



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



STATE REPORT: UTTARAKHAND
SURVEY DURATION: MARCH TO APRIL 2022

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Abbreviations

AWC	Aanganwadi Center
FHTC	Functional Household Tap Connection
GMS	Greywater Management System
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
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
 - a. Mini-solar based piped water supply scheme in isolated/tribal hamlets
 - b. Single Village Scheme (SVS) in villages having adequate groundwater that needs treatment
 - c. Single village scheme (having adequate groundwater/ spring water/ local or surface water source of prescribed Quality)
 - d. 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
 - e. 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 Uttarakhand lies in the northern part of India and has a population of 1,00,86,292 people (Census 2011). It has 13 districts and 15,264 villages, and 13,094 villages have PWS schemes. The state is yet to achieve the Har Ghar Jal status. A total of 373 villages, across all districts, and 6035 households were randomly sampled for the survey, and additionally, water samples from 188 public institutions were tested.

In the assessment among sampled villages, 78% of villages have only one scheme, 19% of villages have 2-3 schemes, and 3% have 4 or more schemes. Mostly all schemes across the state were found functional.

At the state level, 83% of the HHs were satisfied with the regularity of the supply, 87% with the quality of the water supplied, 89% with the colour of the water supplied, and 89% with the taste of the supplied tap water.

Overall functionality status of Uttarakhand

At the state level, 82% of HHs received water on the day of the survey. While 63% of the HHs were found to have fully functional tap water connections within the premises. Out of which 93% received an adequate quantity of water, 71% reported receiving a fully regular supply of water, and 92% HHs received potable water.

It was found that 89% of households received water all 7 days a week and 6% of the households received water 3 or 4 days a week. The average duration of water supply across the state was reported to be 3 hours per day.

In Uttarakhand, 57% of the villages have reported that water is directly supplied to the households and the remaining 43% 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 Uttarakhand, 5117 samples of water were submitted, and 4244 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 6% of the HHs. The percentage was relatively higher in none of the public institutions, wherein there is a possibility of additional chlorine being added locally for the purification of water.

Out of the 6030 HHs sampled for the FHTC assessment, a water quality test was carried out in 4929 HHs. pH was found within the acceptable limit in 95% of households. Among the public institution, pH was found in the acceptable limit of 100% in health facilities.

16% of villages in the state reported having available field test kits. And 13% 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 32% of villages in the state reported having a VWSC or a Pani Samiti out of which 54% of the VWSC/Pani Samitis reported to have more than 50% female members. In the state, 9% of the villages reported that VWSC/ Pani Samiti is responsible for the operation and maintenance of pipe water supply.

19% of villages reported having identified skilled manpower for O&M of PWS schemes. 11% of villages in the state reported having faced challenges with respect to O&M of PWS schemes.

49% of HHs reported that they are aware of any grievance redressal mechanism w.r.t. HH tap water through PWS, but only 4% HHs have reported a complaint in the last year and only 2% of complaints have been resolved. Among those who reported complaints (i.e., 4% HHs, 247 HHs), 40% of the HHs reported their complaints to pump operators besides other reporting channels.

Overall, 32% of villages in the state levy charge for water service delivery to households whereas 42% HHs reported paying water service delivery charges at the households.

82% of HHs reported that their daily requirement of water was being met by HH tap connections.

Overall, 92% of HHs reported using an improved source of drinking water, as their primary source.

Overall, 6% HHs reported using booster pumps to maximize the water flow through their piped water connections.

It was found that 4% of the villages have schemes that are based on groundwater sources, while 29% on surface water sources.

Age-wise functionality of the schemes indicates an increase in 'always functional' schemes in the state since 2012. 31-% point increase in the fully functional scheme was recorded from 2012 to 2013-18. In 2019 and later the percentage of fully functional schemes decreased by 17% and 55% of schemes have been reported to be always functional, 4% as partially functional and 6% as non-functional (i.e., a total of 65% of schemes).

Impact of JJM

Across the state, none of the HHs reported having an incidence(s) of water-borne diseases in the last year.

Since having a functional HH tap connection, 22% HHs across the state have reported that there has been a change in the no. of employment days of the adult HH members while 56% HHs reported no change.

Out of the HHs reported (i.e., 5167) that female members used to fetch water before HH tap connection, 79% reported that post-installation of HH tap connection helped reduce time and effort in collection of water.

Across the state, 25% of the HHs reported that since having a functional HH tap connection the attendance of the girls going to schools has increased, and 48% of the 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, 80% of households received water on the day of the survey. While 64% of the households were found to have fully functional tap connections. Out of which 93% received an adequate quantity of water, 69% reported receiving a fully regular supply of water and 94% received potable water.

Since having a functional HH tap connection, 26% 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, 76% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the Har Ghar Jal district, 26% 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, 84% of households received water on the day of the survey. While 69% of the households were found to have fully functional tap connections. Out of which 97% received an adequate quantity of water, less than 3 out of 4 reported receiving a fully regular supply of water and 94% received potable water.

Since having a functional HH tap connection, 10% 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, 65% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the aspirational district, 19% 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	Uttarakhand
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	86	82
Quantity ¹ of water received by households		
Adequate quantity (>55 LPCD) (%)	85	93
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	5	4
Inadequate quantity (<40 LPCD) (%)	10	3
Regularity ² of water received by households		
Fully Regular Supply (as per schedule) (%)	80	71
Partially Regular Supply (not as per schedule) (%)	14	19
Irregular Supply (less than 9 months' supply) (%)	6	10
Potable ³ (Quality) water received by households (%)	87	92
Overall functionality ⁴ (%)	62	63

Service delivery parameters	India	Uttarakhand
Overall user satisfaction on regularity at the household level (%)	83	83
Overall user satisfaction on quality at the household level (%)	82	87
Households receiving water supply daily-7 days a week (%)	74	89
Daily HH requirement of water being met by FHTC (%)	80	82
Households paying water service delivery charges (%)	35	42
Households aware of grievance redressal mechanism (%)	71	49
Households reported a reduction in time and effort in collecting water (%)	79	79
Average no. of times water is supplied in a day	1	1
Households reported incidence of water-borne diseases in the last year (%)	2	0
Households purifying water before drinking (%)	57	15
Residual Chlorine (RCL) detected with in permissible limits (%)	24	6
Villages with Field Test Kits (%)	30	16
Villages in which bacteriological test was done in last 1 year by VWSC/ Pani Samiti (%)	29	10
Villages reported to have a mechanism for chlorination (%)	21	11

Institutional arrangement	India	Uttarakhand
Village reported having presence of VWSC/ Pani Samiti (%)	38	32
Villages in which VWSC/ Pani Samiti is responsible for Operation & Maintenance of PWS schemes (%)	14	9
Villages in which persons are trained to use Field Test Kits (%)	31	13
Villages levying water service delivery to households (%)	34	32
Villages having skilled manpower for Operation & Maintenance of PWS schemes (%)	31	19
Community monitoring of water wastage in villages (%)	19	9
Villages in which signages about JJM were observed (%)	15	2

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

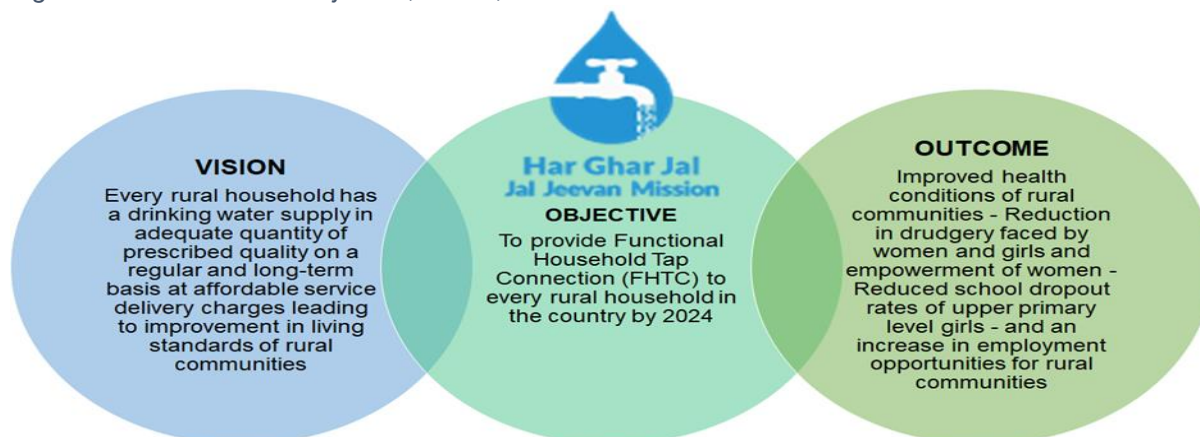
Functionality status of tap connection at households in Har Ghar Jal Districts	India	Uttarakhand
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	91	80
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	88	93
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	4	3
Inadequate quantity (<40 LPCD) (%)	8	4
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	84	69
Partially Regular Supply (not as per schedule) (%)	11	20
Irregular Supply (less than 9 months' supply) (%)	5	11
Potable (Quality) water received by households	90	94
Overall functionality (%)	69	64

Functionality status of tap connection at households in Aspirational Districts	India	Uttarakhand
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	78	84
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	85	97
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	5	2
Inadequate quantity (<40 LPCD) (%)	10	1
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	77	74
Partially Regular Supply (not as per schedule) (%)	14	11
Irregular Supply (less than 9 months' supply) (%)	9	15
Potable (Quality) water received by households (%)	88	94
Overall functionality (%)	62	69

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: Uttarakhand

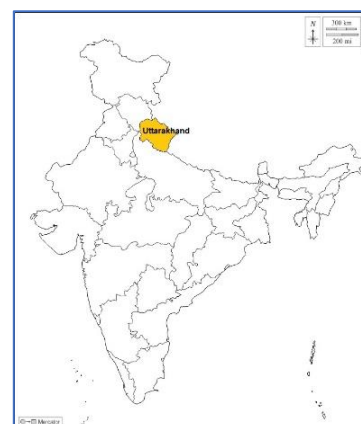
The state of Uttarakhand lies on the northern part of India and has a population of 1,00,86,292 people. It has 13 districts and 15,264 villages where 13,094 villages have PWS schemes. The state lies on the Western Himalayan region and receives an average annual rainfall of about 1385.5mm. Among the villages with PWS schemes, 7972 villages (52.23%) 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:

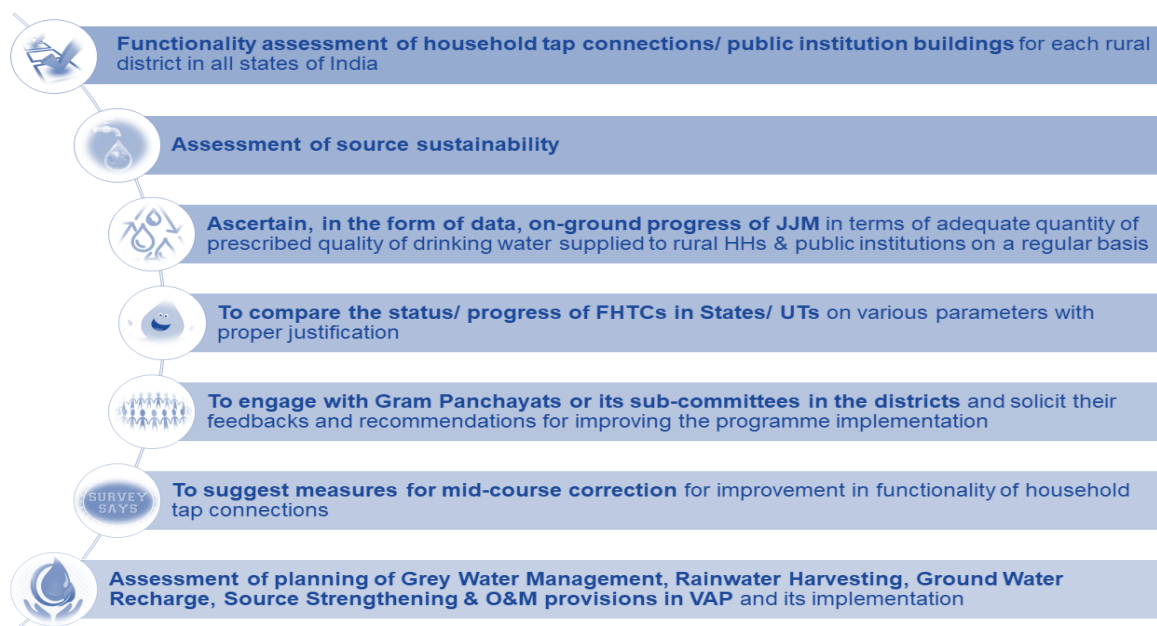
- Not a Har Ghar Jal state
- 1 district is Iron and 1 is fluoride affected
- 7972 (52.23% of all) villages with PWS more than 20 FHTC
- 16.82% villages covered under HH tap connections under HGJ



2.2. FHTC Assessment Objectives

The overall objectives of the FHTC assessment are as presented:

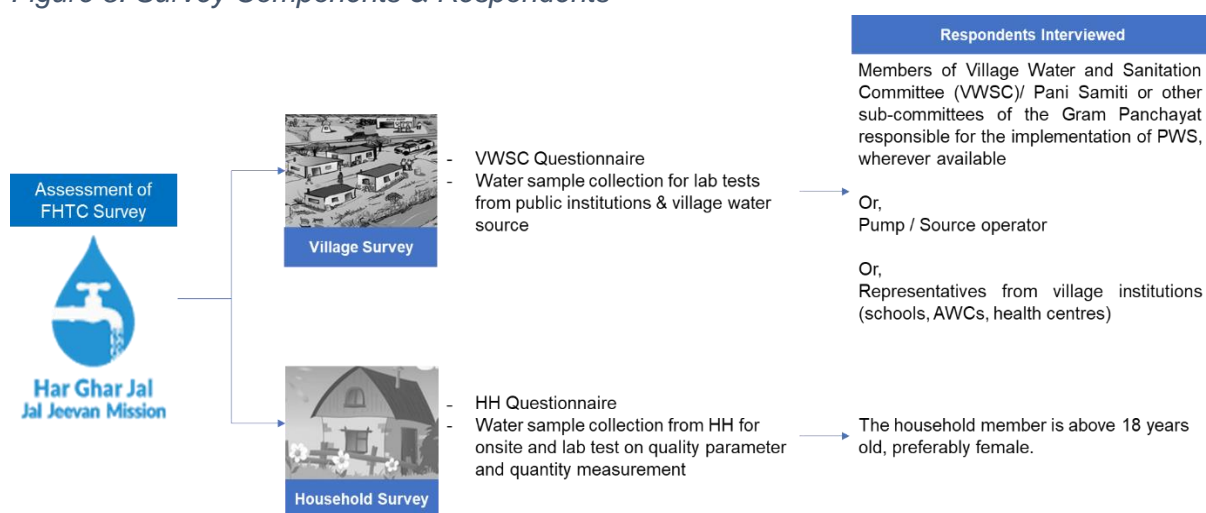
Figure 4: FHTC Assessment Objectives



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

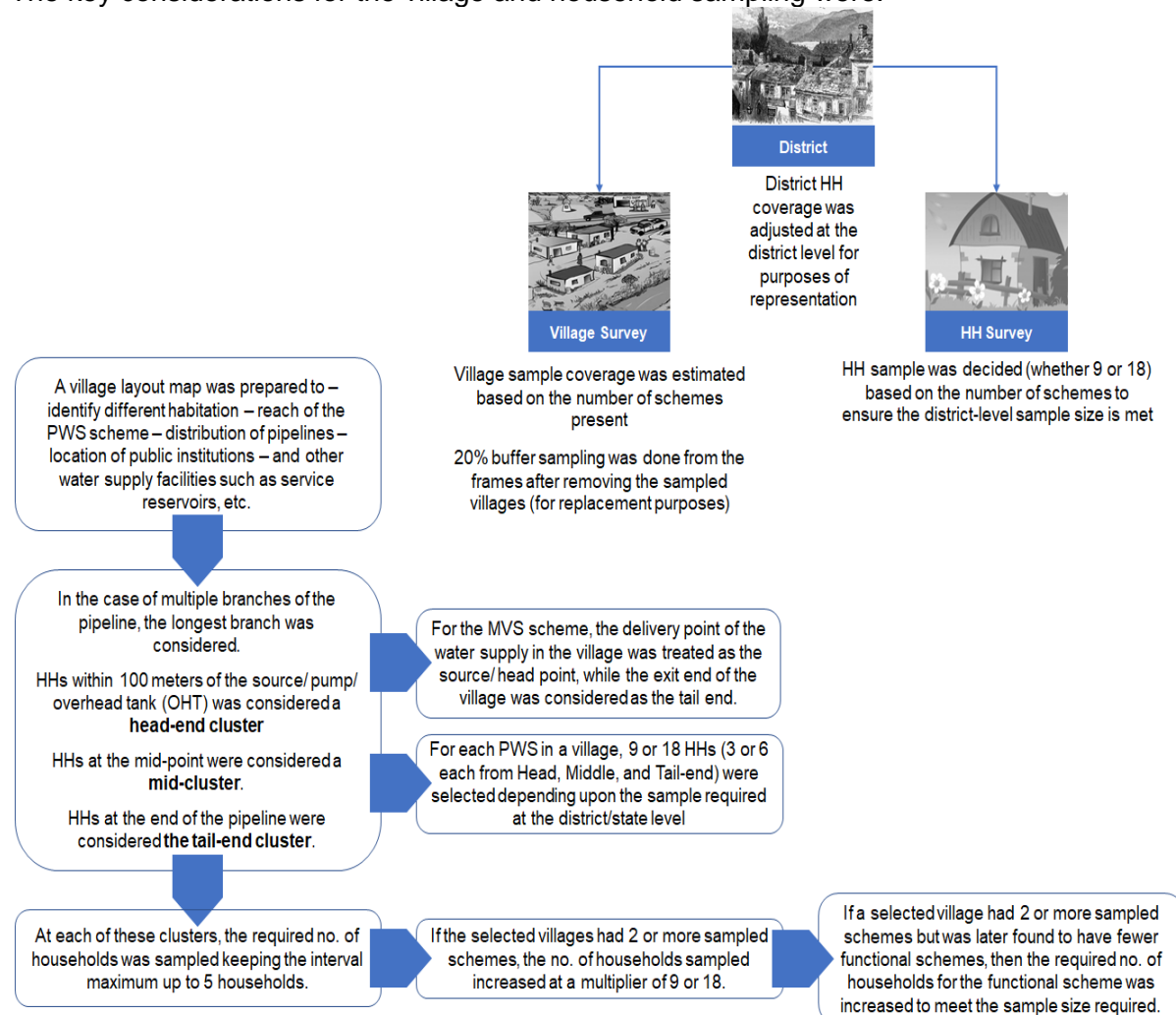
As per the design, all villages having a PWS scheme with 20 or more functional household tap connections were included in the sample frame. The probability proportionate to size (PPS) method was used for village selection in each district. The steps for random selection of villages using PPS are presented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

Figure 6: Steps for Random Sampling of Villages



Figure 7: Household Selection

The key considerations for the village and household sampling were:

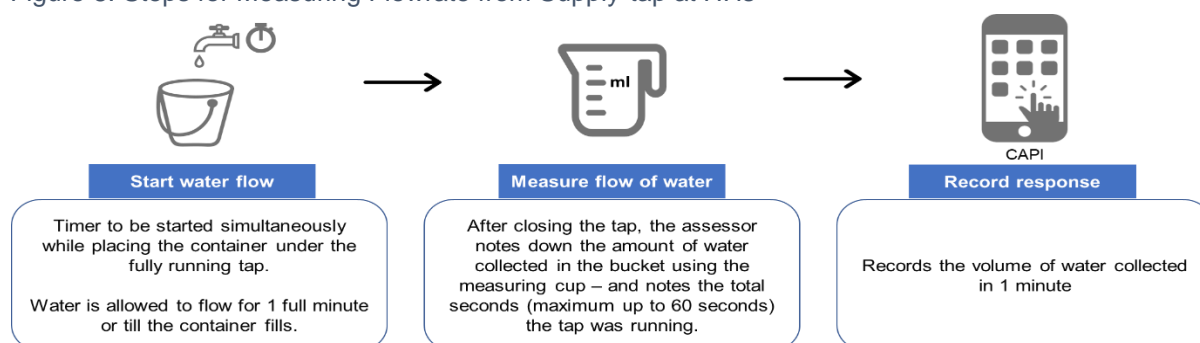


The record of all district-wise village replacements is maintained and reported as part of the annexure.

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:

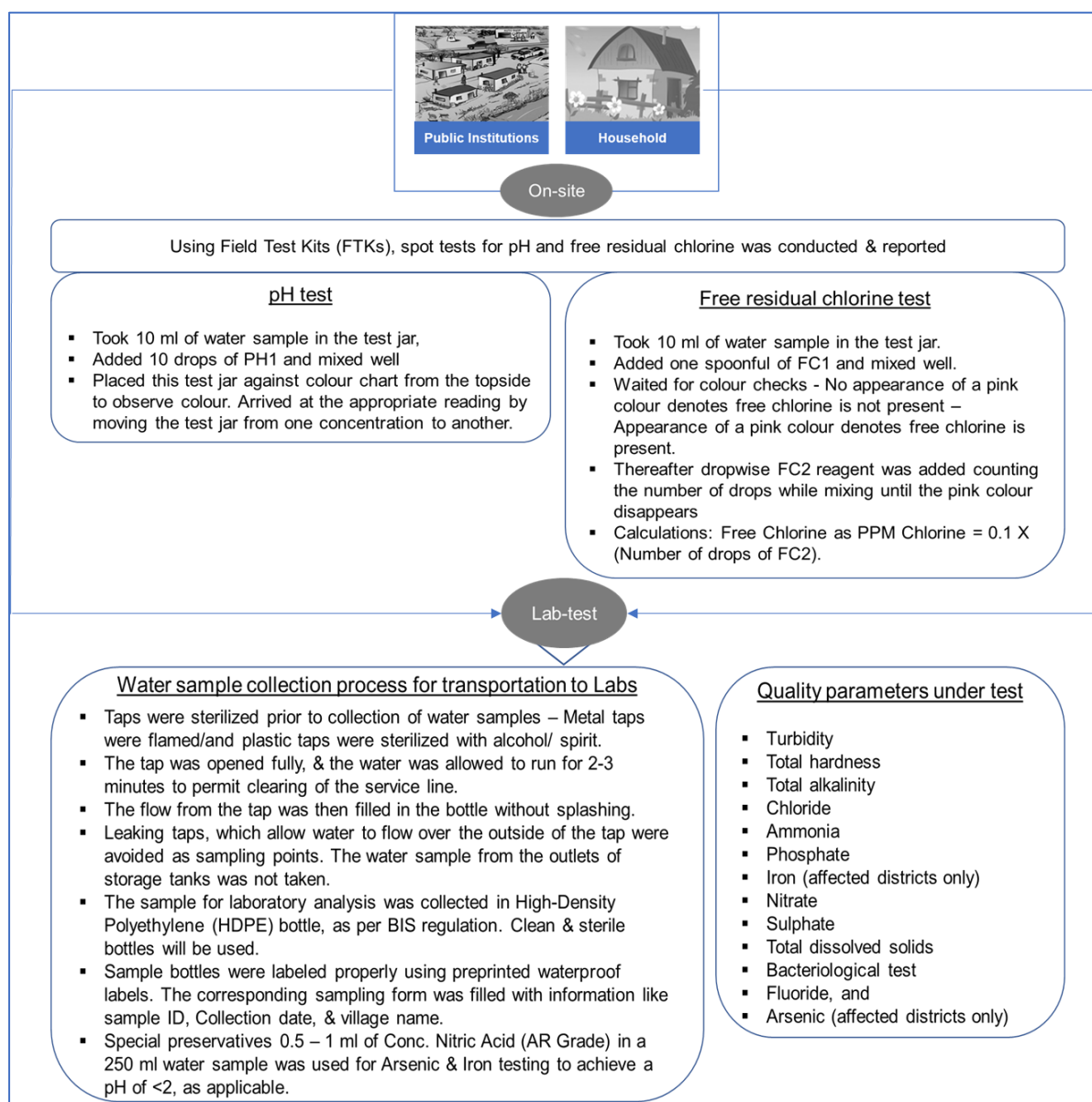
- Assessor first asked and recorded length, breadth, and height.
- Assessor dipped a 5 feet long rod, marked the level of the water table, and calculated the volume – length x breadth x-height of water.
- Next the assessor opened the valve of the connection and allowed the water to flow inside the storage 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

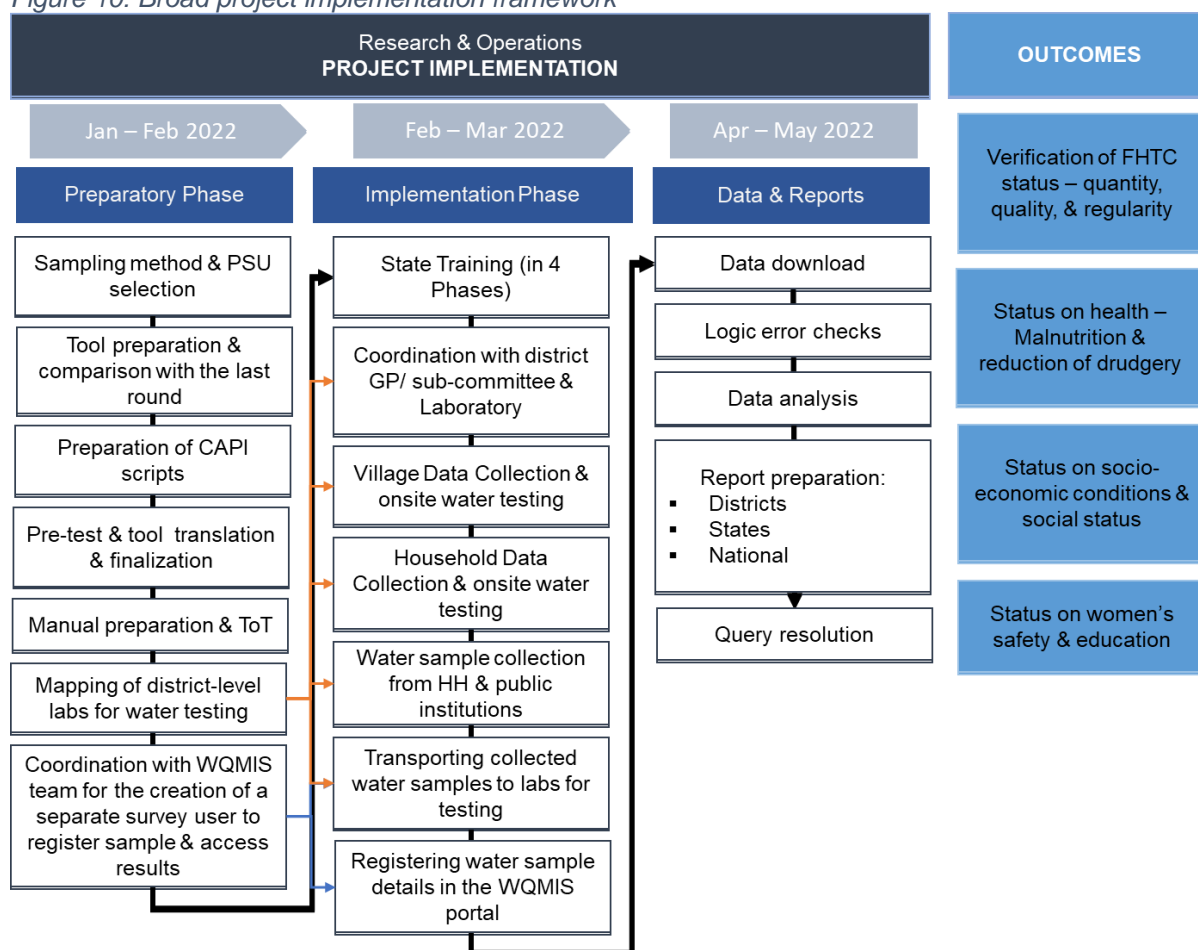


JJM, with the support of the BMI Division of ICMR, enabled a new interface on the WQMIS portal for “Functionality Assessment (FA) User” to enable seamless harmonization of water sample registration, and sample submission for testing, and sharing of results as per the applicable quality parameters.

2.8. Project Implementation

An overview of the project implementation is as presented:

Figure 10: Broad project implementation framework



A total of 9 teams (comprising 9 supervisors, 54 assessors, and 9 water collection assistants) were recruited, trained, and deployed to complete the survey across the states of Uttarakhand. 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
Uttarakhand	9 Teams	2 nd March	18 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
Uttarakhand	13	366	5,904	13	366	6,030	188

2.10. Sampled village and household profile

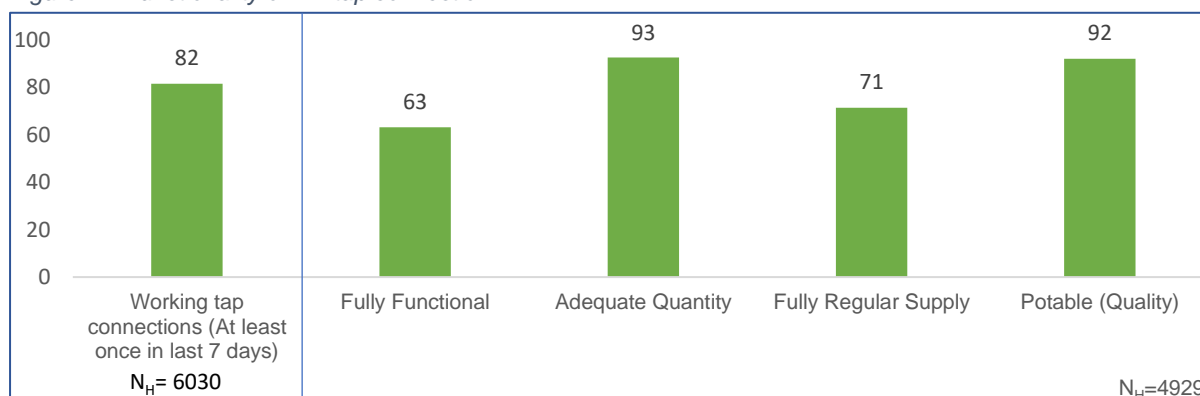
SAMPLED VILLAGES	SAMPLED HOUSEHOLDS
<ul style="list-style-type: none"> Total no. of villages covered in the state – 366 Percentage of SC dominated villages – 19.1% Percentage of ST dominated villages – 4.6% Higher proportion of Sarpanchs interviewed at the village level 1.1% of the villages reported to have any historical incidence of water contamination 	<ul style="list-style-type: none"> Total no. of households covered in the state – 6030 (Respondents: Male 1271, Female 4764) Proportion of General – 56.4%, SC 20.9%, ST 6.5%, OBC 16.2% households 78.9% of the FHTC connections are under the name of a female member Average household size – 5.5 100% positive user experience in 5/5 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=4929 implies all HHs where water was found on the day of the survey.

It has been found that 82 percent of the sampled HHs (N=6030) had working tap connections. Moreover, three-fourth households (75 percent) received adequate (≥ 55 LPCD) water supply and about 3 out of 4 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 (92 percent) of the sampled households in the state receive potable water.

Out of the 6030 HHs sampled for the FHTC assessment, water quantity and quality test was carried out in 4929 due to non-availability of water in 18 percent HHs on the day of survey.

Quantity, Regularity, and Quality of water of HH tap connection at the district level:

Table No. 3: Quantity, Regularity, and Quality of FHTC at the district level (%HH)					
S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
1.	Dehradun	100	96	57	74
2.	Uttarkashi	90	98	58	93
3.	Chamoli	86	95	79	94
4.	Udham Singh Nagar	85	98	83	99
5.	Hardwar	84	96	65	88
6.	Rudraprayag	82	99	67	90
7.	Champawat	82	89	96	99
8.	UTTARAKHAND	82	93	71	92
9.	Pauri Garhwal	78	67	68	90
10.	Pithoragarh	78	99	86	99
11.	Tehri Garhwal	78	90	74	98
12.	Almora	76	76	58	94
13.	Nainital	72	95	89	100
14.	Bageshwar	62	99	58	97

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/

Table No. 3: Quantity, Regularity, and Quality of FHTC at the district level (%HH)					
S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
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		

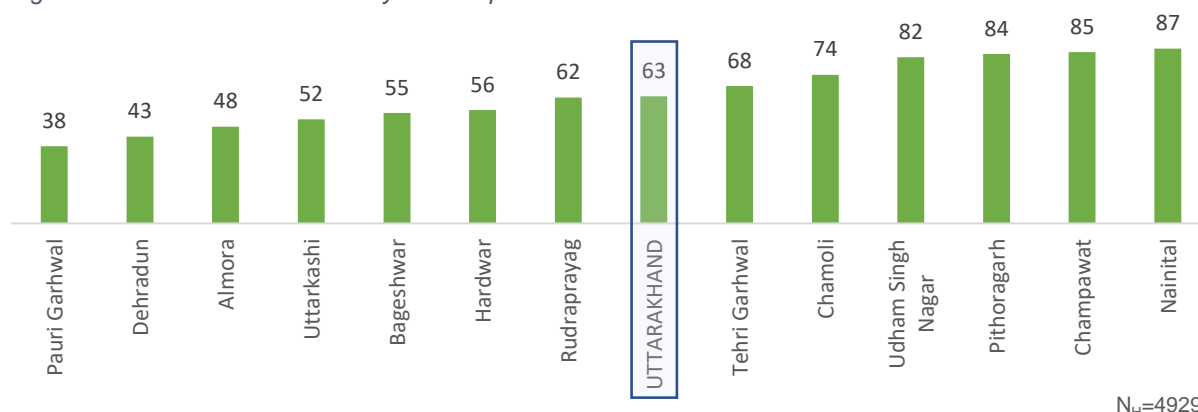
District level comparison across the districts indicate Bageshwar, Nainital, Almora, Pithoragarh, Tehri Garhwal, Pauri Garhwal, and Champawat reported functionality less than the state average. The district of Dehradun FHTC provides more than 55 LPCD of water in more than 95 percent HHs.

More than 95 percent HHs in the district of Champawat reported to regularly receive water through FHTC. Regular supply of water is less than 50 percent in none of the districts.

Potability of water was highest in the district of Nainital where it was reported to be 100 percent.

B. District wise functionality status

Figure 12: District wise Functionality of HH tap connection



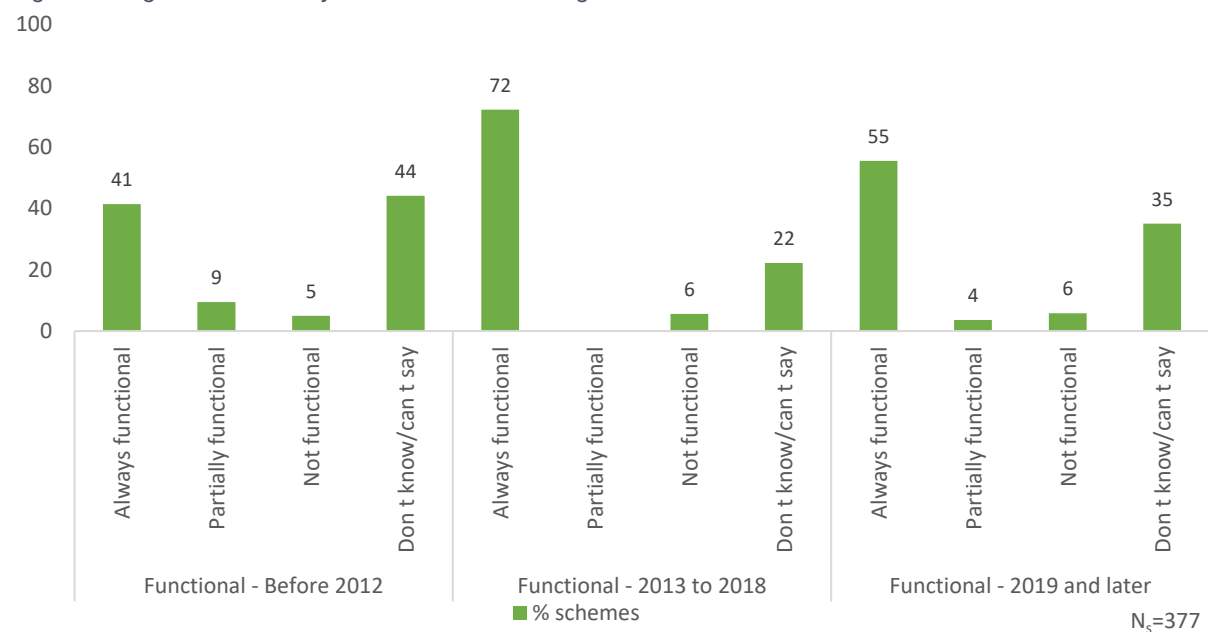
N_H=4929

* '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, i.e., 4929 HHs.

68 percent HHs in the state were found to have functional HH tap water connection. Nainital and Champawat district reported 87 percent functional households in the state, followed by Pithoragarh and Uddham Singh Nagar with more than 80 percent functionality. In the districts of Pauri Garhwal, less than half 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



More than 4 out of 10 schemes are functional since 2012 which reflects a 31-point increase in till 2018 and 17-point decrease in 2019 and later.

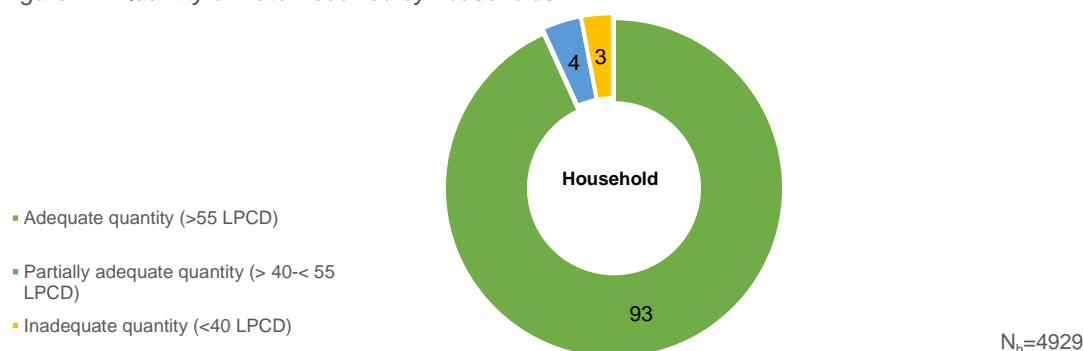
3.2. Quantity, Regularity, and Quality of Water

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)

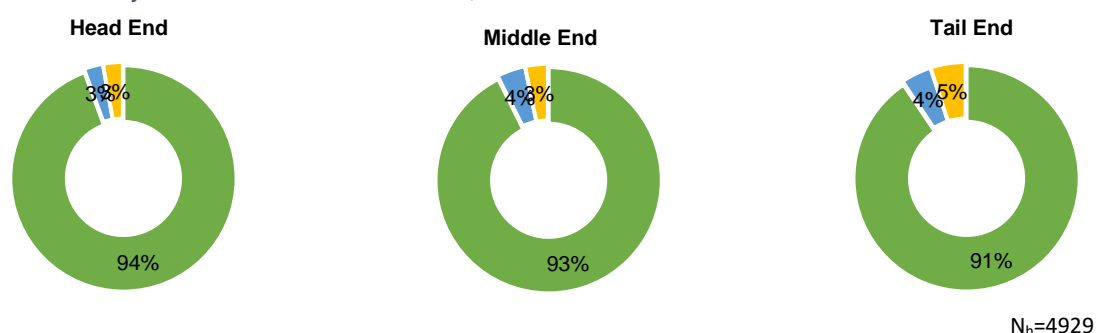
89% HHs reported receiving more than 55 LPCD of water.

Figure 14: Quantity of water received by households



Quantity of water received across head, middle, and tail end

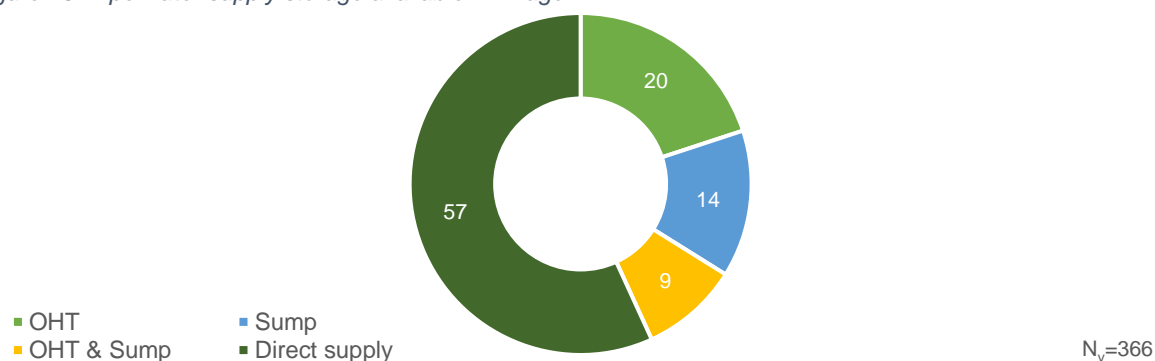
Figure 15: Quantity of water received across head, middle and tail end households



The quantity of water received across the head, middle, and the tail end was observed to have remained the same, and about nine-tenth (93 percent) of the sampled households received water in adequate quantity, i.e., greater than or equal to 55 LPCD.

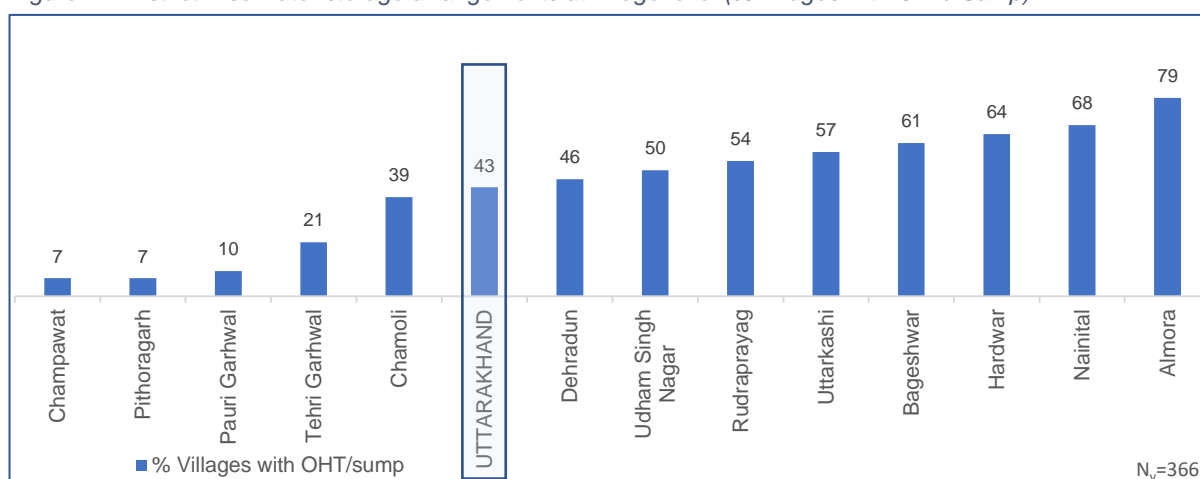
Types of water storage arrangements (in %)

Figure 16: Pipe water supply storage available in village



More than one out of two respondents in the state reported water being directly supplied. And in 43 percent reported water being stored in sump and overhead tanks.

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

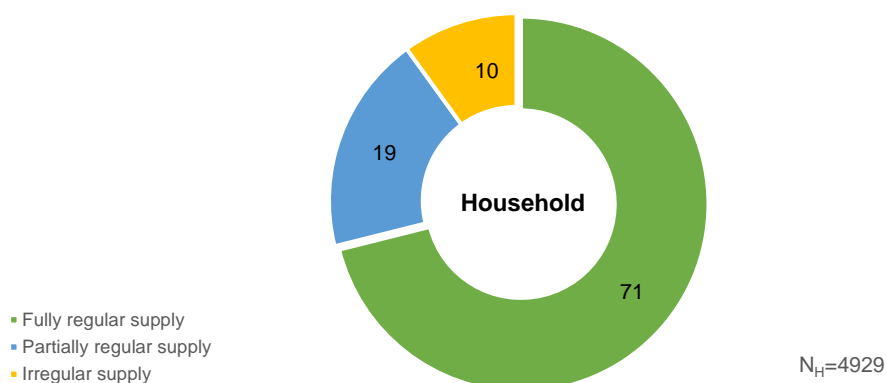


43 percent villages in the state have either an OHT or a sump for storing water for supplying to the households. 79 percent of the villages in Almora have either an OHT or a sump for storing water, which is the highest in the state.

B. Regularity of water supply to villages and households

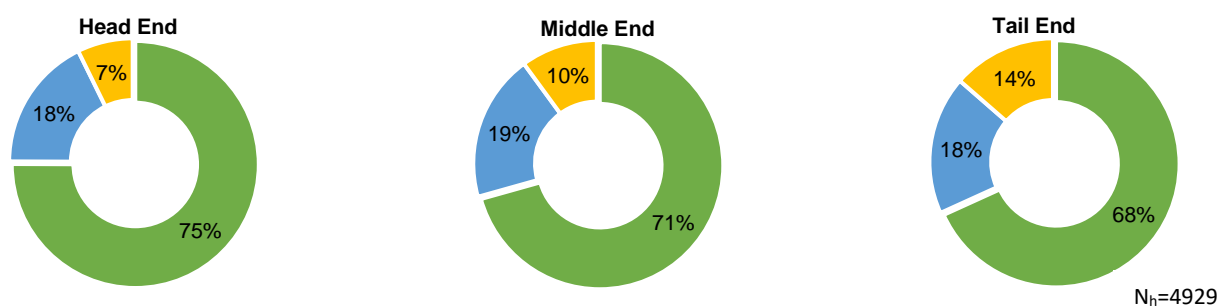
71% HHs receive a regular supply of water (as per agreed schedule).

Figure 18: Regularity of water received by households



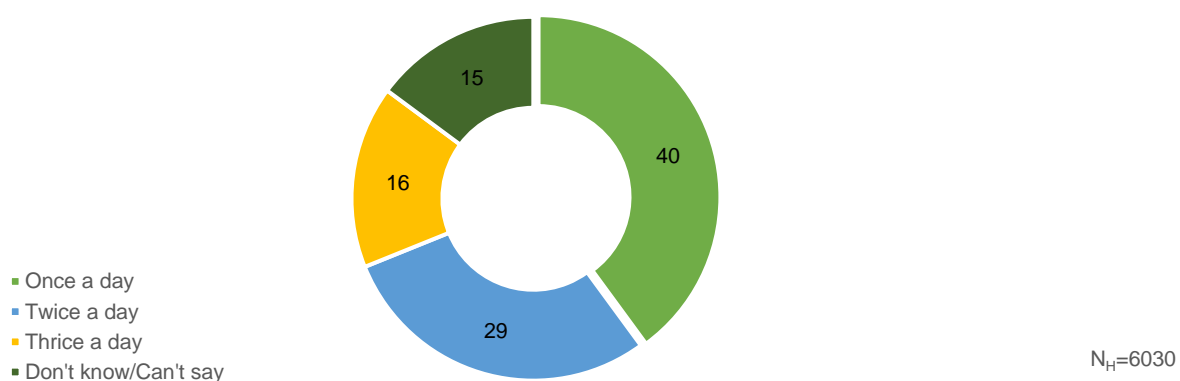
Regularity of water received across head, mid, and tail end HHs

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



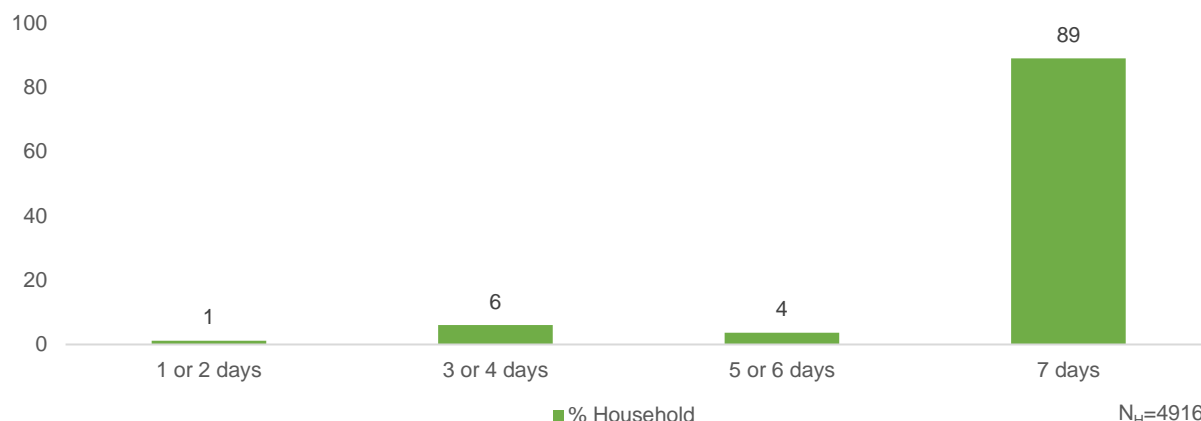
Water is more regularly available at the tail-end households of the PWS in comparison to the head end.

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



HHs in **40 percent of districts** receive water at least once a day. The average duration of water supply across the state was reported to be **3 hours per day**.

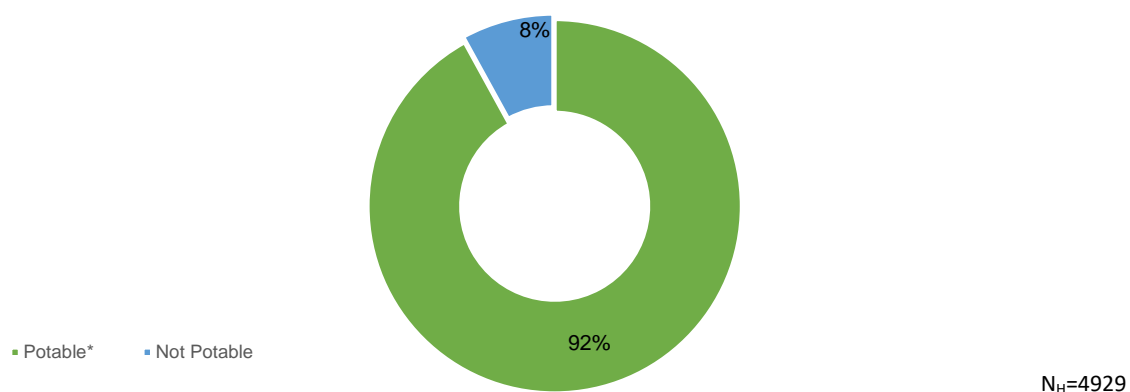
Figure 21: Average number of days households receive water supply in a week (in %)



89 percent of HHs reported receiving water for all 7 days in a week (daily).

C. Potability Water – Quality

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 Uttarakhand 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 =366)	Water Samples Tested from Public Institutes			
	Anganwadi Centre	Health Facility	Schools	Others
pH (on-site)	94	100	94	100
Turbidity	100	100	100	100
Total Hardness	100	100	100	100
Total Alkalinity	100	100	100	100
Chloride	100	100	100	100
Ammonia	Not Tested			
Iron	100		100	100
Nitrate	100		100	100
Sulphate	100		100	100
Total Dissolved Solids	100	100	100	100
Bacteriological Test (Absence)	100	100	100	100
Fluoride	100		100	100
Arsenic	No History			

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=4929). 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)	4929	95
Turbidity	3781	100
Total Hardness	3907	100
Total Alkalinity	3778	100
Chloride	3201	100
Ammonia	Not Tested	
Iron	50	100
Nitrate	1242	100
Sulphate	1241	100
Total Dissolved Solids	1569	100
Bacteriological Test (Absence)	3422	97
Fluoride	Not Tested	
Arsenic	No History	

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

The Residual Chlorine (RC) in the state of Uttarakhand was found in 6% samples. Also, none of the samples were having RC outside range whereas 94% samples had no RC. 97% of water samples passed the bacteriological contamination test. While in 3% samples bacteriological contamination is found, out of which no samples had chlorine in permissible range while in 3% samples there was no chlorination.

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 9 water quality parameters. 5117 water samples were submitted, and 4244 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.

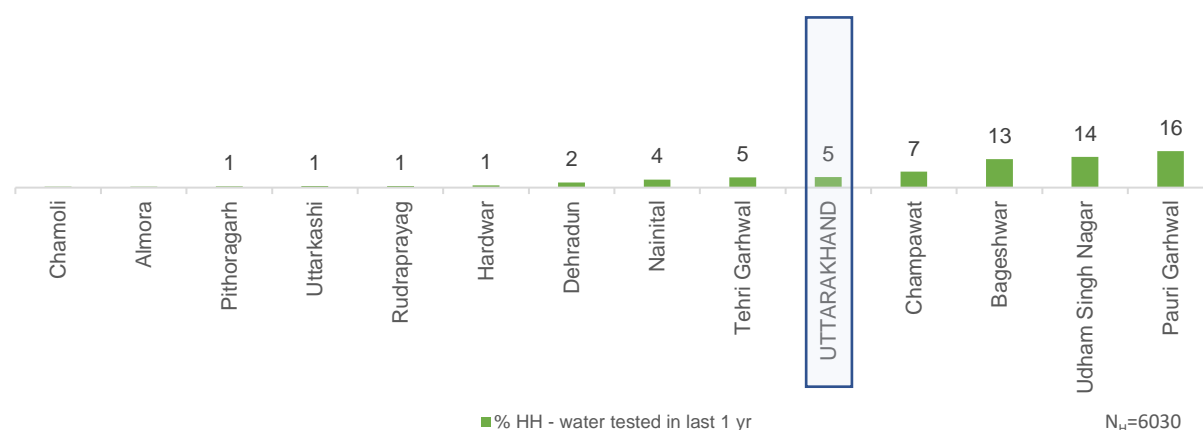
Sl. No	District	Lab available	HH surveyed	Samples submitted	Report received	Overall lab experience
1	Uttarkashi	Yes	606	557	322	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
2	Dehradun	Yes	569	585	560	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
3	Hardwar	Yes	402	347	222	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	Chamoli	Yes	479	457	392	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	Pauri Garhwal	Yes	414	325	323	The labs did not have any issue with testing the number of water samples submitted nor had any issues with human resource, reagents etc
6	Rudraprayag	Yes	540	456	232	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	Almora	Yes	415	351	348	The labs did not have any issue with testing the number of water

Table No. 6: Performance of Labs						
Sl. No	District	Lab available	HH surveyed	Samples submitted	Report received	Overall lab experience
						samples submitted nor had any issues with human resource, reagents etc
8	Nainital	Yes	418	306	306	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	Udham Singh Nagar	Yes	391	342	281	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	Champawat	Yes	534	438	379	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	Pithoragarh	Yes	377	297	258	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	Bageshwar	Yes	468	309	309	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	Tehri Garhwal	Yes	417	347	312	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

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

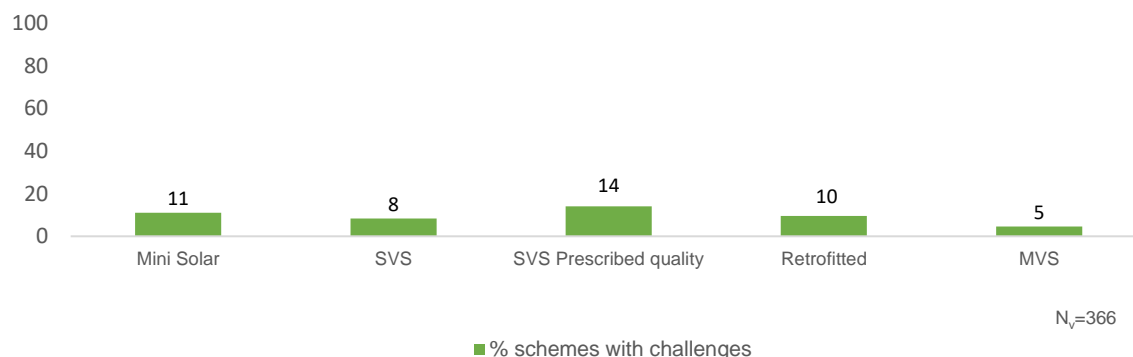
Figure 23: HHs where water was collected and tested in last 1 year



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

The SVS prescribed quality scheme faced the most challenges (14%) in comparison to the other schemes in the state.

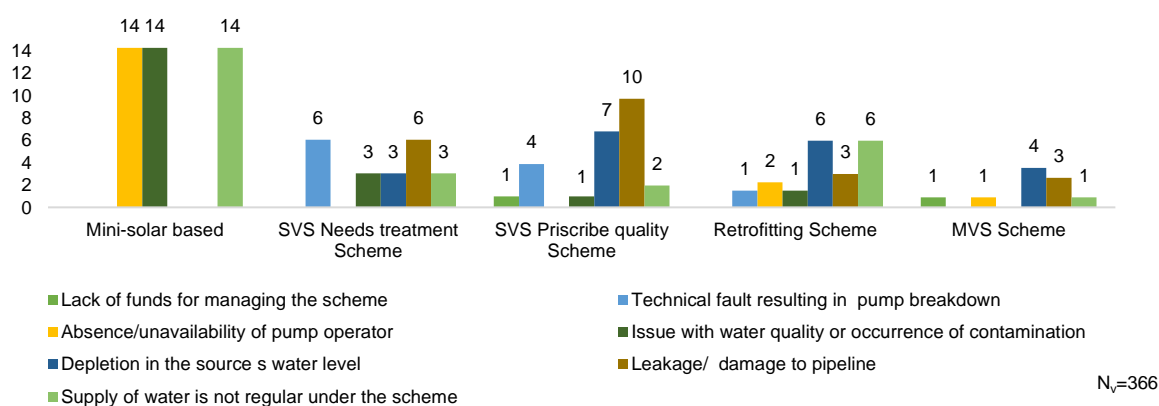
Figure 24: Schemes reported to have faced challenge in village



Type of challenge faced by the schemes

The most faced problem varied from one scheme to another. However, 'Supply of water is not regular under the scheme' is a problem that was found unanimously in all the schemes.

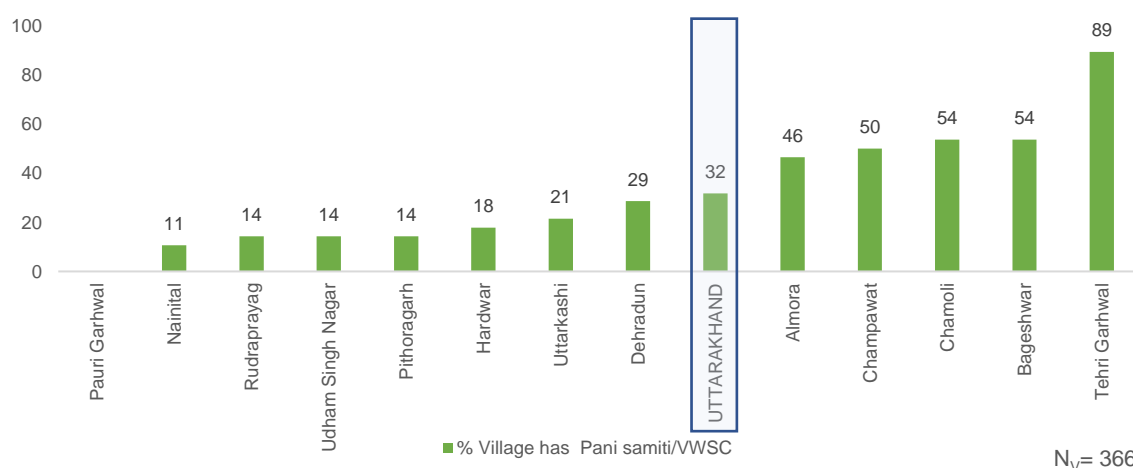
Figure 25: Type of challenge faced by the schemes



A. Presence of VWSC/Pani Samiti

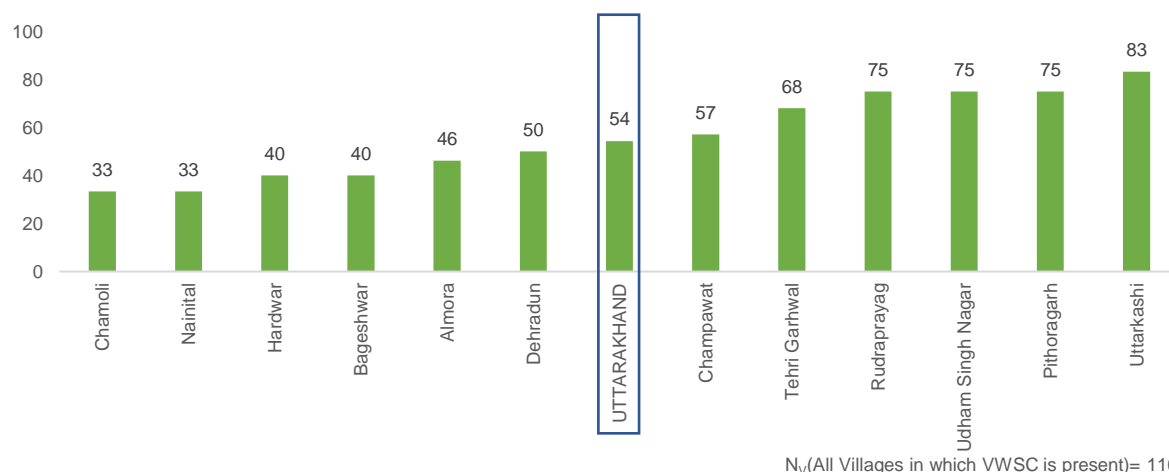
32 percent of villages in the state reported to have a VWSC or a Pani Samiti.

Figure 26: Villages where VWSC/ Pani Samiti is present



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

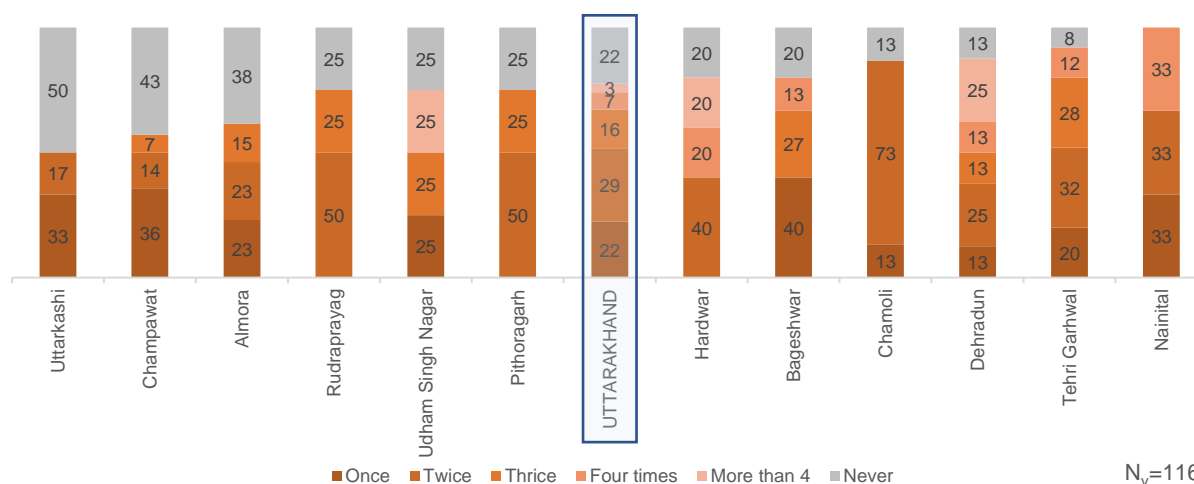
Figure 27: VWSC/ Pani Samiti with more than 50 percent female members



About 54 percent of the VWSC/Pani Samitis in Uttarakhand were having more than 50 percent female members.

C. VWSC Meetings in last one year

Figure 28: VWSC meetings held in last one year

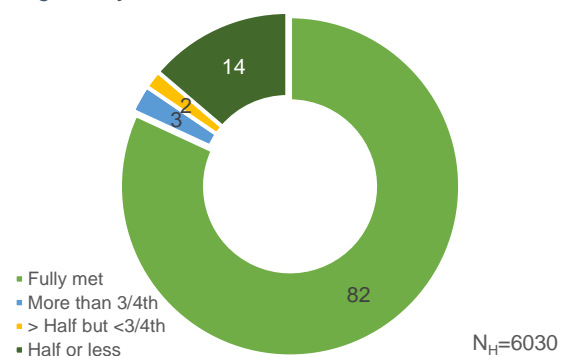


Across the villages in the state, that reported to have VWSC/Pani Samitis (116 villages), 2 meetings in last one year was reported the most (29 percent)

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

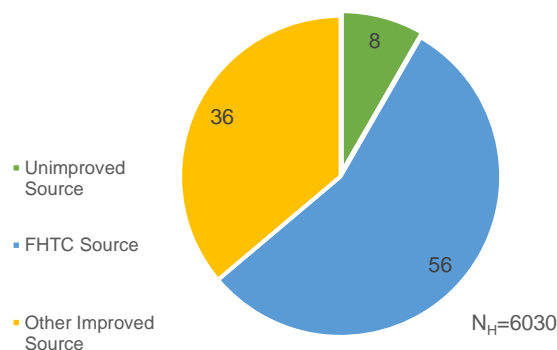
82% of HHs reported that their daily requirement of water was being met by HH tap connections

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



92% HHs reported HH tap connections as their primary source of drinking water

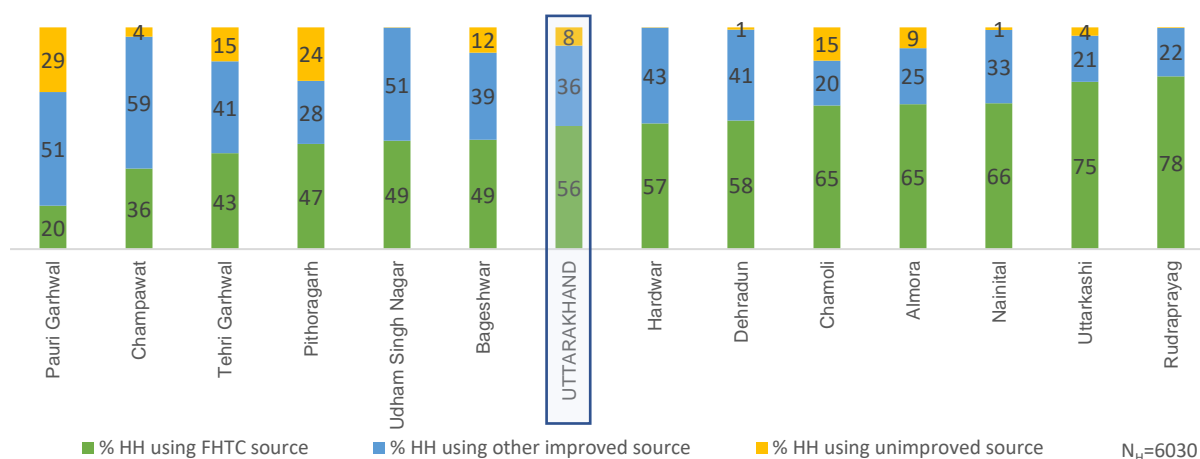
Figure 29: Households reported FHTC as primary source of drinking water



More than 4 out of 5 (82 percent) HHs reported their daily requirement of water being fully met by the HH tap connections. And 56 percent HHs reported used household tap connection for drinking water (primary source). About 36 percent of the HHs even though have reported household tap connections to fully meet their requirements, were not found using the same for drinking purposes.

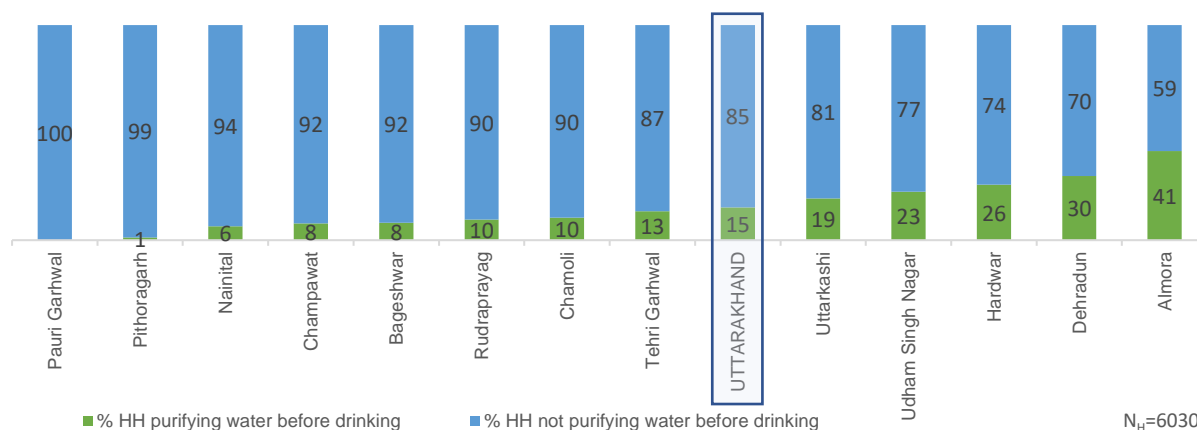
Overall, **92 percent of HHs** reported using improved primary source of drinking water, out of which **56 percent of HHs** reported HH tap water as their primary source.

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

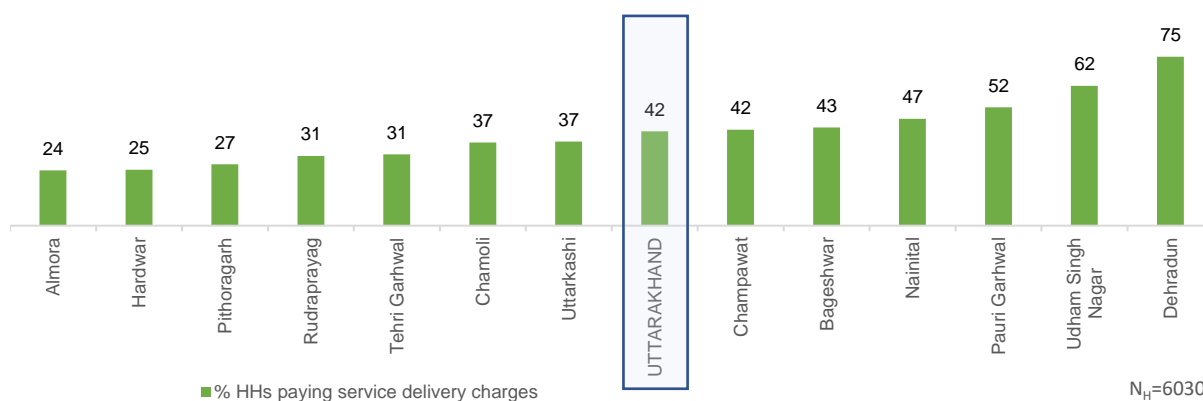


Practice of purifying water before drinking was reported the most in Almora (41 percent) where 65 percent HHs reported using HH tap water as primary drinking water source, while the least was reported in Pauri Garhwal (0 percent) where 20 percent HHs reported using HH tap water as a primary drinking water source.

B. Households paying water service delivery charges

In Uttarakhand, around 42% of the sampled households were found to be paying service delivery charges, Dehradun being the district with the highest percentage of such households (75%) and Almora being the districts with the lowest percentage of such households (24%).

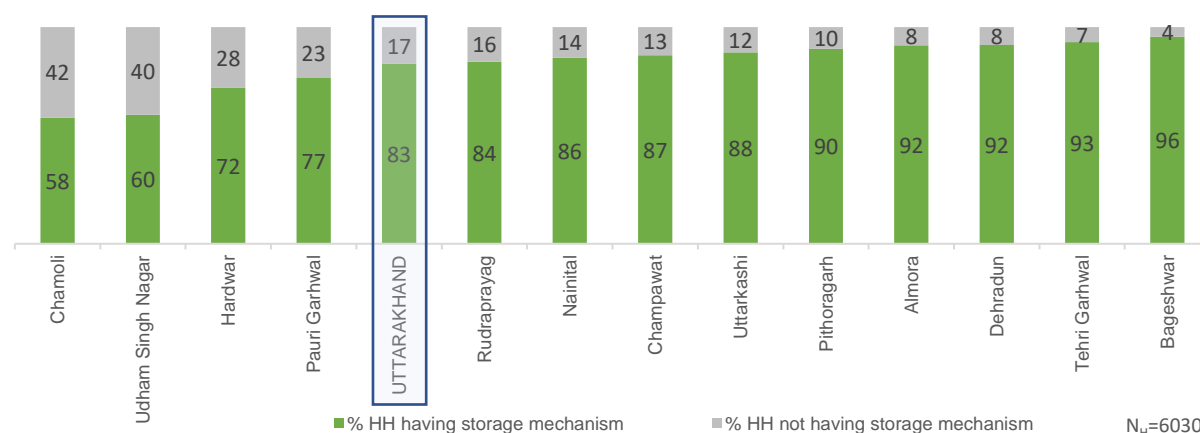
Figure 33: Households paying water service delivery charges



C. Storage mechanism used by households

Overall, 83% households in Uttarakhand were found to use some mechanism to store water in the household.

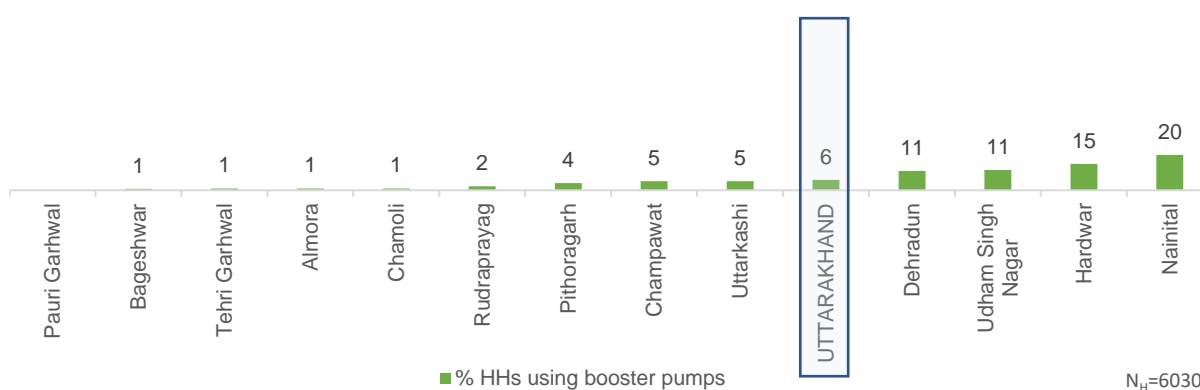
Figure 34: Households reported using some storage mechanism



D. Households using booster pumps

Overall, **6 percent HHs** reported using booster pumps to maximize the water flow through their piped water connections. Nainital and Hardwar reported 20 percent and 15 percent of HHs using booster pump in the state while Pauri Garhwal reported no usage of booster pumps.

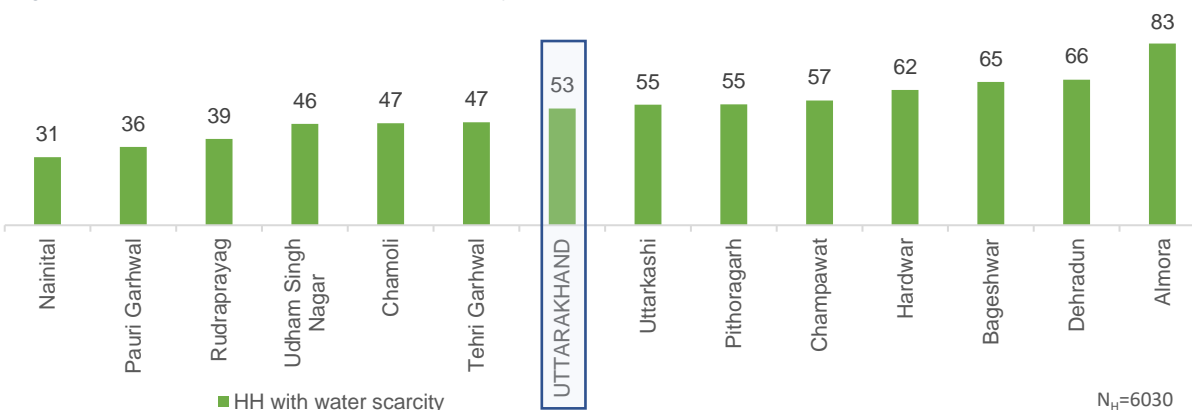
Figure 35: Households reported to use of booster pumps



E. Households who faced shortage of water

In the state, **53% HHs** faced shortage of water during any time of the year.

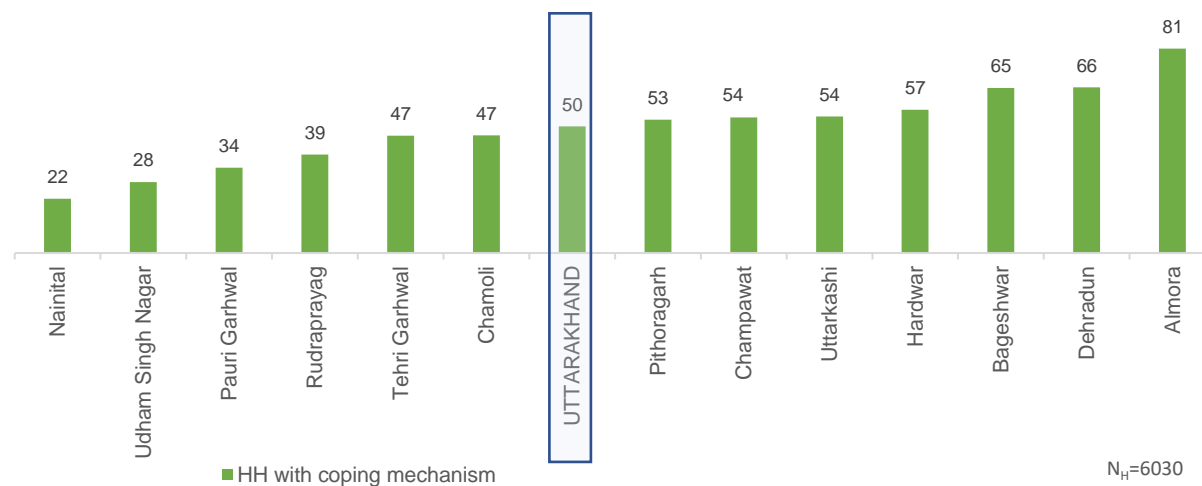
Figure 36: Households who faced water scarcity



F. Households with coping mechanism during scarcity of water

In the state, **53 percent HHs** faced shortage of water during any time of the year, while **50 percent HHs** reported having some mechanism to cope with scarcity of water.

Figure 37: Households reported to have some mechanism to cope with scarcity of water

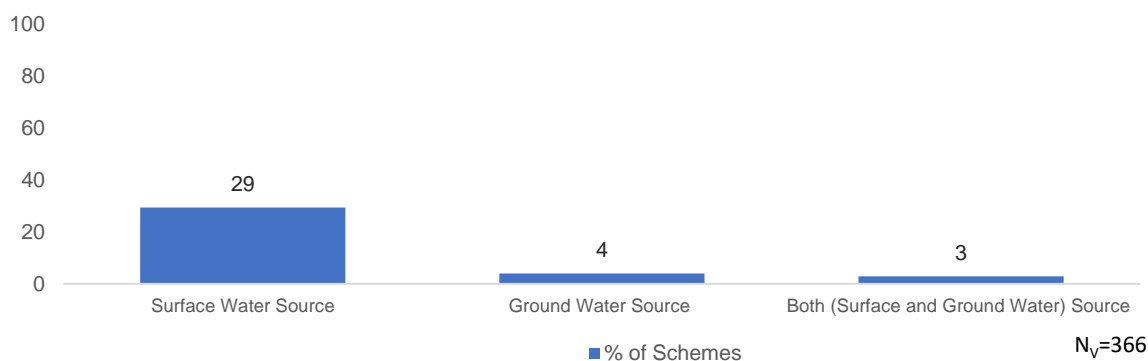


3.5. Source sustainability at the village level

Schemes based on surface and ground water

29% of schemes reported to be based on surface water source while 4% of schemes reported to be based of ground water sources.

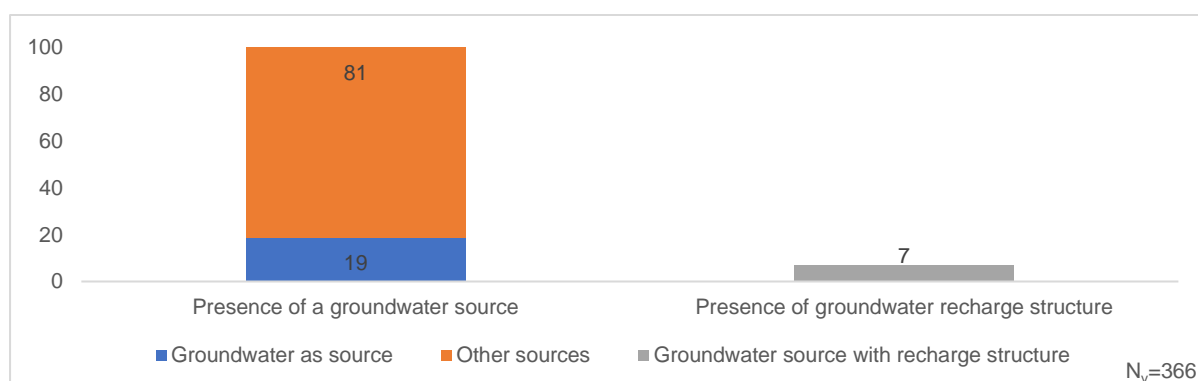
Figure 38: Schemes based on water source in village



*'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

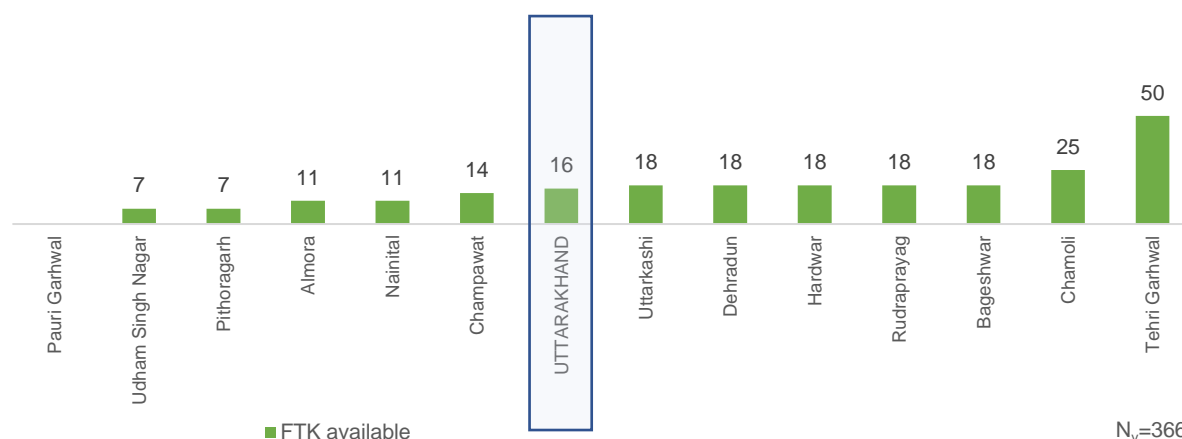


In the state, **19 percent villages** reported the presence of groundwater sources like improved dug wells and borewells. Out of which, 7 percent of villages reported (i.e., 26 villages) reported having a recharge structure.

3.6. Water quality monitoring and surveillance in the villages

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

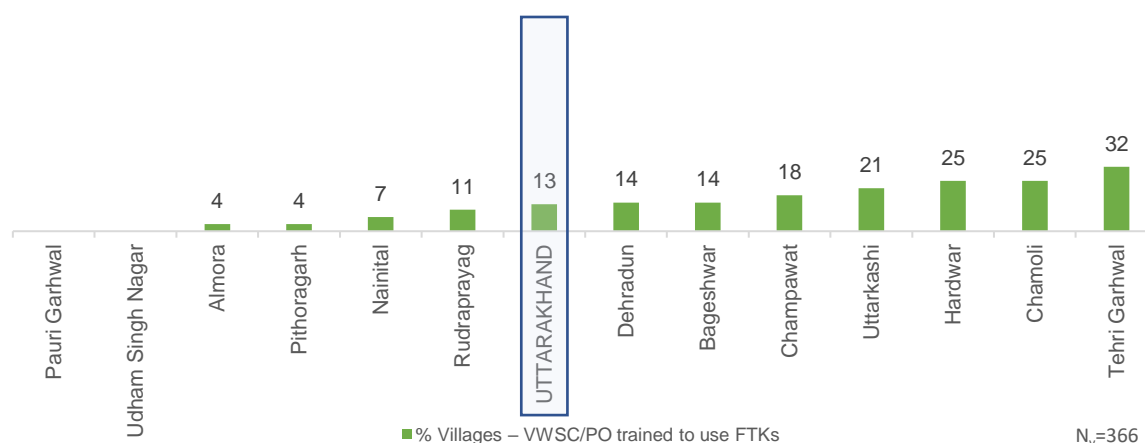
Figure 40: Availability of field test kits with VWSC/ Pani Samiti



With regards to water quality testing in the village by VWSC, 16 percent villages in the state reported having available field test kits. Tehri Garhwal reported 50 percent villages having available field test kits for water quality testing and this is the highest in the state, while Pauri Garhwal reported none.

B. Persons trained to use field test kits

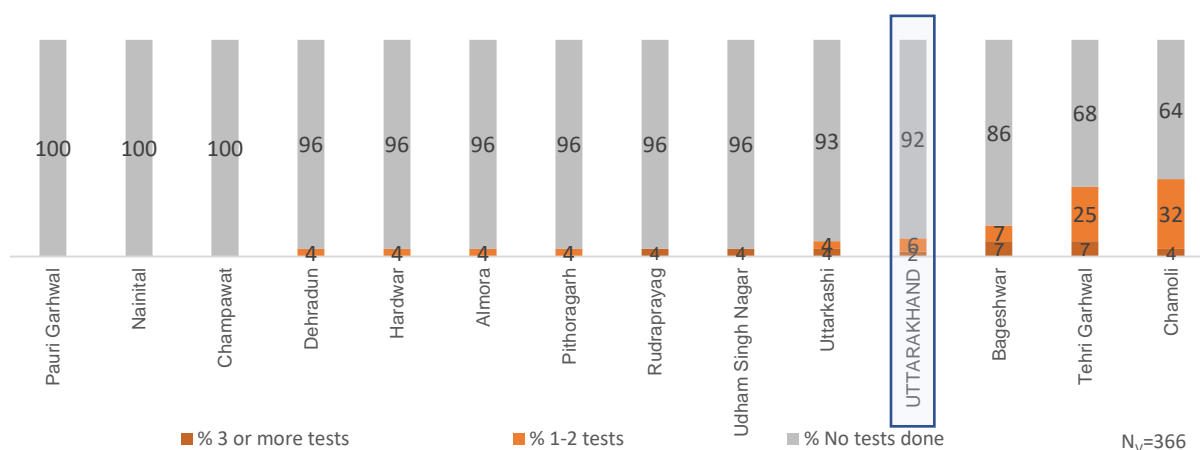
Figure 41: Persons trained to use field test kits



Overall, **13 percent 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. Highest number of VWSC/Pani Samiti or pump operators trained to use field test kits was reported in Tehri Garhwal (32 percent) while lowest was reported in Pauri Garhwal and Udham Singh Nagar with no VWSC/Pani Samiti or pump operators.

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

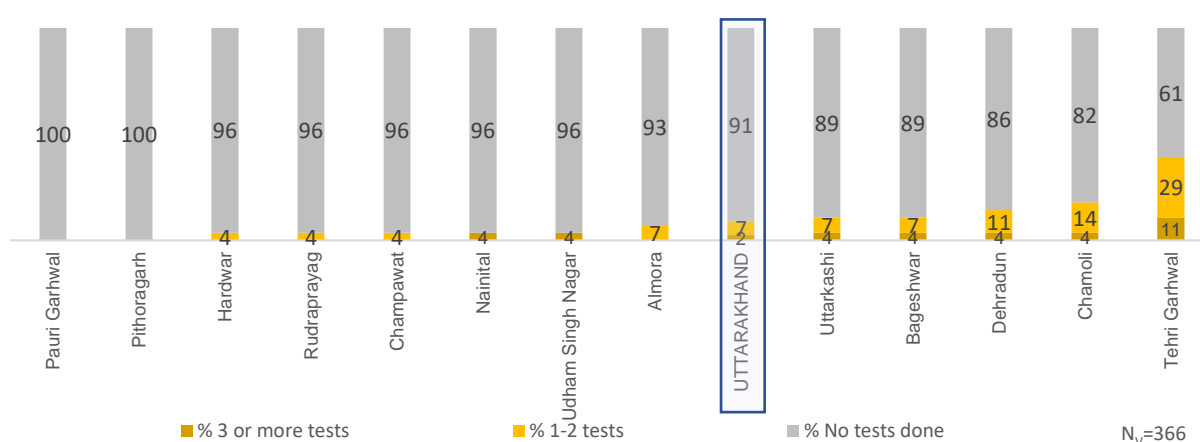
Figure 42: Frequency of testing using FTK in villages



Across the state, only 2 percent of the total sampled villages 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, Tehri Garhwal had the highest proportion of such villages, wherein 7 percent of its villages reported using FTKs three or more times in last one year.

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

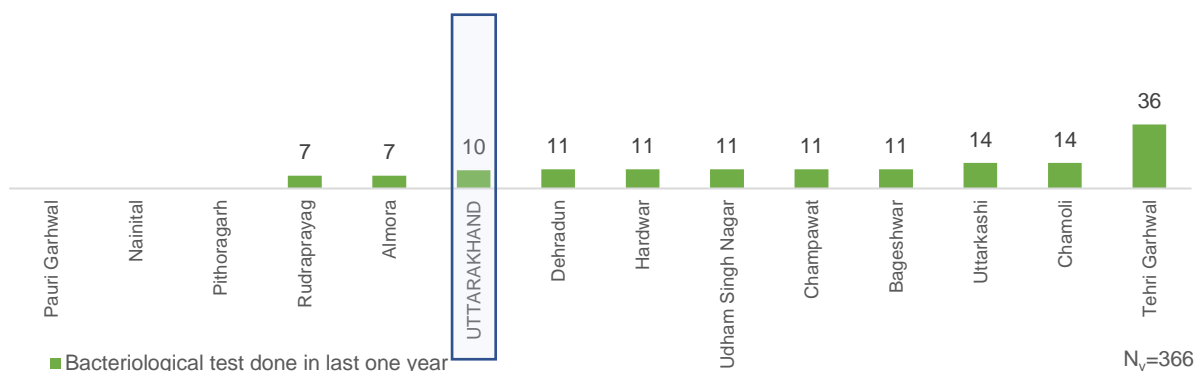
Figure 43: Frequency of lab testing



Across the state, only 2 percent of the total sampled villages 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, Tehri Garhwal had the highest proportion of such villages, wherein 11 percent of its villages reported tests through laboratories - three or more times in last one year.

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

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

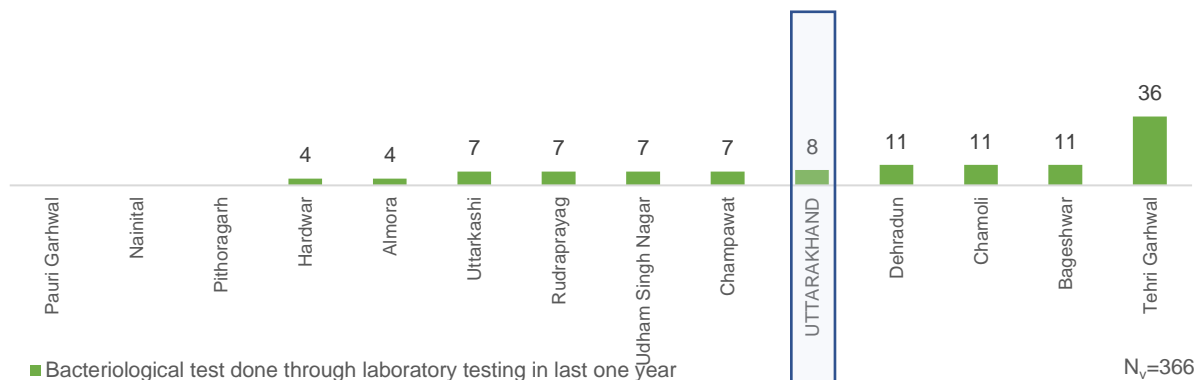


With regards to water quality testing in the village by VWSC, **10 percent villages** in the state reported having bacteriological test done in the last one year.

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 8 percent of sampled villages. All sampled villages from all the districts except Pauri Garhwal, Nainital, and Pithoragarh reported to have had bacteriological tests done through laboratories in last one year.

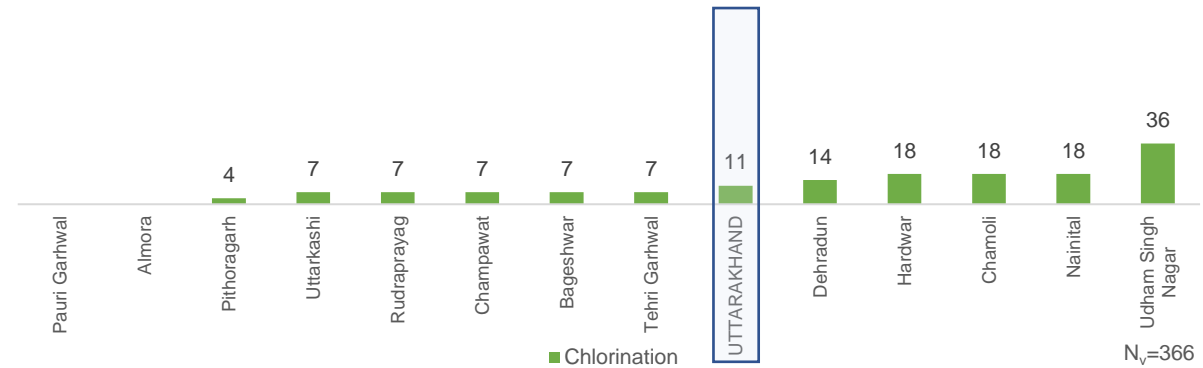
Figure 45: Bacteriological test done through laboratory testing in the last one year



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

More than **11 percent villages** reported that there is availability of chlorination mechanism in the village but during onsite testing of water at household level only 6 percent households tested to have for presence of chlorine.

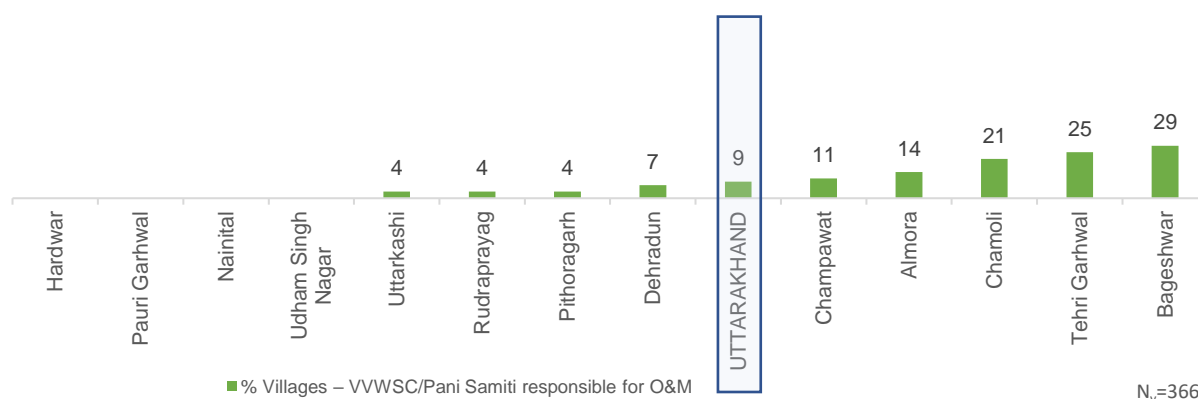
Figure 46: Villages having a mechanism for chlorination



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, **9 percent villages** that have VWSC/Pani Samiti reported to be responsible for operation and maintenance of PWS. Hardwar, Pauri Garhwal, Nainital, and Udham Singh Nagar districts reported that VWSC/Pani Samiti are not responsible for operation and maintenance of PWS.

B. Villages levying water service delivery charges from households

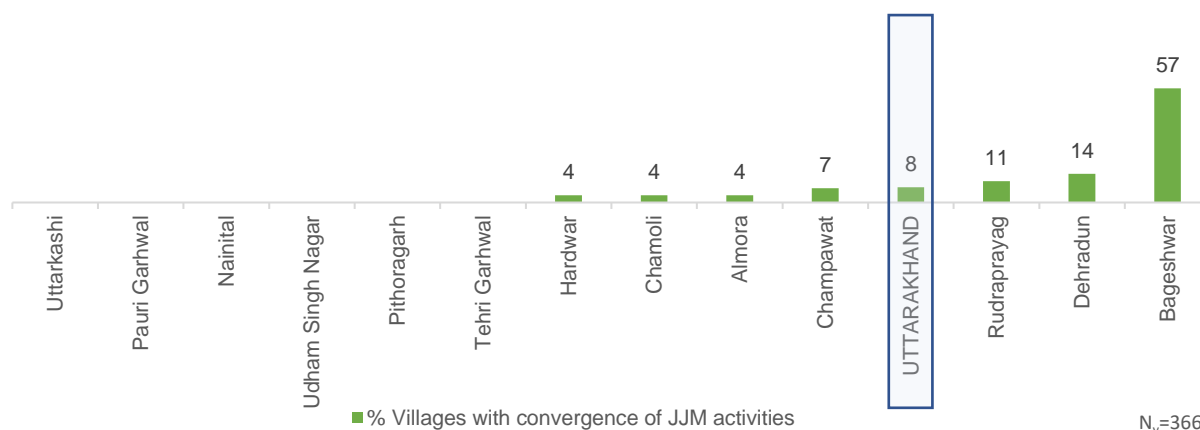
Figure 48: Villages levying water service delivery charges from households



Overall, **32 percent of villages** in the state levy charge for water service delivery to households whereas **42 percent 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 **8 percent 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

Signages about JJM were observed in 2 percent of the sampled villages. District Dehradun had the highest proportion of villages where signages were observed (11 percent).

Figure 50: Villages in which signages about JJM was observed

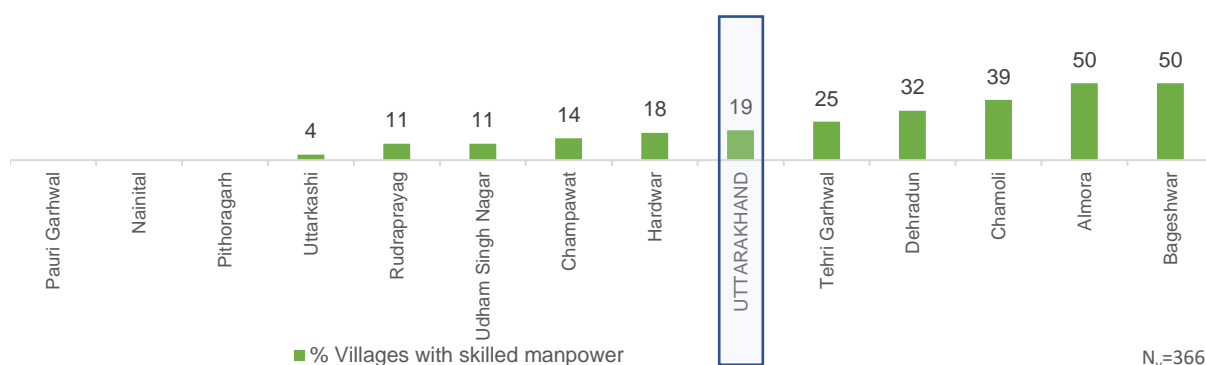


3.8. Status of Operation & Maintenance

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

Across the state, **19 percent villages** in the reported having identified skilled manpower for O&M of PWS schemes, the most reported to be in Bageshwar and Almora (50 percent each) and the least in Pauri Garhwal, Nainital, and Pithoragarh (17 percent).

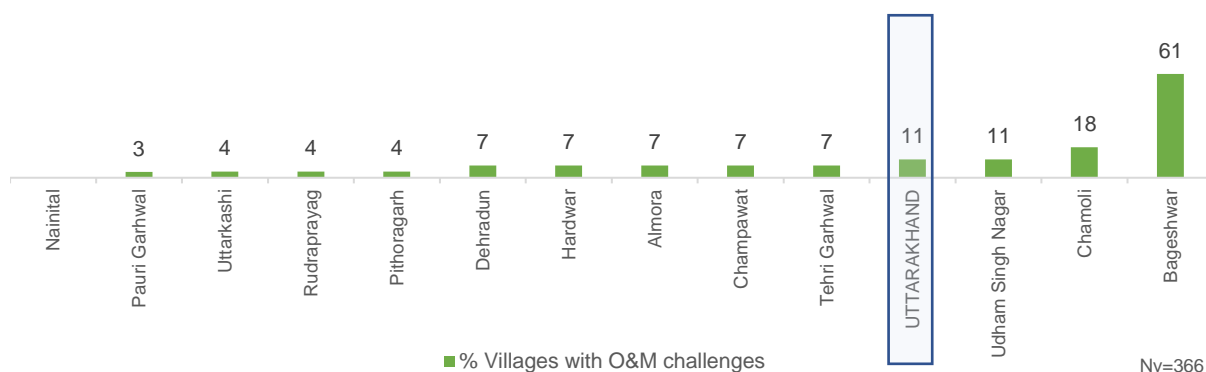
Figure 51: Villages reported having skilled manpower for O&M of PWS schemes



B. Villages with O&M challenges

In the state, **11 percent of villages** in the state reported to have faced challenges with respect to O&M of PWS schemes.

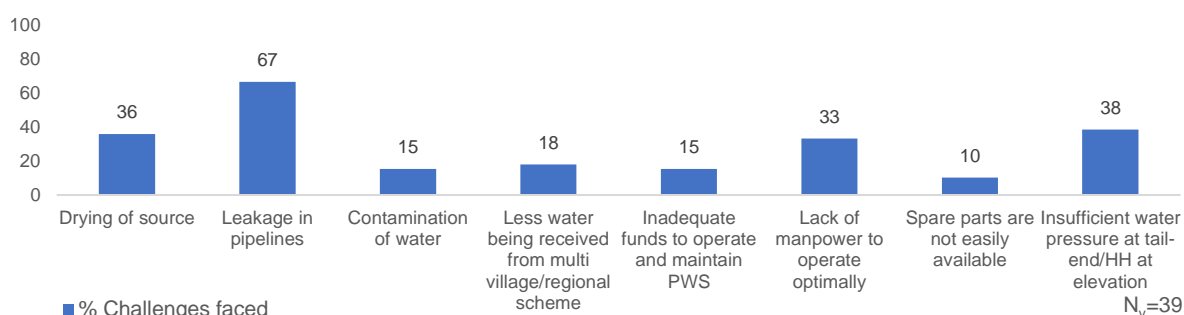
Figure 52: Villages reported having faced O&M challenge



C. Details of challenges faced

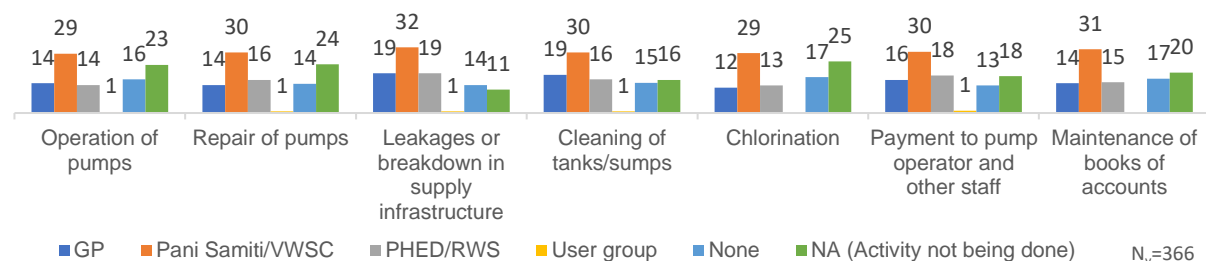
Out of the 11 percent of villages that had faced challenges with respect to O&M of PWS schemes (39 villages), 'leakage in pipelines' was attributed the most – at 67 percent.

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



D. Responsible for O&M

Figure 54: Different bodies responsible for O&M

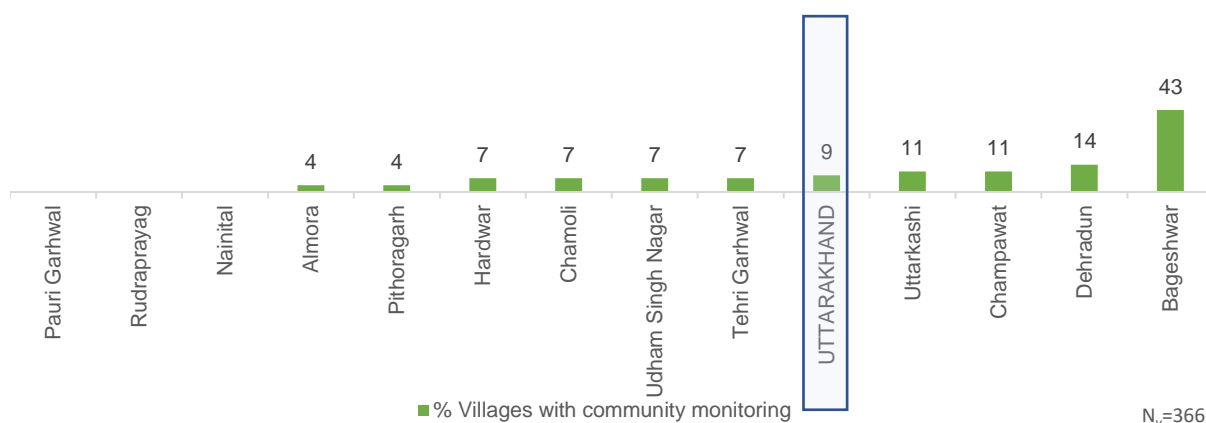


Across the state, villages reported 'Pani Samiti/VWSC' the most for being responsible for all essential aspects about operation and maintenance of PWS schemes.

E. Villages with community level monitoring of water wastage

9 percent 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

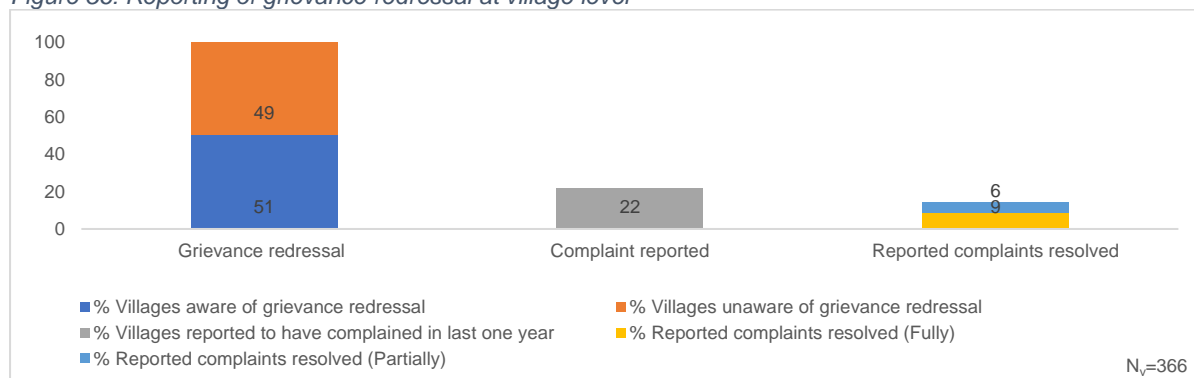


3.9. Status of service delivery related grievances and redressal

A. Village level

Grievance redressal at village

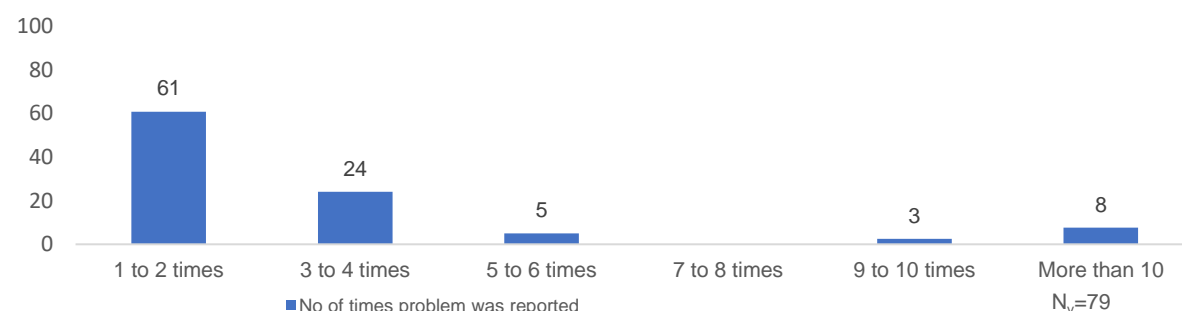
Figure 56: Reporting of grievance redressal at village level



In the state, **51 percent of villages** reported that they are aware of any grievance redressal mechanism, but only 22 percent HHs have reported a complaint in the last one year amongst which 9 percent reported that the complaints are fully resolved while 6 percent 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

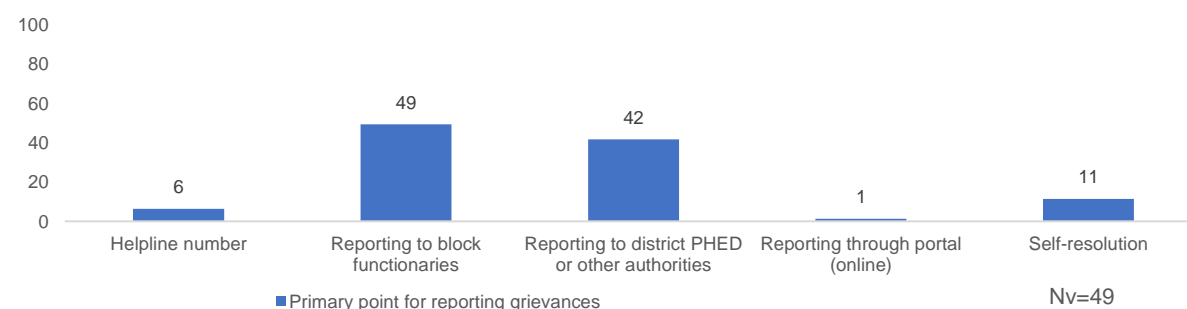


Among the villages who reported a complaint (i.e. 79 villages), 8 percent villages have reported a complaint more than 10 times in the last one year, while 61 percent reported a complaint at least once or twice.

Primary points for reporting grievances

Among those who reported complaint (i.e., 22% HHs, 79 villages), **49% of villages** reported that they report their grievances to **block functionaries** beside other reporting-points.

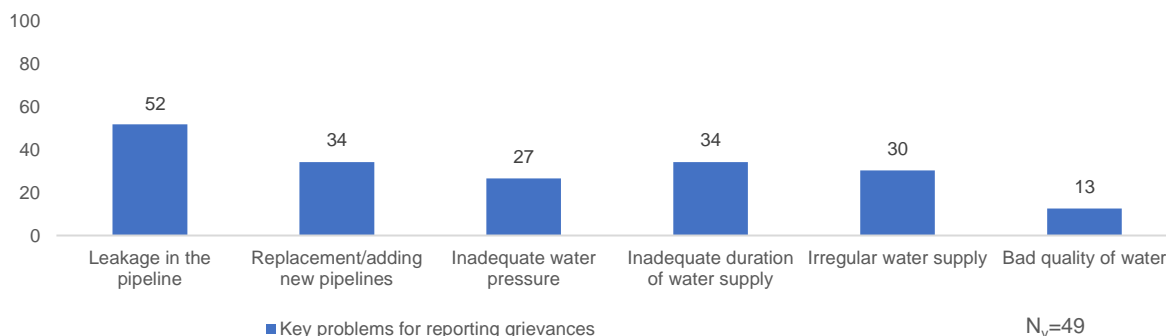
Figure 58: Primary points for reporting grievances by village



Key problems for reporting grievances

Overall, among those who reported complaint (i.e., 49% HHs, 79 villages) **52% of villages** reported that **leakage in the pipeline** is their most encountered problem for reporting grievances

Figure 59: Key problems reported by village

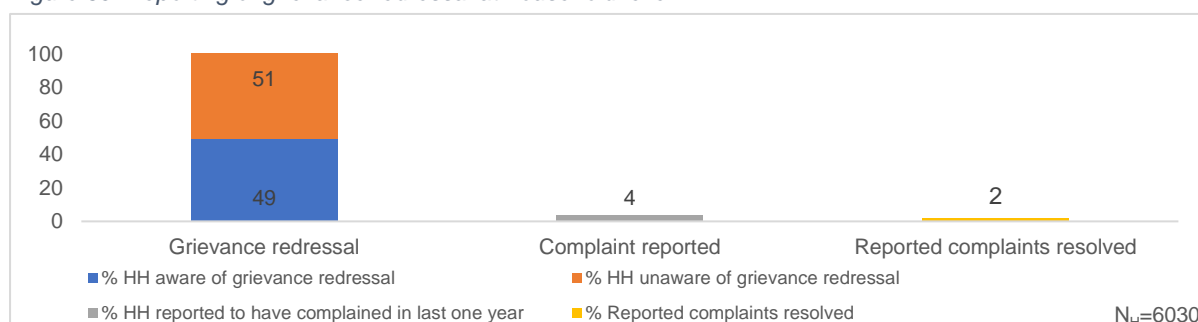


B. Household level

Awareness of grievance redressal at household

In the state, **49 percent of HHs** reported that they are aware of any grievance redressal mechanism w.r.t. HH tap water through PWS, but only 4 percent HHs have reported a complaint in the last one year and only 2 percent of complaints have been resolved.

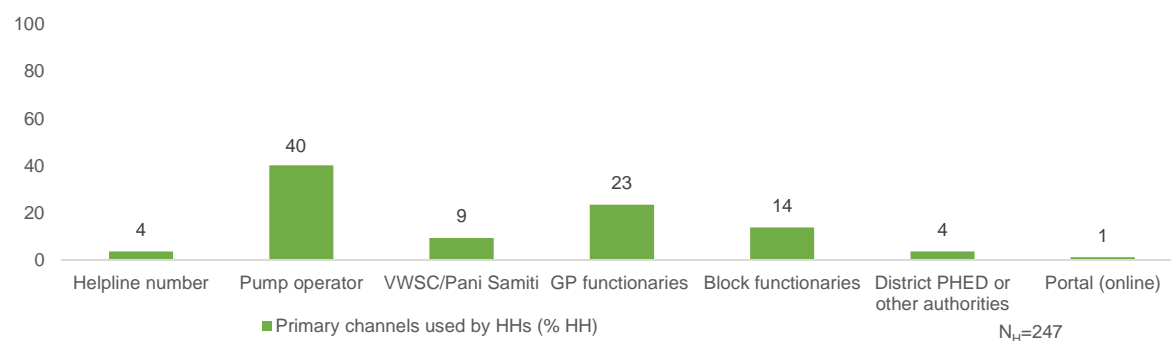
Figure 60: Reporting of grievance redressal at household level



Primary channels for reporting grievances by households

Among those who reported complaint as shown in the above graph (i.e., 4% HHs, 247 HHs), **40% of the HHs** reported their complaints to the **pump operators** beside other reporting-channels.

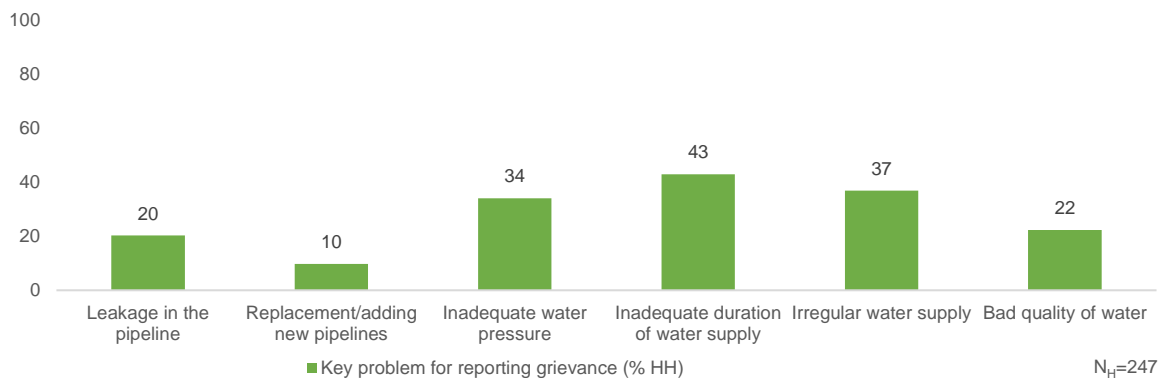
Figure 61: Primary channels for reporting grievances by households



Key problems for reporting grievances

Overall, among those who reported complaint (i.e., 4% HHs, 247 HHs) **43%** of the HHs that reported problems was of **inadequate duration of water supply** beside other problems.

Figure 62: Key problems reported by households

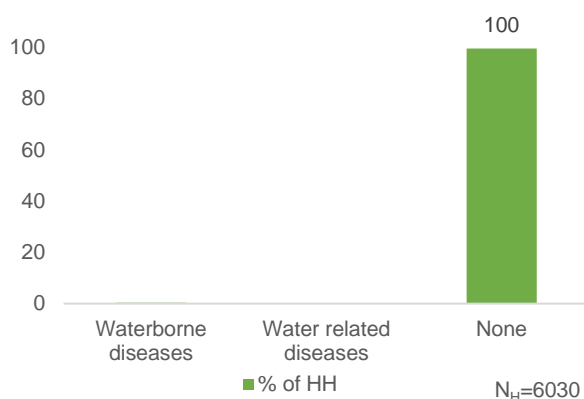


3.10. Perception of HHs on Outcome Indicators

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

Across the state no HHs reported having an incidence(s) of water borne diseases in their household in last one year. The cases recorded were of Dysentery, Diarrhea, Cholera and Typhoid

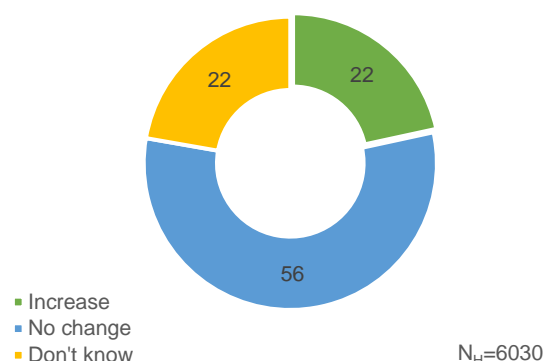
Figure 64: Household reported incidence of water borne diseases in last one year



B. Change in employment days since FHTC programmes/schemes

Since having a functional HH tap connection, 22% HHs across the state has reported that there has been a change in the no. of employment days of the adult HH members while 56% HHs reported no change

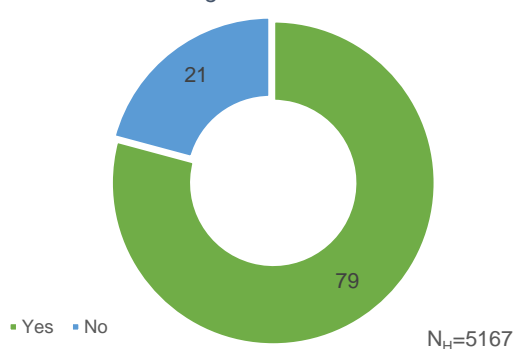
Figure 63: Household reported a change in employment days since FHTC programmes /schemes



C. Reduction in time and effort in collecting water

Out of the HHs reported (i.e. 5167) that female members used to fetch water before HH tap connection, 79% reported that post installation of HH tap connection it helped reduction of time and effort in collection of water

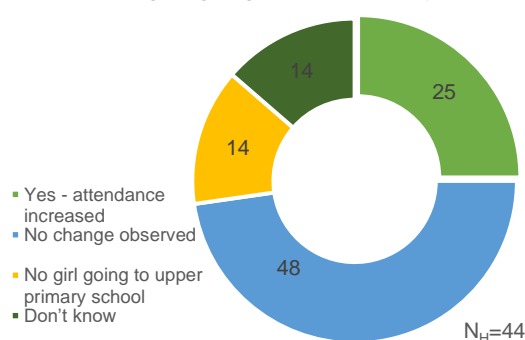
Figure 66: Households reported reduction in time and effort in collecting water



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

Across the state, 25% HHs reported that since having a functional HH tap connection the attendance of the girls going to schools increased, while 48% 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

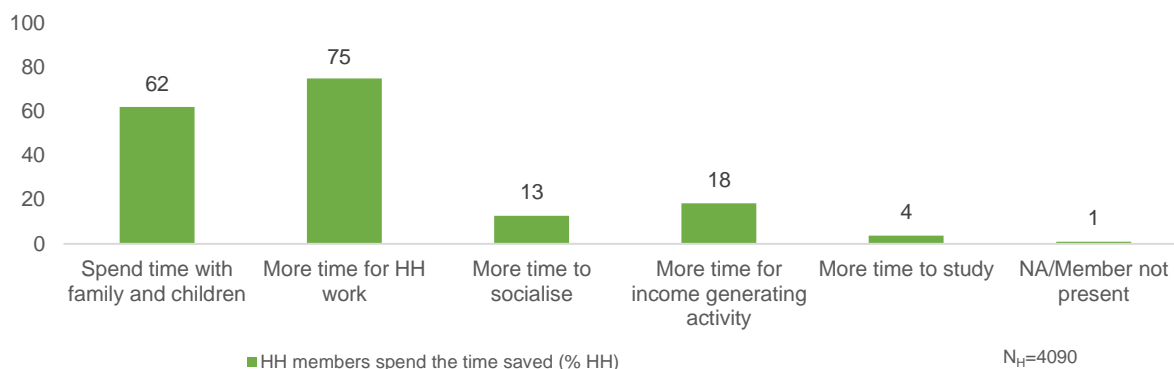
Figure 65: Households reported increase of attendance of girls going to upper primary school



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 (75 percent).

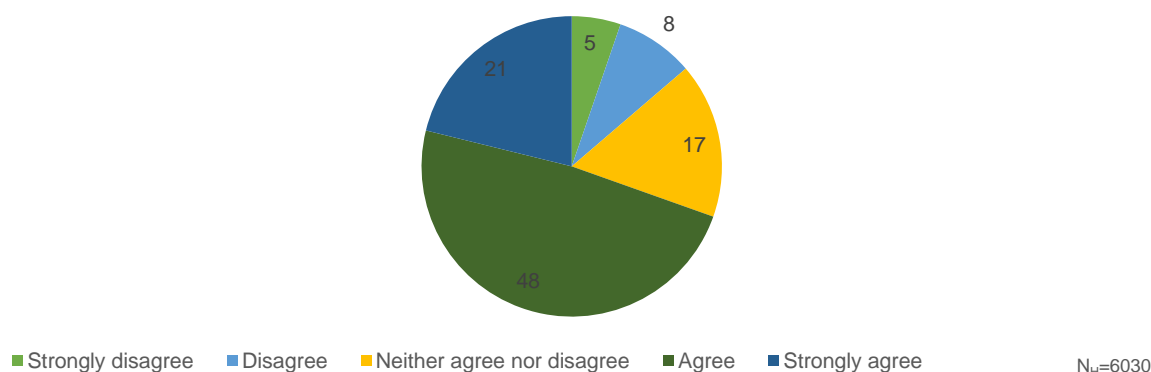
Figure 67: Utilization of time saved by households post installation of HH tap connection



F. Change in social status

Sense of pride and positive change in social status was reportedly realized by 21 percent of HHs post the installation of HH tap connections.

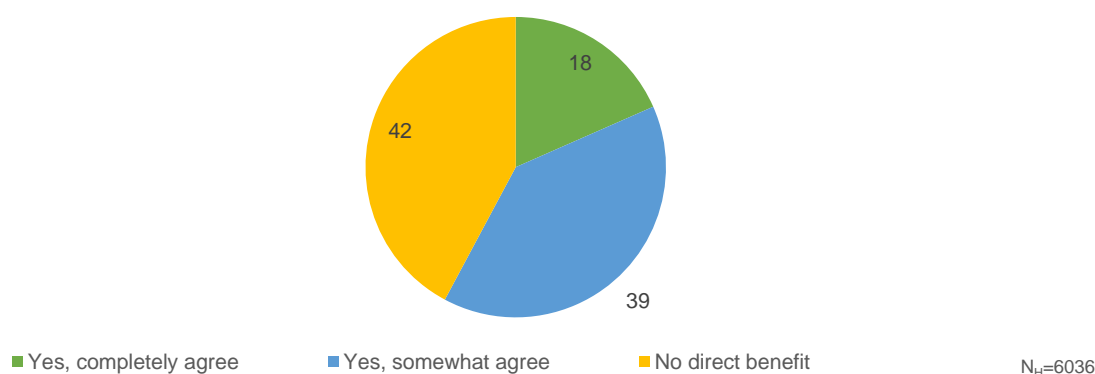
Figure 68: Households reported to have a positive change in social status








G. Direct benefits in terms of income due to FHTC

Across the state, 18 percent 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 39 percent 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. 7: User satisfaction - more than 75% happy with FHTC services			
S. No.	Parameter (N _h =6030)		In %
1	Regularity		82.9
2	Overall quality		87.4
3	Colour		88.6
4	Taste		88.8
5	Odour		85.8

Note:

Base (N_v)=366 means all villages sampled and covered in Uttarakhand state

Base (N_H)=6030 means all households sampled and covered across the 366 villages in Uttarakhand state

Base (N_H)=4916 means all households sampled where water sample be collected across the 366 villages in Uttarakhand state

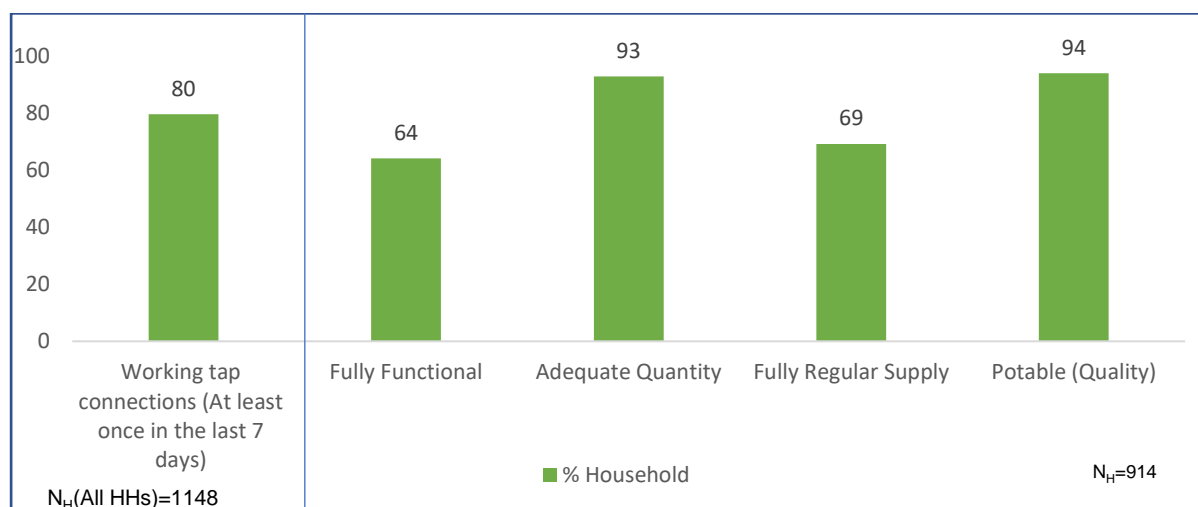
Base (N_H)=5167 means all households sampled where female members used to fetch water before HH tap connection

Base (N_H)=44 means all households sampled that had adolescent girls as one of HH members

4. Status of functionality in 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=914 implies all HHs where water was found on the day of the survey.

It has been found that 80 percent of the sampled HHs (N=1148) had working tap connections. 64 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, more than 9 out of 10 the households (93 percent) received adequate quantity (≥ 55 LPCD) of water supply and more than two-third received regular supply (69 percent) of water. The on-site testing and lab test results of the water indicates that more than 9 out of 10 (94%) 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.	Uttarkashi	100	63	100	63	100
2.	Dehradun	100	54	96	65	85
3.	Hardwar	100	39	94	39	100
4.	Chamoli	100	89	100	90	99
5.	Almora	100	28	57	38	91
6.	Tehri Garhwal	100	100	100	100	100
7.	Rudraprayag	80	86	100	86	97
8.	UTTARAKHAND	80	64	93	69	94
9.	Champawat	77	92	93	97	100
10.	Nainital	76	95	100	95	100
11.	Pithoragarh	70	91	98	93	100
12.	Udham Singh Nagar	64	26	100	26	100
13.	Pauri Garhwal	50	39	100	39	94
14.	Bageshwar	43	42	96	43	100

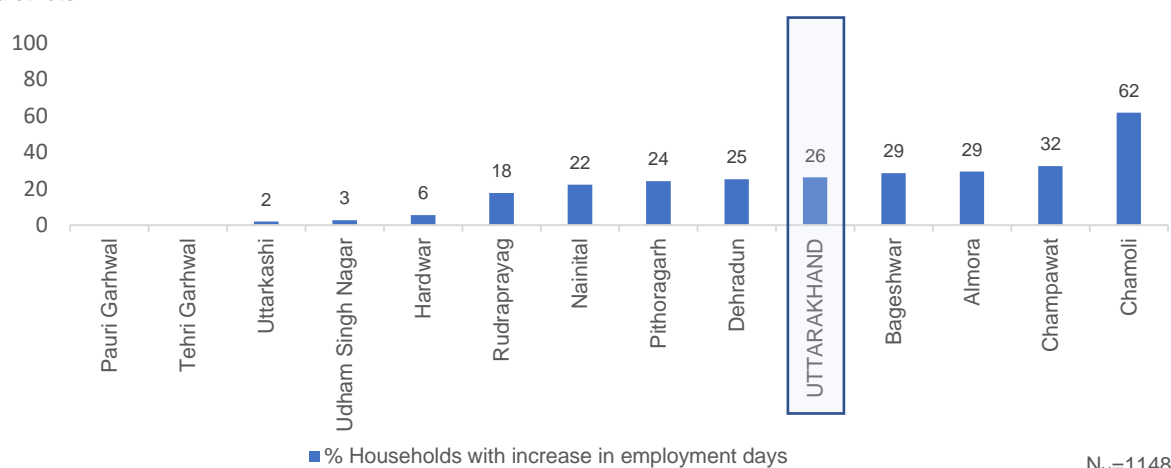
Table No. 8: Quantity, Regularity, and Quality of FHTC for Har Ghar Jal districts (%HH)						
S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Fully functional (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
# 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, one-fourth (26 percent) of the sampled households reported that employment days increased since the installation of FHTC.

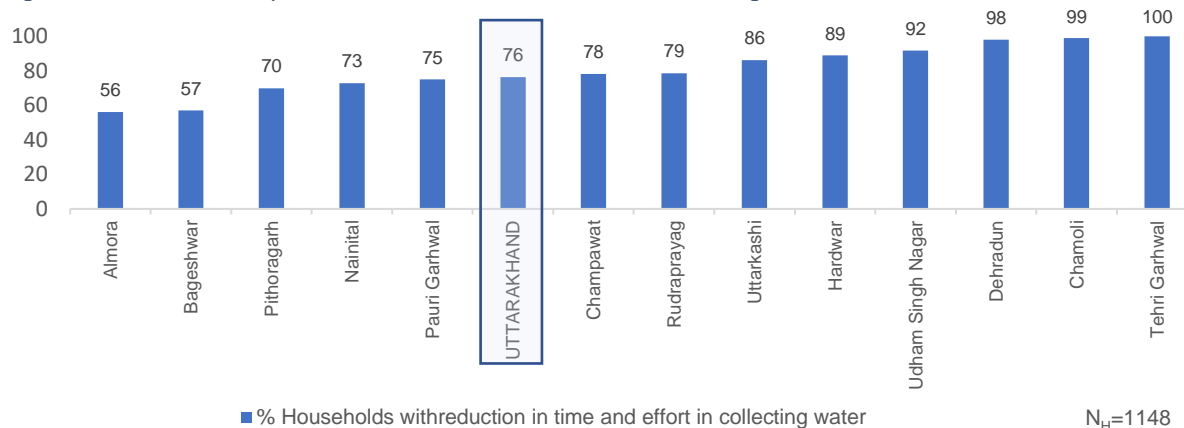
Figure 71: Household reported a change in employment days since FHTC programmes /schemes in Har Ghar Jal districts



B. Reduction in time and effort in collecting water

Similarly, about 76 percent of the sampled households also reported that the effort and time in collecting water reduced after installation of FHTC.

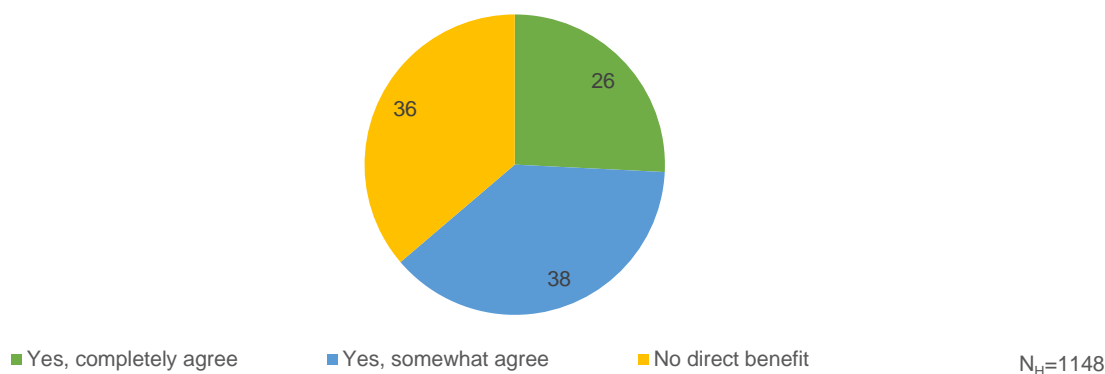
Figure 72: Households reported reduction in time and effort in collecting water in Har Ghar Jal districts



4.3. Direct benefits in terms of income due to FHTC

Across the nation, 26 percent 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 38 percent reported being in partial agreement against the same.

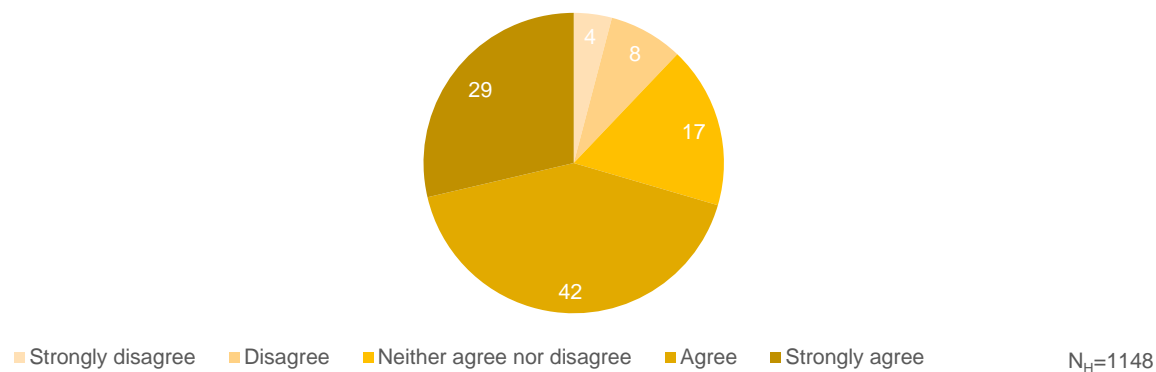
Figure 73: Households reported to have received direct benefits in terms of income due to FHTC in Har Ghar Jal districts



4.4. Change in social status

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

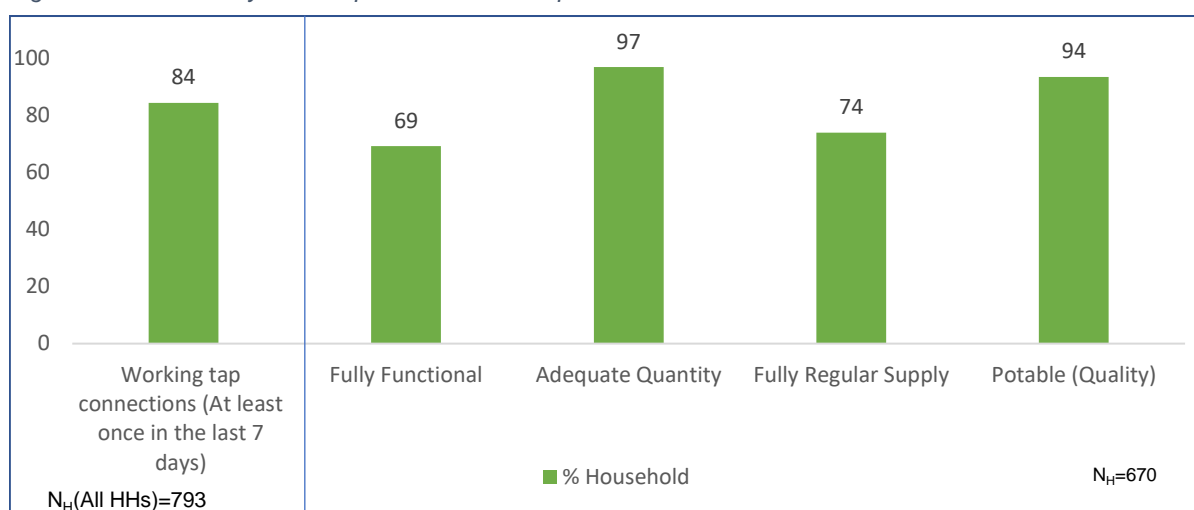
Figure 74: Households reported to have a positive change in social status in Har Ghar Jal districts



5. Status of functionality in 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=670 implies all HHs where water was found on the day of the survey.

It has been found that 84 percent of the sampled HHs (N=793) had working tap connections. 69 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, almost all the households (97 percent) received adequate quantity (≥ 55 LPCD) of water supply and almost 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 (94%) sampled households in the state receive potable water.

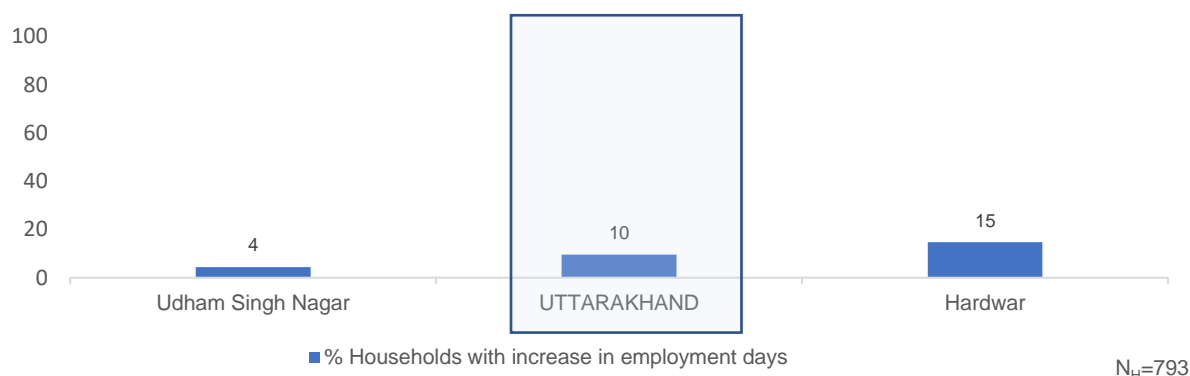
Table No. 9: Quantity, Regularity, and Quality of FHTC for aspirational districts (%HH)						
S. No.	District	Working tap connections (HHs which received water through FHTC at least once in the last 7 days) (% HH)	Fully functional (% HH)	Adequate Quantity (% HH)	Full Regular Supply (% HH)	Potable (Quality) (% HH)
1.	Udham Singh Nagar	85	82	98	83	99
2.	Hardwar	84	56	96	65	88
3.	UTTARAKHAND	84	69	97	74	94
# 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 10 percent of the households in aspirational districts reported increase in employment days since installation of FHTC.

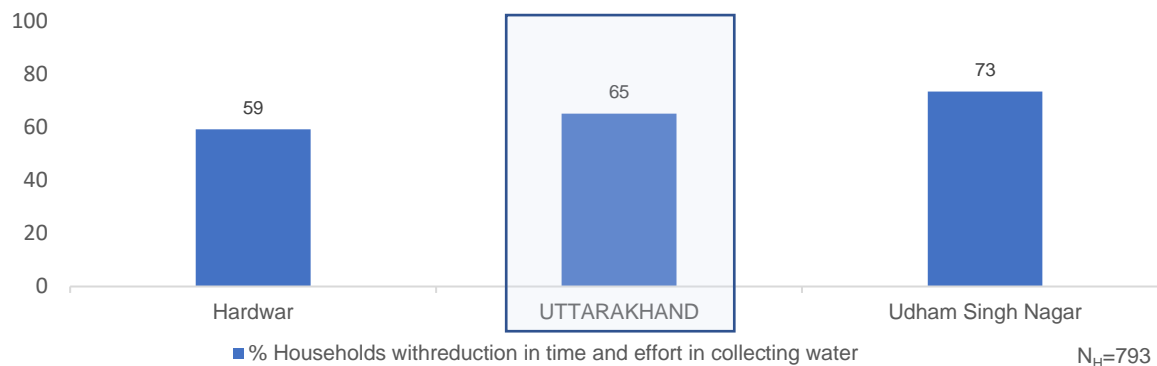
Figure 76: Household reported a change in employment days since FHTC programmes /schemes in Aspirational districts



B. Change in employment days since FHTC programmes/ schemes

Only around 65 percent of the households in aspirational districts reported reduction in time and effort in collecting water.

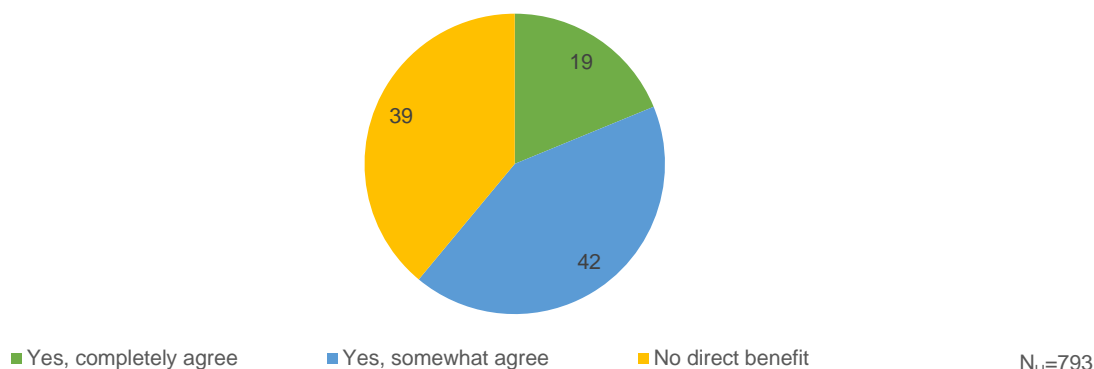
Figure 77: Households reported reduction in time and effort in collecting water in Aspirational districts



5.3. Direct benefits in terms of income due to FHTC

Across the state, 19 percent 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 42 percent reported being in partial agreement against the same.

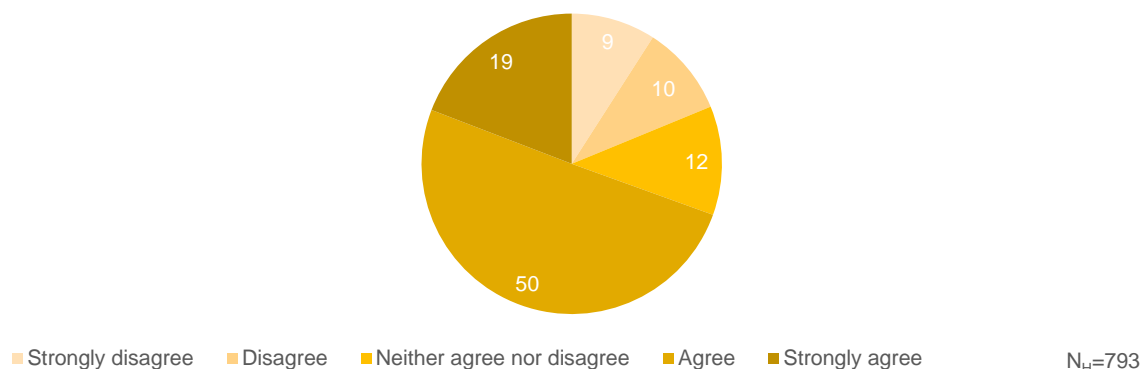
Figure 78: Households reported to have received direct benefits in terms of income due to FHTC in Aspirational districts



5.4. Change in social status

More than two-third 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. Annexure

Table No. 10: List of replaced villages				
S. No.	District Name	Village Name	Status of the Scheme (No Scheme/Replaced & Defunct)	Remarks
1	Uttarkashi	Masari	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Kharsari. Scheme found to be functional in replacement village
2	Uttarkashi	Manjyali	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Nandgaon. Scheme found to be functional in replacement village
3	Uttarkashi	Devali	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Barsali. Scheme found to be functional in replacement village
4	Uttarkashi	Dharkot	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Kuthaldi. Scheme found to be functional in replacement village
5	Uttarkashi	Dandalka	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dharali. Scheme found to be functional in replacement village
6	Dehradun	Simiyari	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bajhet. Scheme found to be functional in replacement village
7	Chamoli	Vampa	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Topoban. Scheme found to be functional in replacement village
8	Chamoli	Pyura	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Gadaut. Scheme found to be functional in replacement village
9	Chamoli	Simli	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dewali Laga Chhenkuda. Scheme found to be functional in replacement village
10	Rudraprayag	Badeth	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Kanyas. Scheme found to be functional in replacement village
11	Rudraprayag	Kaviltha	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dobha. Scheme found to be functional in replacement village
12	Rudraprayag	Shishou	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Falot Gaon. Scheme found to be functional in replacement village
13	Rudraprayag	Jakhal	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Jakholi Malli. Scheme found to be functional in replacement village
14	Rudraprayag	Semalta	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Mar Gaon. Scheme found to be functional in replacement village
15	Almora	Taya	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Nanankote. Scheme found to be functional in replacement village
16	Almora	Dadgaliya	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dadholi. Scheme found to be functional in replacement village
17	Nainital	Naripur Lamachaur	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Haripur Motia. Scheme found to be functional in replacement village
18	Udham Singh Nagar	Dharampur	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Meghawala. Scheme found to be functional in replacement village

19	Udham Singh Nagar	Gangapur Gusai	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Chandpur. Scheme found to be functional in replacement village
20	Udham Singh Nagar	Ginni Khera	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Kundeswari. Scheme found to be functional in replacement village
21	Udham Singh Nagar	Tiliyapur	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dhyampur. Scheme found to be functional in replacement village
22	Udham Singh Nagar	Lauka	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Damgara. Scheme found to be functional in replacement village
23	Udham Singh Nagar	Deyori	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bhitaura. Scheme found to be functional in replacement village
24	Udham Singh Nagar	Kalyanpur	No Scheme / Defunct Scheme	No Scheme present in the sampled village, hence replaced with Village- Bitha Akbar. Scheme found to be defunct in replacement village
25	Udham Singh Nagar	Basgar	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Karghatiya. Scheme found to be functional in replacement village
26	Udham Singh Nagar	Nirmalnagar	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Nakulia. Scheme found to be functional in replacement village
27	Udham Singh Nagar	Gangi	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bari Anjanima. Scheme found to be functional in replacement village
28	Udham Singh Nagar	Chandna	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Sujiyan. Scheme found to be functional in replacement village
29	Udham Singh Nagar	Kumrah	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Jadavpur. Scheme found to be functional in replacement village
30	Udham Singh Nagar	Vandiya	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Jamour. Scheme found to be functional in replacement village
31	Udham Singh Nagar	Sarpura	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Sripur Bichuwa. Scheme found to be functional in replacement village
32	Champawat	Birgul	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bastiyagoonth. Scheme found to be functional in replacement village
33	Champawat	Mohanpur	No Scheme / Defunct Scheme	No Scheme present in the sampled village, hence replaced with Village- Badoli. Scheme found to be defunct in replacement village
34	Champawat	Koyatikhalsha	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dungaabora. Scheme found to be functional in replacement village
35	Champawat	Sango	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Sirmoli. Scheme found to be functional in replacement village
36	Pithoragarh	Ralam	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bindi. Scheme found to be functional in replacement village
37	Pithoragarh	Dafa	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dumar Malla. Scheme found to be functional in replacement village
38	Pithoragarh	Diyuti Bagar	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Dhunga Toli. Scheme found to be functional in replacement village