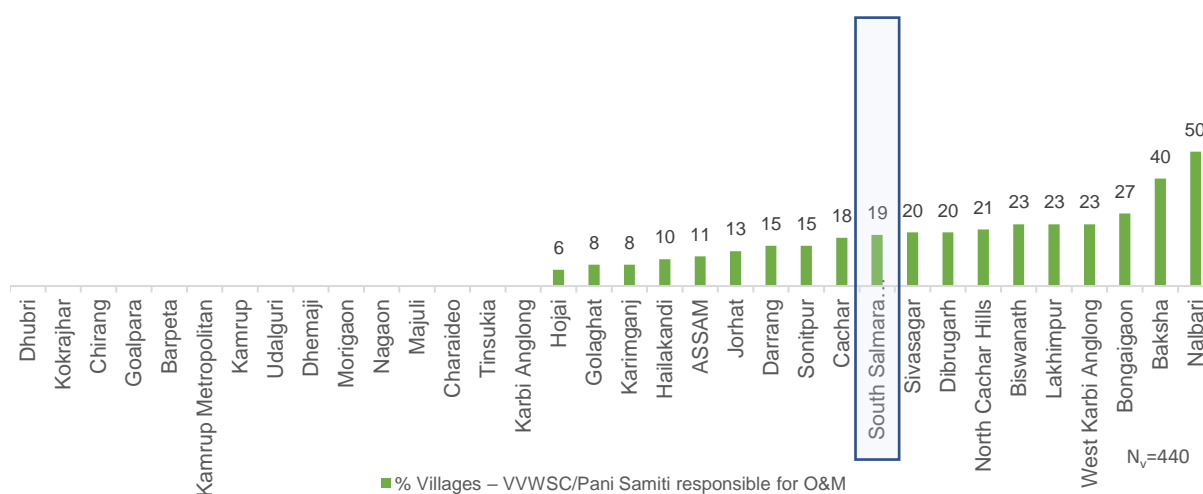


Only **19% villages** reported that there is availability of chlorination mechanism in the village but during onsite testing of water at household level about 81% households tested to have for presence of chlorine.

3.7. Management of water service delivery at village level

A. VWSC/Pani Samiti responsibility for O&M of PWS schemes

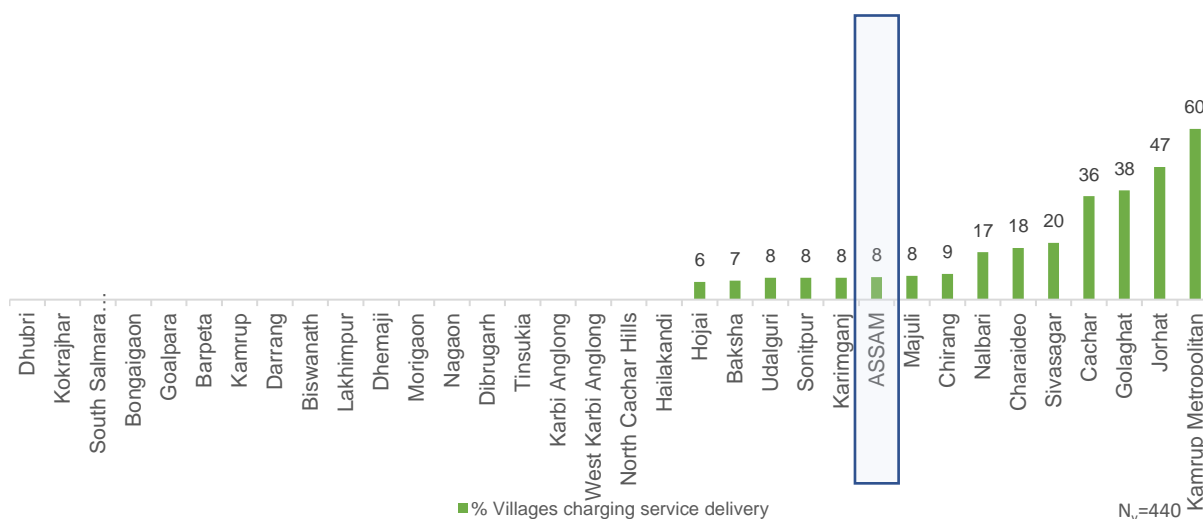
Figure 47: VWSC/Pani Samiti responsibility for O&M of PWS schemes



In the state, **11% villages** that have VWSC/Pani Samiti reported to be responsible for operation and maintenance of PWS. Dhubri, Kokrajhar, Chirang, Goalpara, Barpeta, Kamrup Metropolitan, Kamrup, Udalguri, Dhemaji, Morigaon, Nagaon, Majuli, Charaideo, Tinsukia, and Karbi Anglong districts reported that VWSC/Pani Samiti are not responsible for operation and maintenance of PWS.

B. Villages levying water service delivery charges from households

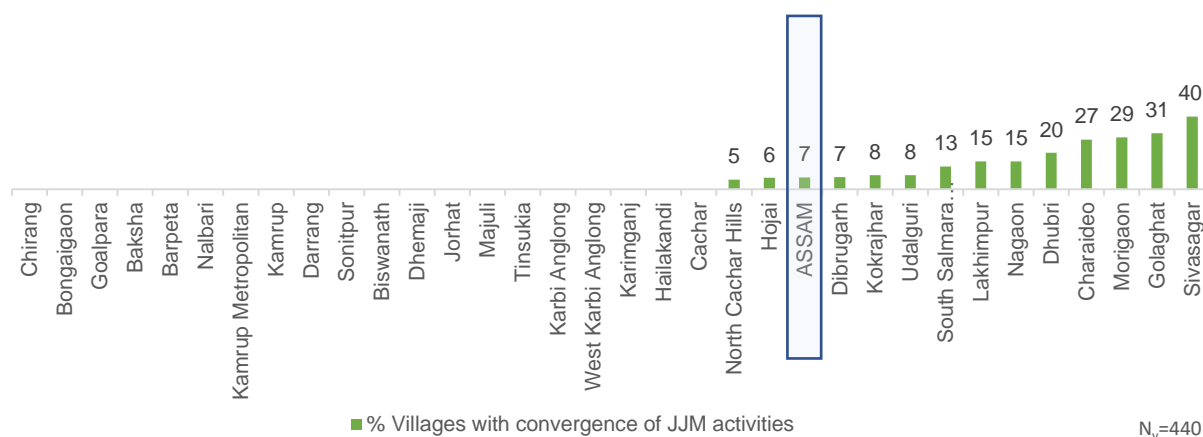
Figure 48: Villages levying water service delivery charges from households



Overall, **8% of villages** in the state levy charge for water service delivery to households whereas **10% HHs** reported paying water service delivery charges at the households.

C. Convergence of JJM activities with other schemes in villages

Figure 49: Village reported convergence of JJM activities with other schemes in the village

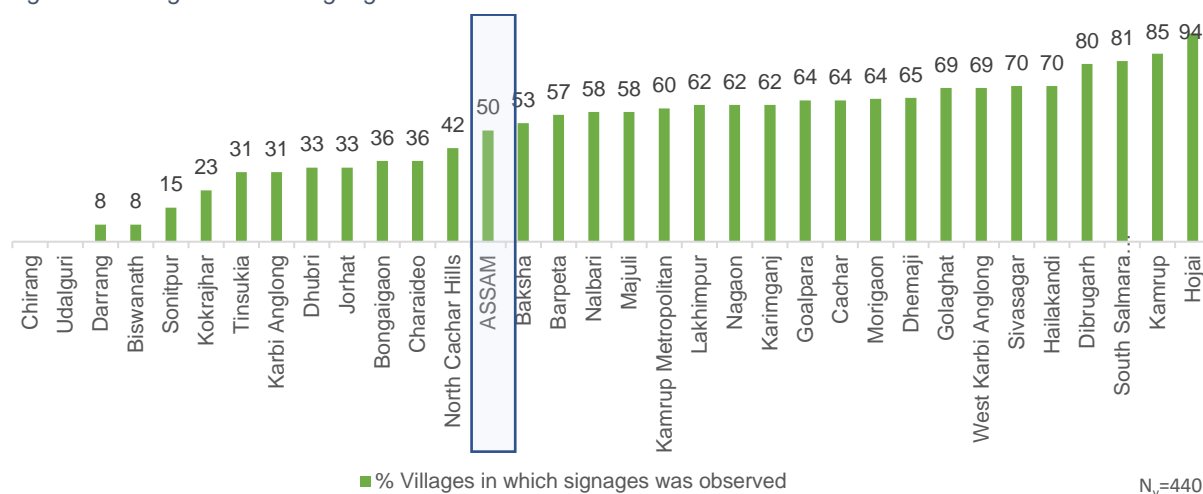


In the state, only **7% villages** in the state reported convergence of activities under JJM with other government programmes/ schemes on skill development, capacity building and training, and awareness generation.

D. Villages where signages were observed

Signages about JJM were observed in 50% of the sampled villages. District Hojai had the highest proportion of villages where signages were observed (94%).

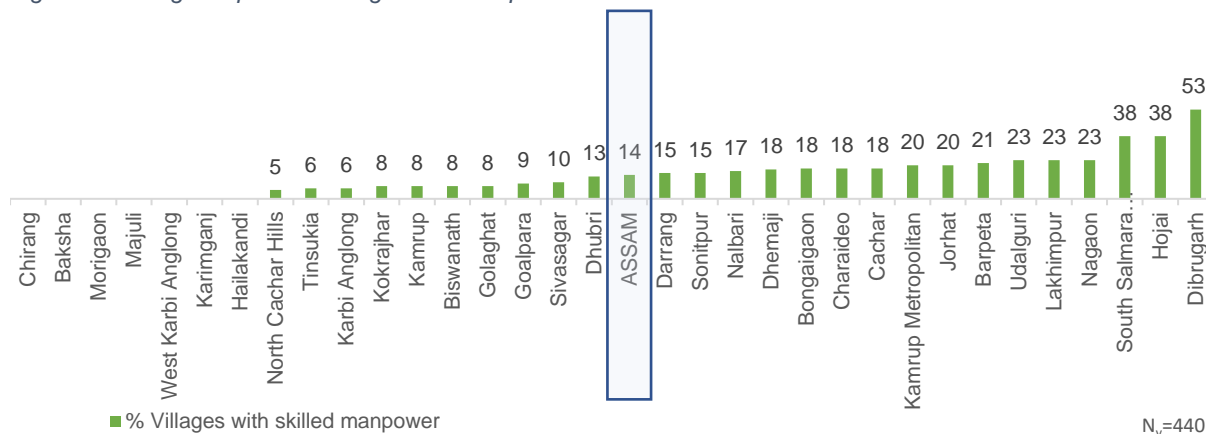
Figure 50: Villages in which signages about JJM was observed



3.8. Status of Operation & Maintenance

A. Villages with skilled manpower for operation and maintenance (O&M) of PWS schemes

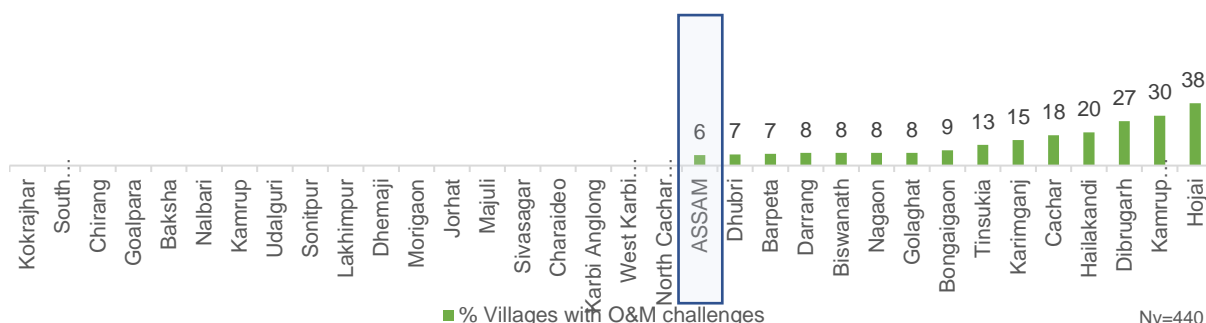
Figure 51: Villages reported having skilled manpower for O&M of PWS schemes



Across the state, **14% villages** in the reported having identified skilled manpower for O&M of PWS schemes, the most reported to be in Dibrugarh (53%) and no skilled manpower was reported in the districts of Chirang, Baksha, Morigaon, Majuli, West Karbi Anglong, Karimganj and Hailakandi.

B. Villages with O&M challenges

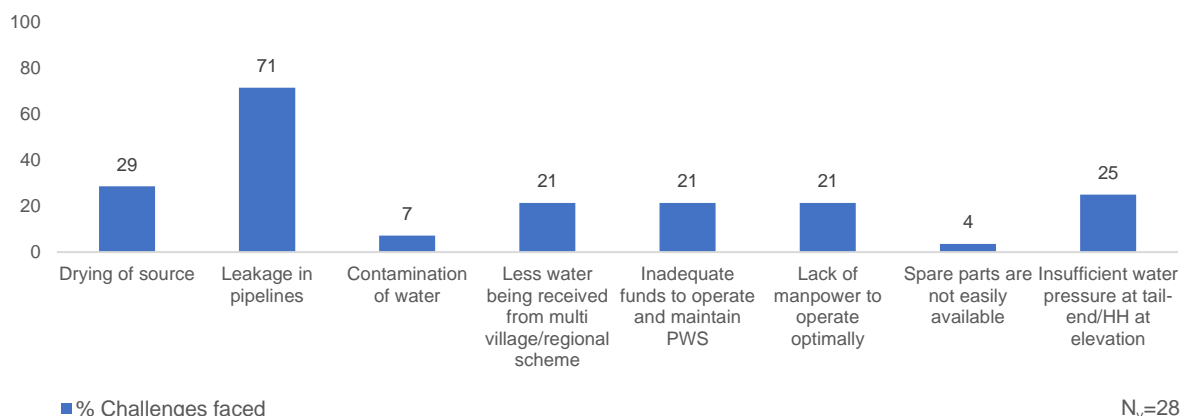
Figure 52: Villages reported having faced O&M challenge



In the state, **6% of villages** in the state reported to have faced challenges with respect to O&M of PWS schemes

C. Details of challenges faced

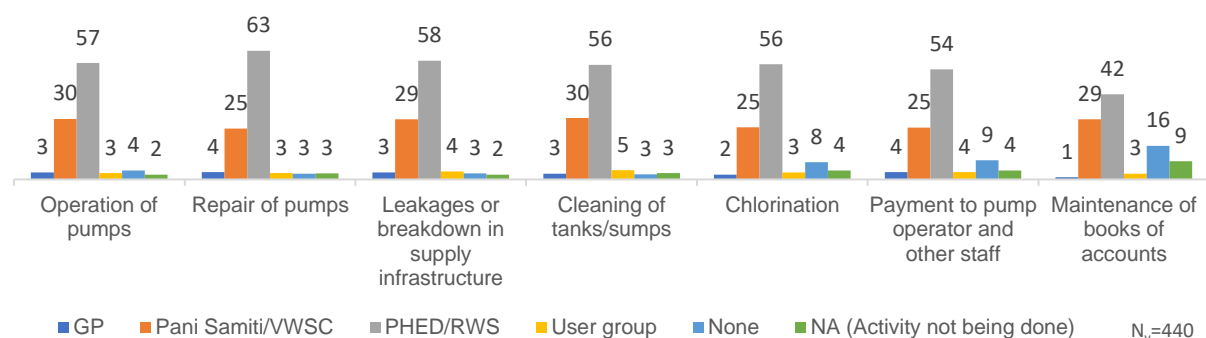
Figure 53: Details of O&M challenges faced by village



Out of the 6% of villages that had faced challenges with respect to O&M of PWS schemes (28 villages), 'leakage in pipelines' was attributed the most – at 71%.

D. Responsible for O&M

Figure 54: Different bodies responsible for O&M

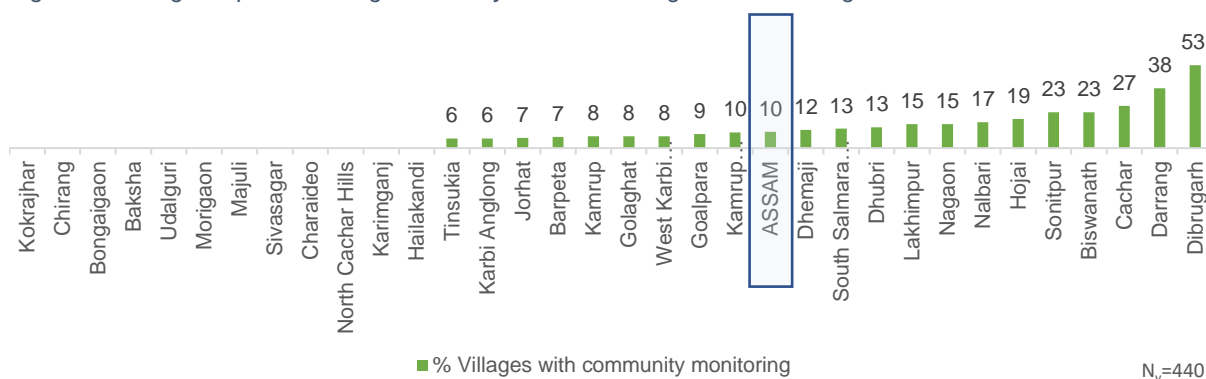


Across the state, villages reported 'Repair of pumps' the most for being responsible for all essential aspects about operation and maintenance of PWS schemes.

E. Villages with community level monitoring of water wastage

10% of villages in the state reported to have community level monitoring of water wastage

Figure 55: Villages reported having community level monitoring of water wastage

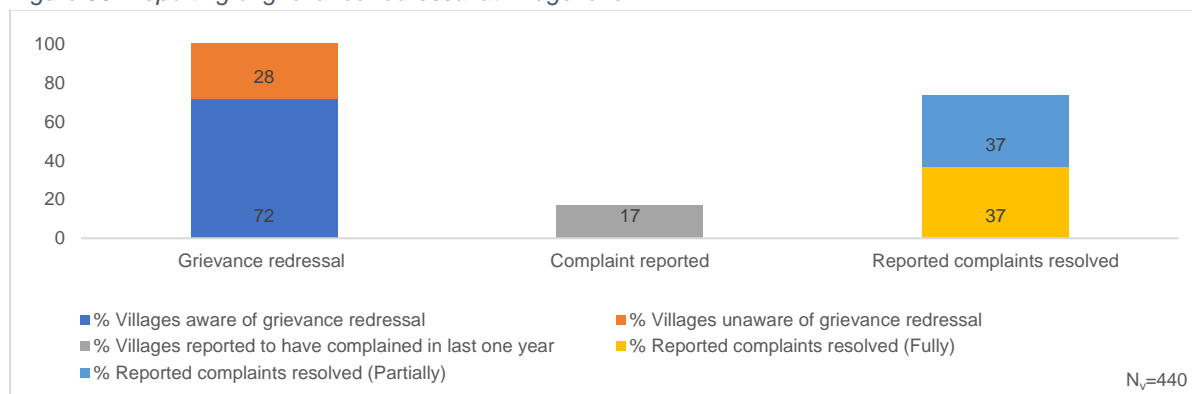


3.9. Status of service delivery related grievances and redressal

A. Village level

Grievance redressal at village

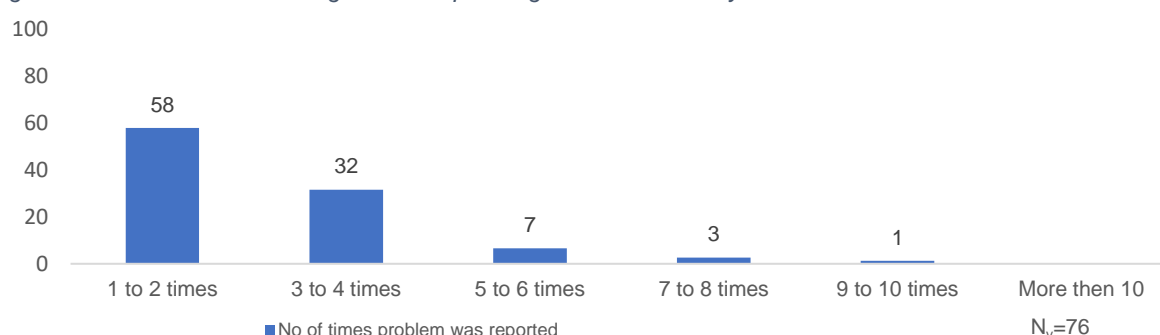
Figure 56: Reporting of grievance redressal at village level



In the state, **72% of villages** reported that they are aware of any grievance redressal mechanism, but only 17% HHs have reported a complaint in the last one year amongst which 37% reported that the complaints are fully resolved and another 37% of complaints have been partially resolved.

Problem reported in last 1 year

Figure 57: Number of times villages have reported grievance in last 1 year

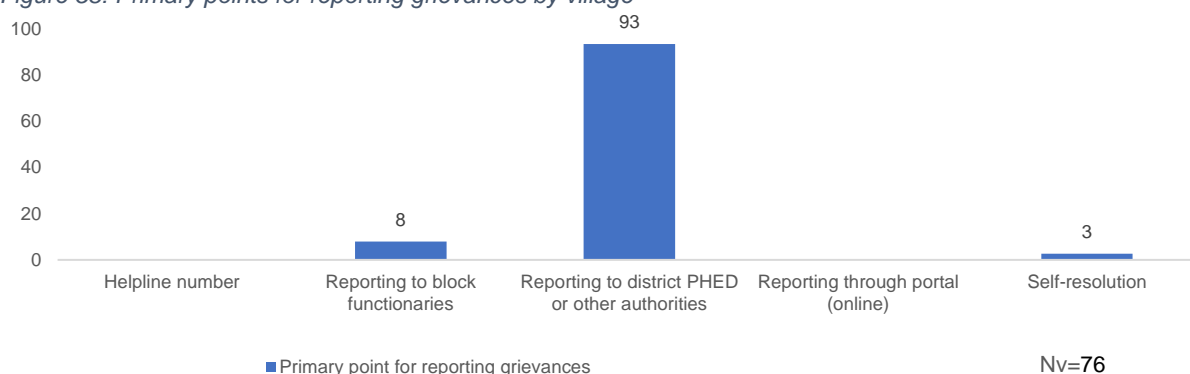


Among the villages who reported a complaint (i.e. 76 villages), 58% villages have reported a complaint at least once or twice or 2 times in the last one year, while 32% reported a complaint three or four time.

Primary points for reporting grievances

Among those who reported complaint (i.e., 17% HHs, 76 villages), **93% of villages** reported that they report their grievances to **PHED or other authorities** beside other reporting-points

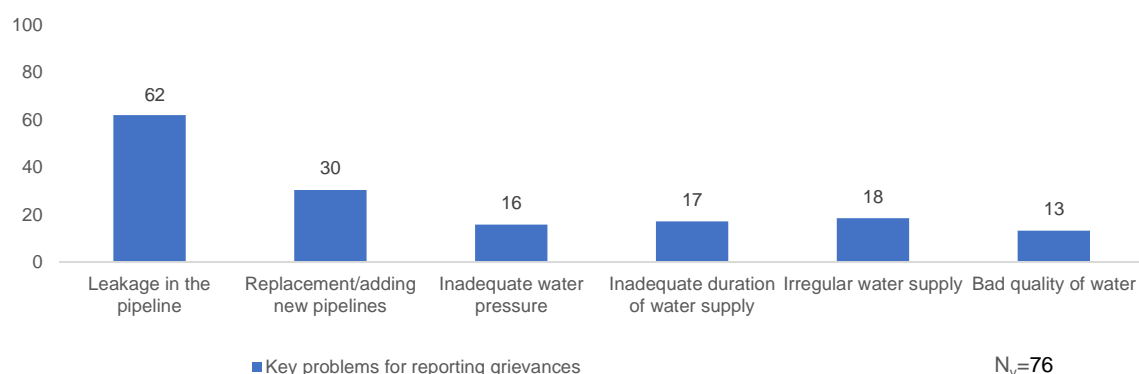
Figure 58: Primary points for reporting grievances by village



Key problems for reporting grievances

Overall, among those who reported complaint (i.e., 56% HHs, 204 villages) **62% of villages** reported that **leakage in the pipeline** is their most encountered problem for reporting grievances.

Figure 59: Key problems reported by village

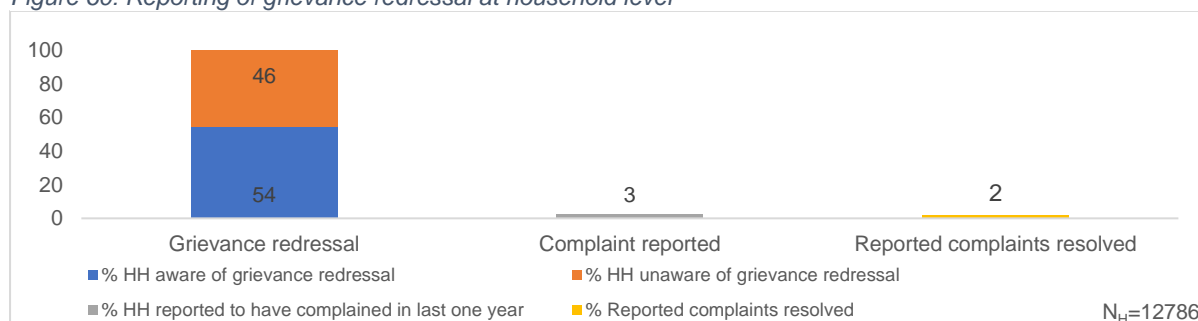


B. Household level

Awareness of grievance redressal at household

In the state, **54% of HHs** reported that they are aware of any grievance redressal mechanism w.r.t. HH tap water through PWS, but only 3% HHs have reported a complaint in the last one year and only 2% of complaints have been resolved.

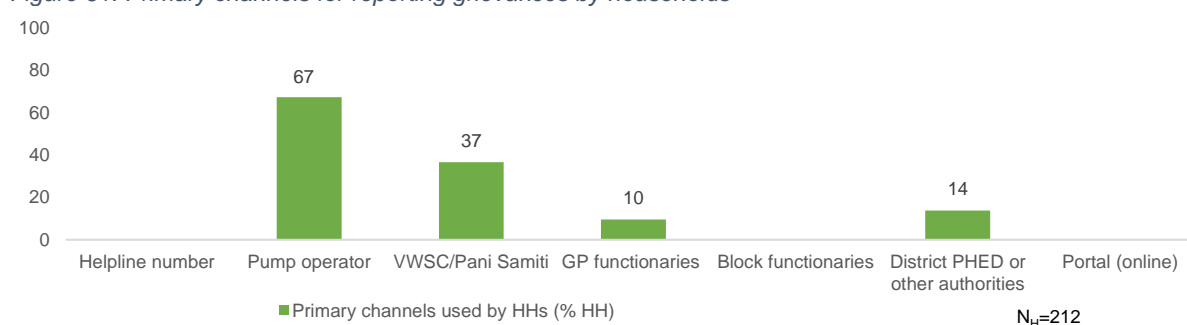
Figure 60: Reporting of grievance redressal at household level



Primary channels for reporting grievances by households

Among those who reported complaint as shown in the above graph (i.e., 3% HHs, 212 HHs), **67% of the HHs** reported their complaints to the **pump operators** beside other reporting-channels

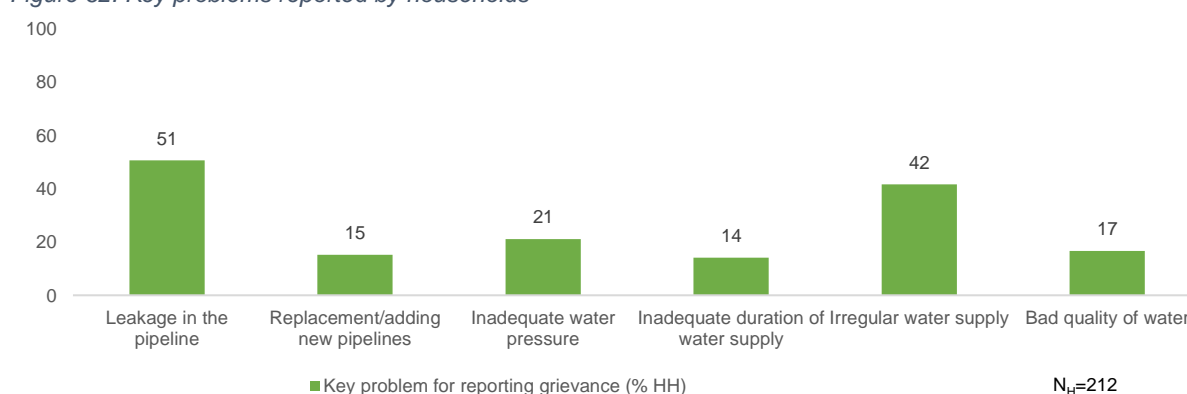
Figure 61: Primary channels for reporting grievances by households



Key problems for reporting grievances

Overall, among those who reported complaint (i.e., 3% HHs, 212 HHs) **51% of the HHs** that reported problems was of **leakage in the pipeline** beside other problems

Figure 62: Key problems reported by households

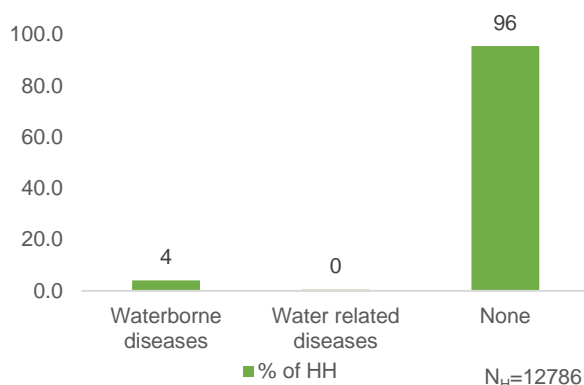


3.10. Perception of HHs on Outcome Indicators

A. Incidence of water borne diseases at HH level in last one year

Across the state only 4% HHs reported having an incidence(s) of water borne diseases in your household in last one year. The cases recorded were of Dysentery, Diarrhoea, Cholera and Typhoid

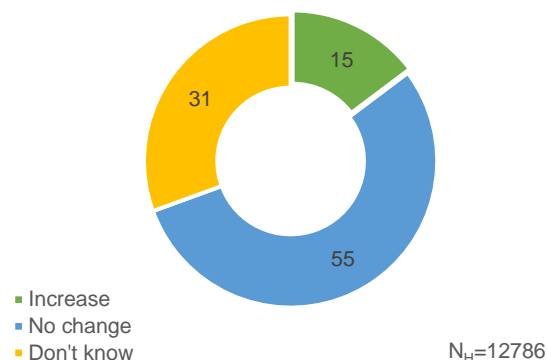
Figure 64: Household reported incidence of water borne diseases in last one year



B. Change in employment days since FHTC programmes/schemes

Since having a functional HH tap connection, 15% HHs across the state has reported that there has been a change in the no. of employment days of the adult HH members while 55% HHs reported no change

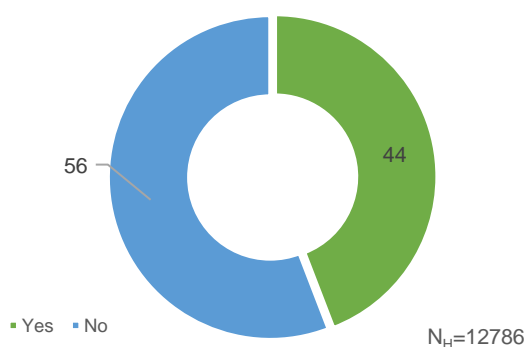
Figure 63: Household reported a change in employment days since FHTC programmes /schemes



C. Reduction in time and effort in collecting water

Out of the HHs reported (i.e., 4338) that female members used to fetch water before HH tap connection, 44% reported that post installation of HH tap connection it helped reduction of time and effort in collection of water

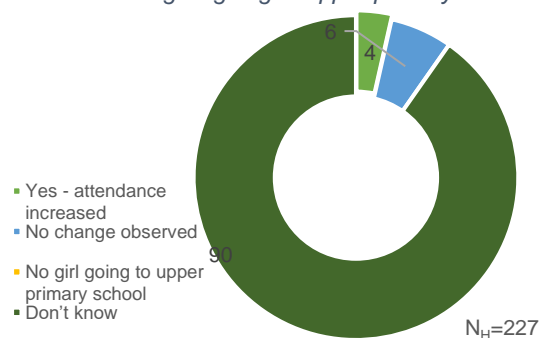
Figure 65: Households reported reduction in time and effort in collecting water



D. Impact on attendance of the girls going to upper primary

Across the state, 4% HHs reported that since having a functional HH tap connection the attendance of the girls going to schools increased, while zero HHs reported no change in attendance which could possibly be an impact of shutting down of schools due to COVID-19 related lockdown during the survey

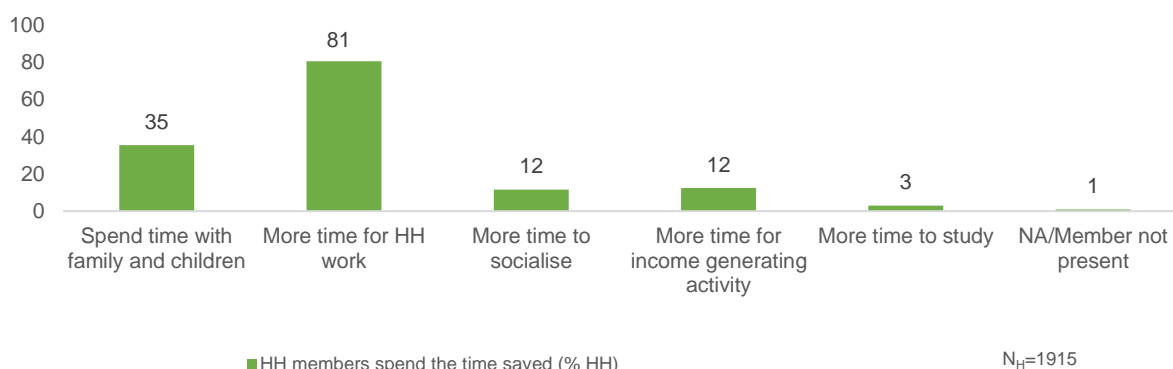
Figure 66: Households reported increase of attendance of girls going to upper primary school



E. HHs are using time saved due to provision of tap connection

Time saved by female HH members against collecting water, post installation of HH tap connections, was reportedly most utilized for other HH work (81%).

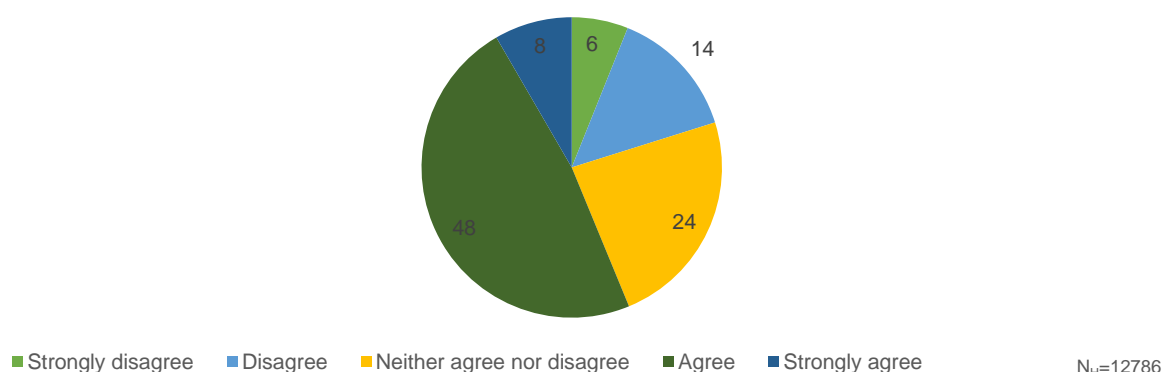
Figure 67: Utilization of time saved by households post installation of HH tap connection



F. Change in social status

Sense of pride and positive change in social status was reportedly realized by 62% of HHs post the installation of HH tap connections.

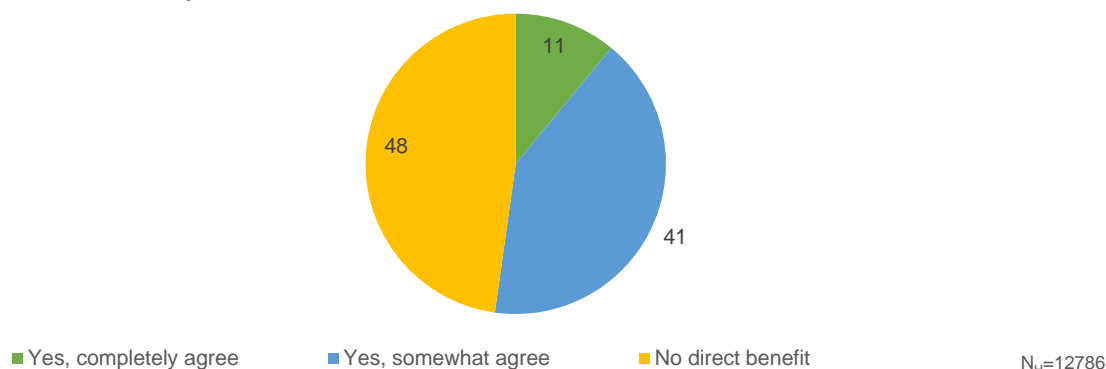
Figure 68: Households reported to have a positive change in social status








G. Direct benefits in terms of income due to FHTC

Across the state, 11% of sampled HHs reported being in complete agreement that there had been direct benefits on their HH income since the installation of HH tap connection, while 41% HHs reported being in partial agreement against the same.

Figure 69: Households reported to have received direct benefits in terms of income due to FHTC



3.11. User satisfaction

Table No. 6: User satisfaction - more than 75% happy with FHTC services			
S. No.	Parameter (N _h =12786)		In%
1	Regularity		72.2
2	Overall quality		75.7
3	Colour		75.7
4	Taste		77.9
5	Odour		77.9

Note:

Base (N_v)=440 means all villages sampled and covered in Assam state

Base (N_H)=12786 means all households sampled and covered across the 440 villages in Assam state

Base (N_H)=10320 means all households sampled where water sample be collected across the 440 villages in Assam state

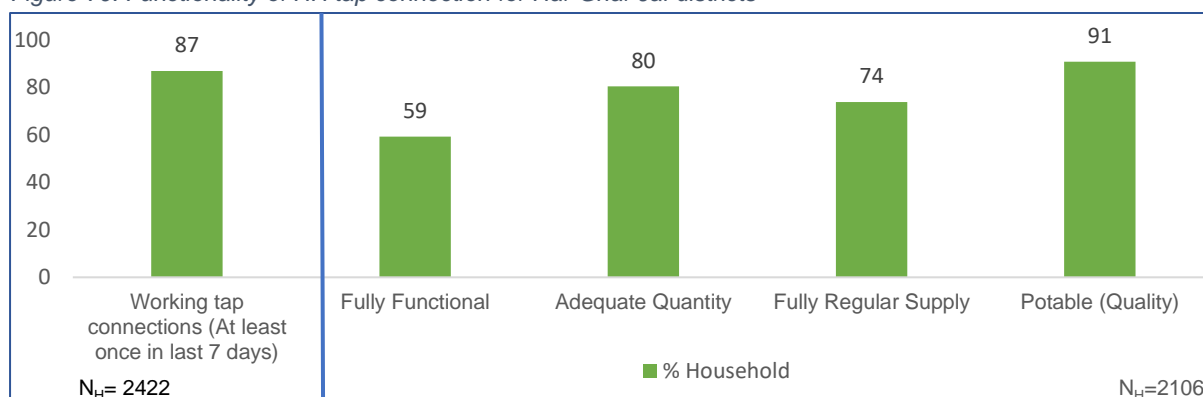
Base (N_H)=4338 means all households sampled where female members used to fetch water before HH tap connection

Base (N_H)=227 means all households sampled that had adolescent girls as one of HH members

4. Functionality status of FHTC at household level for Har-Ghar-Jal villages

4.1. Overall Functionality (in %)

Figure 70: Functionality of HH tap connection for Har Ghar Jal districts



* Fully Functional has been computed as = Adequate Quantity \cap Fully Regular Supply \cap Potable (Quality)

Please note: For HGJ district, N_H=2106 implies all HHs where water was found on the day of the survey.

It has been found that 87 percent of the sampled HHs (N=2422) had working tap connections. 59 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, four-fifth of the households (80 percent) received adequate quantity (≥ 55 LPCD) of water supply and less than three-fourth received regular supply (74 percent) of water. The on-site testing and lab test results of the water indicates that more than 9 out of 10 (91%) sampled households in the state receive potable water.

S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Fully functional (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
1.	Bongaigaon	100	75	100	75	75
2.	Goalpara	100	37	100	37	100
3.	Baksha	100	100	100	100	100
4.	Barpeta	100	100	100	100	100
5.	Nalbari	100	90	95	100	94
6.	Kamrup	100	0	6	0	100
7.	Udalguri	100	86	89	100	97
8.	Sonitpur	100	52	59	61	98
9.	Dhemaji	100	77	97	99	79
10.	Nagaon	100	94	100	100	94
11.	Golaghat	100	65	76	86	100
12.	Jorhat	100	76	100	76	100
13.	Majuli	100	58	87	61	100
14.	Sivasagar	100	35	96	100	35
15.	Charaideo	100	89	89	100	100
16.	Dibrugarh	100	20	100	69	31
17.	Tinsukia	100	7	20	13	100
18.	West Karbi Anglong	100	42	82	47	98
19.	Hailakandi	100	8	29	44	99

Table No. 7: Quantity, Regularity, and Quality of FHTC for Har Ghar Jal districts (%HH)						
S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Fully functional (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
20.	Cachar	100	11	31	72	100
21.	ASSAM	87	59	80	74	91
22.	Kamrup Metropolitan	99	27	49	48	99
23.	Karbi Anglong	80	60	78	79	85
24.	Morigaon	79	100	100	100	100
25.	North Cachar Hills	71	81	92	81	100
26.	Dhubri	67	47	50	86	100
27.	Karimganj	66	41	54	83	87
28.	Kokrajhar	57	75	100	75	97
29.	Hojai	33	39	89	69	53
30.	Darrang	20	50	89	56	100
31.	Lakhimpur	0	62	100	76	72

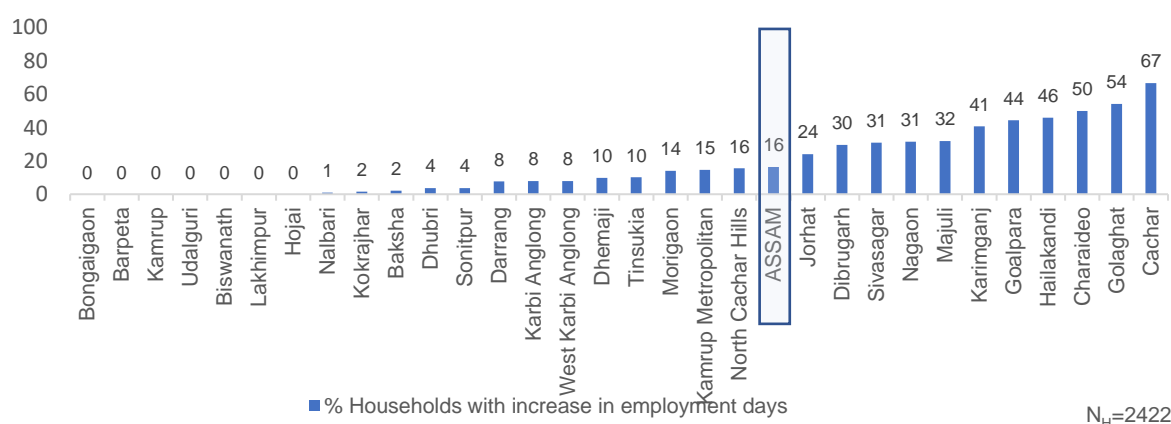
Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological as given in Table 5 parameters (within acceptable/ permissible range) and onsite testing of pH. The details of laboratory test are mentioned in the table given above in the glossary.

4.2. Perception of HHs from Har-Ghar-Jal villages on Outcome Indicators

A. Change in employment days since FHTC programmes/ schemes

Across the state, less than one-fifth of the sampled households reported that employment days increased since the installation of FHTC.

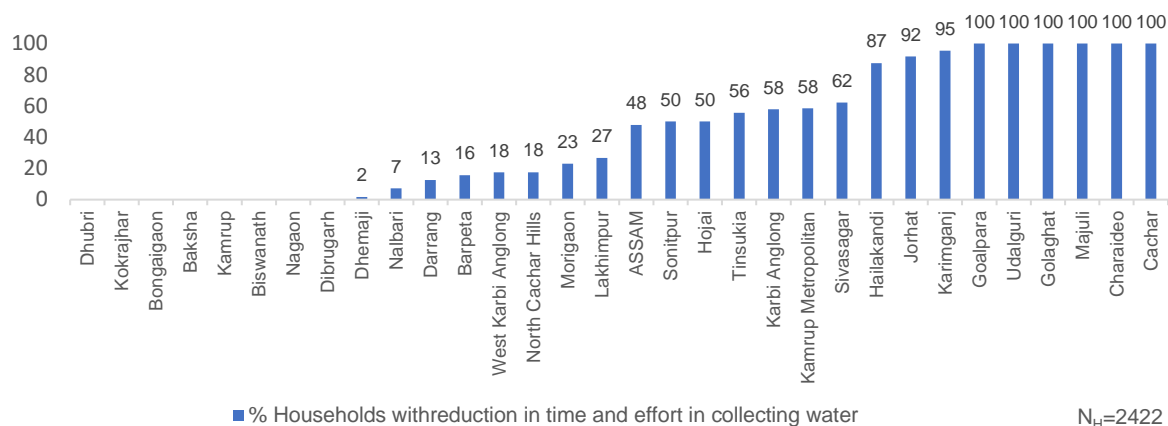
Figure 71: Household reported a change in employment days since FHTC programmes /schemes in Har Ghar Jal districts



B. Reduction in time and effort in collecting water

Similarly, about 48% of the sampled households also reported that the effort and time in collecting water reduced after installation of FHTC.

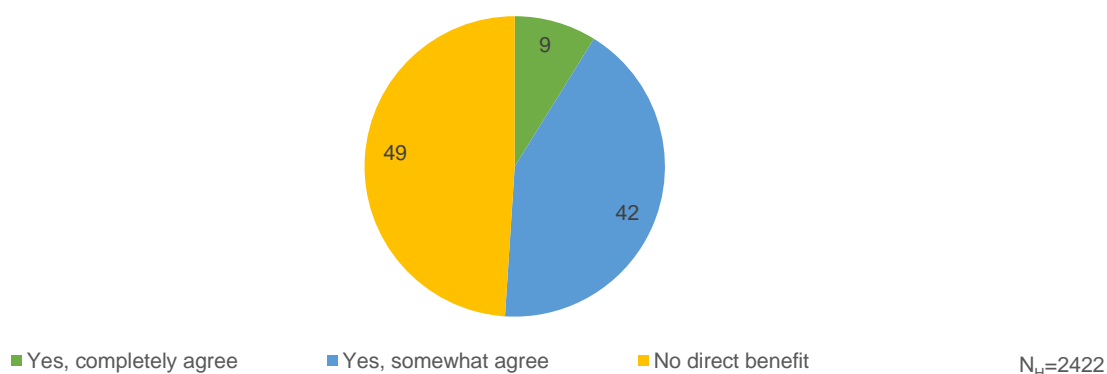
Figure 72: Households reported reduction in time and effort in collecting water in Har Ghar Jal districts



4.3. Direct benefits in terms of income due to FHTC

Across the nation, 9% of sampled HHs from HGJ villages reported being in complete agreement that there had been direct benefits on their HH income since the installation of HH tap connection, while 42% reported being in partial agreement against the same.

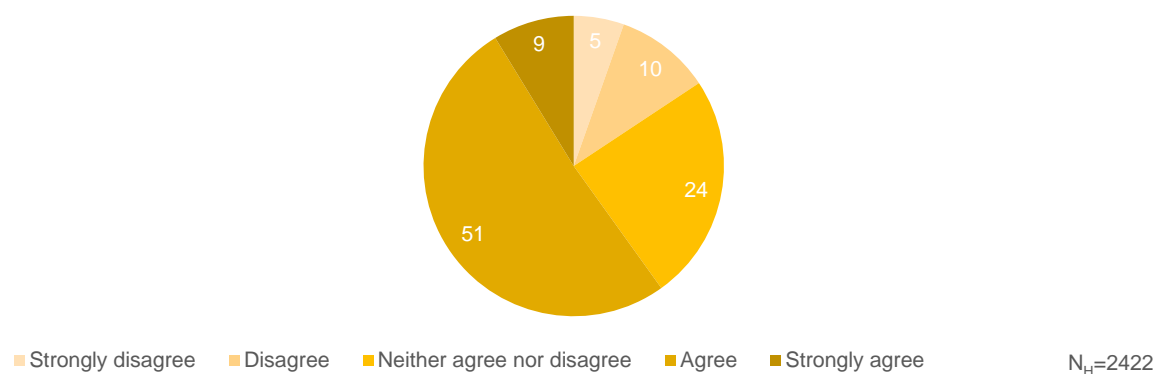
Figure 73: Households reported to have received direct benefits in terms of income due to FHTC in Har Ghar Jal districts



4.4. Change in social status

Almost three-fifth of the households felt HH tap connection earned them more respect, feeling of pride and brought a positive change in their social status.

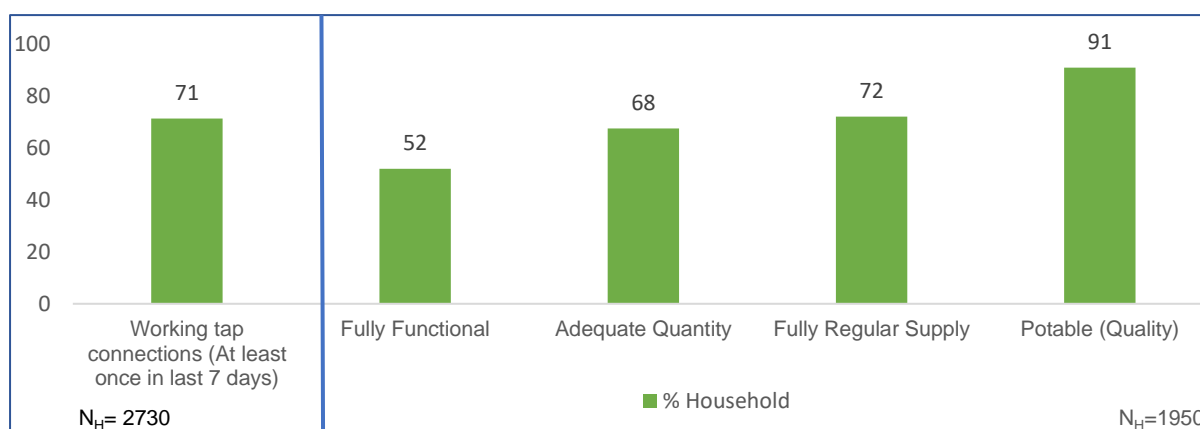
Figure 74: Households reported to have a positive change in social status in Har Ghar Jal districts



5. Functionality status of FHTC at household level for aspirational districts

5.1. Overall Functionality (in %)

Figure 75: Functionality of HH tap connection for aspirational districts



* Fully Functional has been computed as = Adequate Quantity \cap Fully Regular Supply \cap Potable (Quality)

Please note: For aspirational district, N_H=1950 implies all HHs where water was found on the day of the survey.

It has been found that 71 percent of the sampled HHs (N=2730) had working tap connections. 52 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, more than 3 out of 5 households (68 percent) received adequate quantity (≥ 55 LPCD) of water supply and more than 3 out of 5 received regular supply (72 percent) of water. The on-site testing and lab test results of the water indicates that more than 9 out of 10 (91%) sampled households in the state receive potable water.

Table No. 8: Quantity, Regularity, and Quality of FHTC for aspirational districts (%HH)						
S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Fully functional (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
1.	Baksha	100	46	48	60	0
2.	Barpeta	95	95	100	100	0
3.	Goalpara	86	40	69	53	4
4.	Dhubri	76	41	60	83	6
5.	Hailakandi	71	13	36	41	8
6.	ASSAM	71	52	68	72	91
7.	Udalguri	52	44	88	95	0
8.	Darrang	22	16	83	84	0

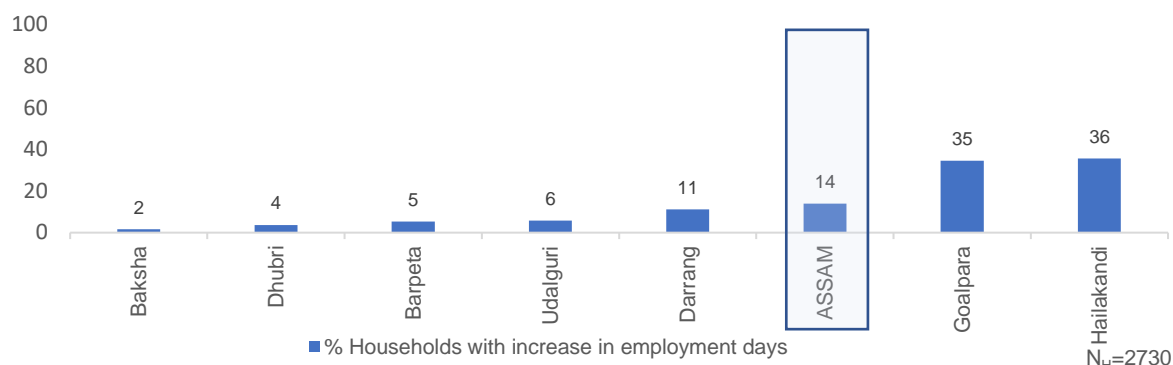
Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological as given in Table 5 parameters (within acceptable/ permissible range) and onsite testing of pH. The details of laboratory test are mentioned in the table given above in the glossary.

5.2. Perception of HHs from aspirational districts on Outcome Indicators

A. Change in employment days since FHTC programmes/ schemes

Only around 14% of the households in aspirational districts reported increase in employment days since installation of FHTC.

Figure 76: Household reported a change in employment days since FHTC programmes /schemes in Aspirational districts



B. Reduction in time and effort in collecting water

Only around 60% of the households in aspirational districts reported reduction in time and effort in collecting water.

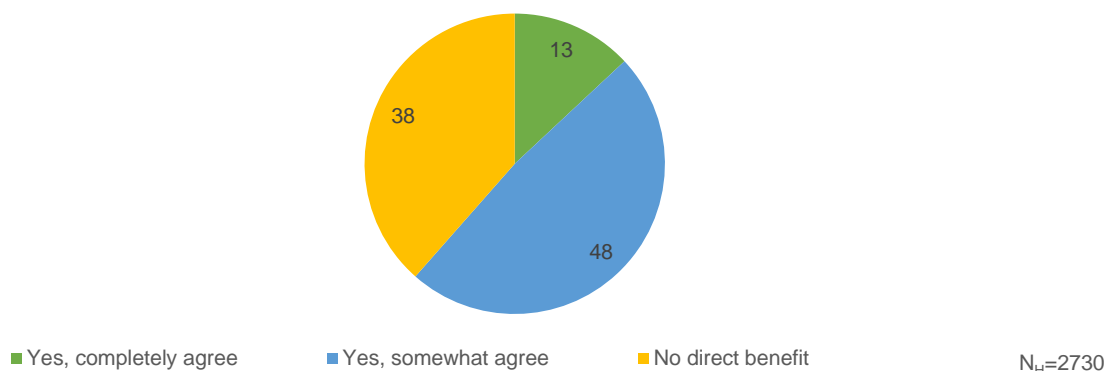
Figure 77: Households reported reduction in time and effort in collecting water in Aspirational districts



5.3. Direct benefits in terms of income due to FHTC

Across the state, 13% of sampled HHs from aspirational districts reported being in complete agreement that there had been direct benefits on their HH income since the installation of HH tap connection, while 48% reported being in partial agreement against the same.

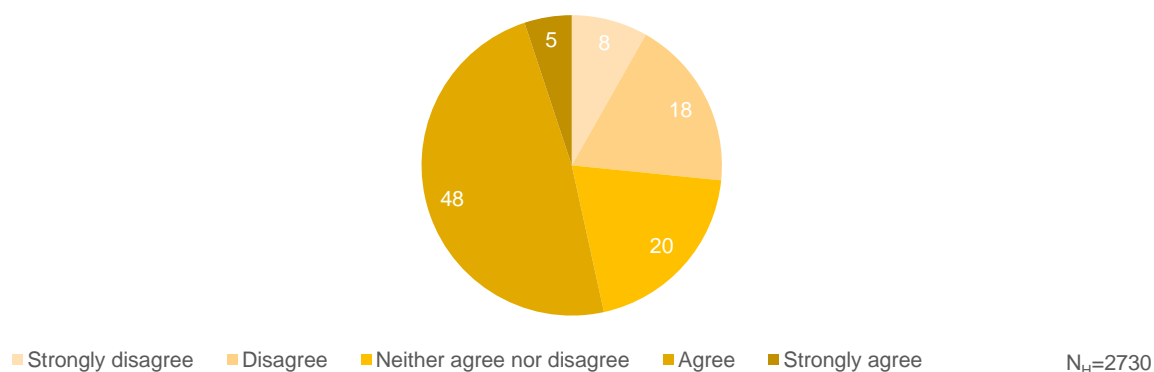
Figure 78: Households reported to have received direct benefits in terms of income due to FHTC in Aspirational districts



5.4. Change in social status

More than half of the households in aspirational districts felt HH tap connection earned them more respect, feeling of pride and brought a positive change in their social status.

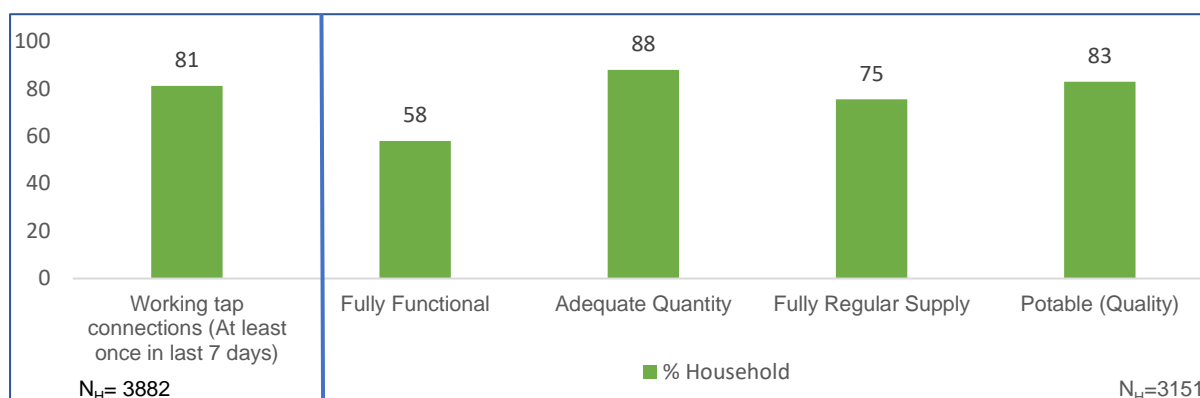
Figure 79: Households reported to have a positive change in social status in Aspirational districts



6. Functionality status of FHTC at household level for JE-AES affected villages

6.1. Overall Functionality (in %)

Figure 80: Functionality of HH tap connection for JE-AES districts



* Fully Functional has been computed as = Adequate Quantity \cap Fully Regular Supply \cap Potable (Quality)

Please note: For JE-AES district, N_H=3151 implies all HHs where water was found on the day of the survey.

It has been found that 81 percent of the sampled HHs (N=3882) had working tap connections. 58 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, more than 4 out of 5 households (88 percent) received adequate quantity (≥ 55 LPCD) of water supply and three-fourth of the households received regular supply (75 percent) of water. The on-site testing and lab test results of the water indicates that more than 8 out of 10 (83%) sampled households in the state receive potable water.

S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Fully functional (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
1.	Golaghat	100	70	85	81	99
2.	Sivasagar	100	84	96	97	91
3.	Barpeta	95	99	100	100	99
4.	Dibrugarh	95	27	90	43	72
5.	Lakhimpur	91	61	91	74	82
6.	Jorhat	86	61	96	62	97
7.	ASSAM	81	58	88	75	83
8.	Dhemaji	72	68	82	93	82
9.	Sonitpur	62	53	78	66	83
10.	Tinsukia	58	13	49	34	82
11.	Udalguri	52	47	88	95	57

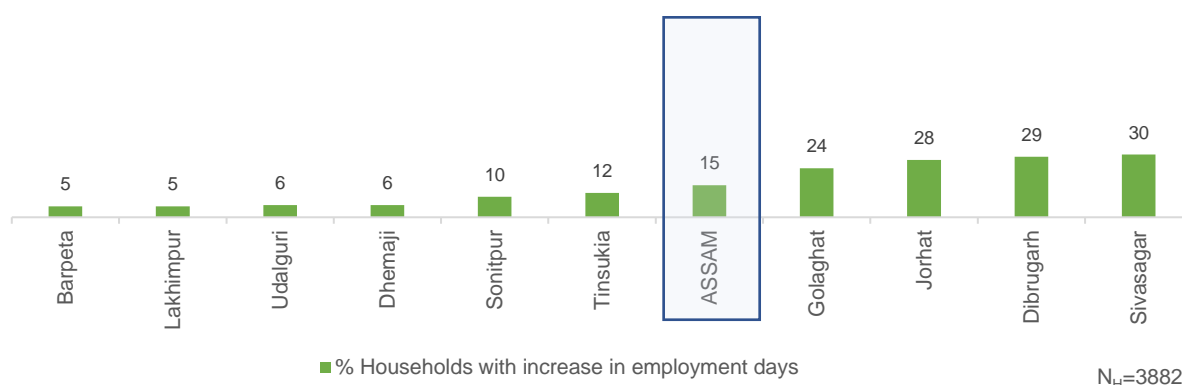
Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological as given in Table 5 parameters (within acceptable/ permissible range) and onsite testing of pH. The details of laboratory test are mentioned in the table given above in the glossary.

6.2. Perception of HHs from JE-AES districts on Outcome Indicators

A. Change in employment days since FHTC programmes/ schemes

Only around 15% of the households in JE-AES affected districts reported increase in employment days since installation of FHTC.

Figure 81: Household reported a change in employment days since FHTC programmes /schemes in JE-AES districts



B. Reduction in time and effort in collecting water

Only around 44% of the households in JE-AES affected districts reported reduction in time and effort in collecting water.

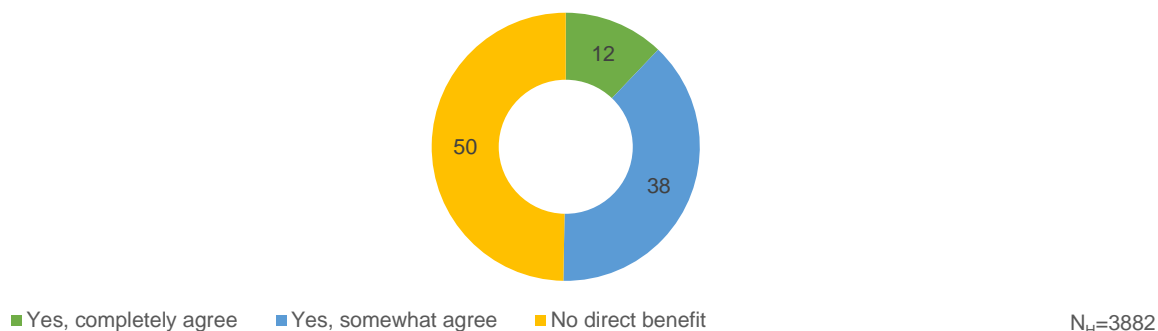
Figure 82: Households reported reduction in time and effort in collecting water in JE-AES districts



6.3. Direct benefits in terms of income due to FHTC

Across the state, 12% of sampled HHs from JE-AES affected districts reported being in complete agreement that there had been direct benefits on their HH income since the installation of HH tap connection, while 38% reported being in partial agreement against the same.

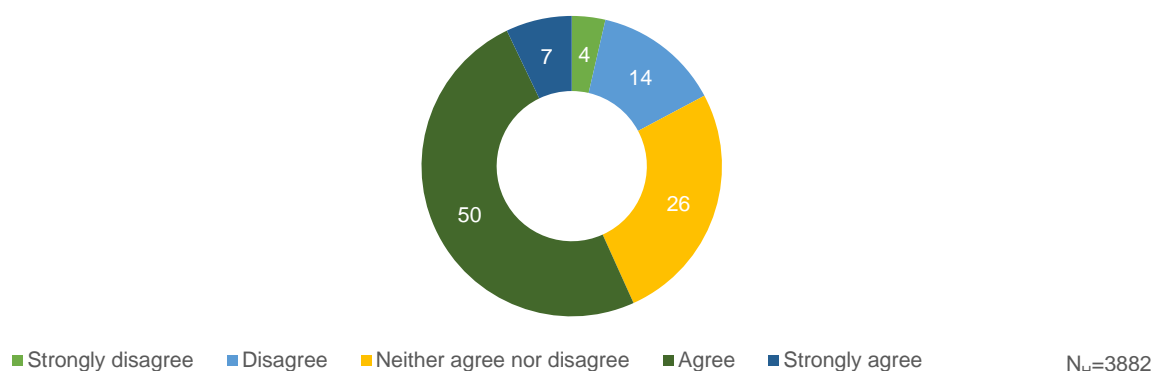
Figure 83: Households reported to have received direct benefits in terms of income due to FHTC in JE-AES districts



6.4. Change in social status

Almost 6 out of 10 households in JE-AES affected districts felt HH tap connection earned them more respect, feeling of pride and brought a positive change in their social status.

Figure 84: Households reported to have a positive change in social status in JE-AES districts



7. Annexure

Table No. 10: List of replaced villages				
S. No.	District Name	Village Name	Status of the Scheme (No Scheme/Replaced & Defunct)	Remarks
1	Chirang	Madyam Runikhata	No Scheme	No Scheme present in the sampled village, hence replaced with Village-Namalpur. Scheme found to be functional in replacement village
2	Chirang	Kashikotra No 1	No Scheme	No Scheme present in the sampled village, hence replaced with Village-Taktara. Scheme found to be functional in replacement village
3	Barpeta	Saru Chenga	No Scheme	No Scheme present in the sampled village, hence replaced with Village-Bara. Scheme found to be functional in replacement village
4	Sonitpur	Natun Jamuguri Gaon	No Scheme	No Scheme present in the sampled village, hence replaced with Village-Dipotahat Khola. Scheme found to be functional in replacement village
5	Biswanath	Magurmara	No Scheme / Defunct Scheme	No Scheme present in the sampled village, hence replaced with Village-Bora-Bhuyan. Scheme found to be defunct in replacement village
6	Dibrugarh	Bajipahumara	No Scheme	No Scheme present in the sampled village, hence replaced with Village-Jilliguri Gaon. Scheme found to be functional in replacement village
7	Dibrugarh	Dowania Gaon No.1	No Scheme	No Scheme present in the sampled village, hence replaced with Village-Borahajer Konwar Gaon. Scheme found to be functional in replacement village