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

Har Ghar Jal
Jal Jeevan Mission

STATE REPORT: RAJASTHAN

SURVEY DURATION: FEBRUARY TO MARCH 2022

Contents

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
    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 Rajasthan lies in the western part of India and has a population of 6,85,48,437 people (Census 2011). It has 33 districts and 43323 villages, and 9258 villages have PWS schemes. The state is yet to achieve the Har Ghar Jal status. A total of 500 villages, across all districts, and 13332 households were randomly sampled for the survey, and additionally, water samples from 615 public institutions were tested.

In the assessment among sampled villages, 68% of villages have only one scheme, 24% 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, 86% of the HHs were satisfied with the regularity of the supply, 86% with the quality of the water supplied, 91% with the colour of the water supplied, and 88% with the taste of the supplied tap water.

Overall functionality status of Rajasthan

At the state level, 100% of HHs received water on the day of the survey. While 38% of the HHs were found to have fully functional tap water connections within the premises. Out of which 59% received an adequate quantity of water, 66% reported receiving a fully regular supply of water, and 82% HHs received potable water.

It was found that more than 46% of households received water all 7 days a week and 30% received at least 3 to 4 days, while 24% of the HHs received water once a week. The average duration of water supply across the state was reported to be 1 hours per day.

In Rajasthan, 16% of the villages have reported that water is directly supplied to the households and the remaining 84% 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 Rajasthan, 13929 samples of water were submitted, and 11998 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 in 30% of the HHs. The percentage was relatively lower in AWC, HF and Schools (less than 25%), wherein there is a possibility of additional chlorine being added locally for the purification of water. Almost all the samples passed in bacteriological parameter the RC was found only in 9 samples. 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 13332 HHs sampled for the FHTC assessment, a water quality test was carried out in 13314 due to the non-availability of water in 88 HHs on the day of the survey. pH was found within the acceptable limit in 98% of households. Among the public institution, pH was found in the acceptable limit of more than 99% in schools.

24% of villages in the state reported having available field test kits. And almost one-fourth 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 38% of villages in the state reported having a VWSC or a Pani Samiti out of which 31% of the VWSC/Pani Samitis reported to have more than 50% female members. In the state, 12% of villages reported that VWSC/ Pani Samiti is responsible for the operation and maintenance of pipe water supply.

44% of villages reported having identified skilled manpower for O&M of PWS schemes. 10% of villages in the state reported having faced challenges with respect to O&M of PWS schemes.

70% of the 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, 488 HHs), 67% of the HHs reported their complaints to the Pump operators besides other reporting channels.

Overall, 19% of villages in the state levy charge for water service delivery to households whereas 19% HHs reported paying water service delivery charges at the households.

85% of HHs reported that their daily requirement of water was being met by HH tap connections.

Overall, 96% 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, 43% HHs reported using booster pumps to maximize the water flow through their piped water connections.

It was found that 52% of the villages have schemes that are based on groundwater sources, while 5% on surface water sources.

Age-wise functionality of the schemes indicates decline in ‘always functional’ schemes and no change in the ‘non-functional scheme’ in the state since 2012. 2-% point decline in a fully

functional scheme was recorded from 2012 to 2013-18. In 2019 and later the same trend was maintained, however, 69% of schemes have been reported to be always functional and 3% of scheme was partially functional (i.e., a total of 72% of schemes).

Impact of JJM

Across the state, 2% of HHs reported having an incidence(s) of water-borne diseases in the last year.

Since having a functional HH tap connection, 35% HHs across the state have reported that there has been a change in the no. of employment days of the adult HH members while 50% HHs reported no change.

Out of the HHs reported (i.e., 10919) that female members used to fetch water before HH tap connection, 92% reported that post-installation of HH tap connection helped reduce of time and effort in collection of water.

Across the state, 55% HHs reported that since having a functional HH tap connection the attendance of the girls going to schools has increased, while 7% 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, 98% of households received water on the day of the survey. While 38% of the households were found to have fully functional tap connections. Out of which 54% received an adequate quantity of water, more than half (58%) reported receiving a fully regular supply of water and 76% received potable water.

Since having a functional HH tap connection, 27% 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, 90% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the Har Ghar Jal district, 19% 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, 100% of households received water on the day of the survey. While 43% of the households were found to have fully functional tap connections. Out of which 61% received an adequate quantity of water, more than two-third (67%) reported receiving a fully regular supply of water and 82% received potable water.

Since having a functional HH tap connection, 42% 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, 89% reported that post-installation of HH tap connection helped reduce time and effort in collecting water. Across the aspirational district, 21% 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	Rajasthan
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	86	100
Quantity[1] of water received by households		
Adequate quantity (>55 LPCD) (%)	85	59
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	5	12
Inadequate quantity (<40 LPCD) (%)	10	29
Regularity[2] of water received by households		
Fully Regular Supply (as per schedule) (%)	80	66
Partially Regular Supply (not as per schedule) (%)	14	20
Irregular Supply (less than 9 months' supply) (%)	6	14
Potable[3] (Quality) water received by households (%)	87	82
Overall functionality[4] (%)	62	38

Service delivery parameters	India	Rajasthan
Overall user satisfaction on regularity at the household level (%)	83	86
Overall user satisfaction on quality at the household level (%)	82	86
Households receiving water supply daily-7 days a week (%)	74	46
Daily HH requirement of water being met by FHTC (%)	80	85
Households paying water service delivery charges (%)	35	19
Households aware of grievance redressal mechanism (%)	71	70
Households reported a reduction in time and effort in collecting water (%)	79	92
Average no. of times water is supplied in a day	1	1
Households reported incidence of water-borne diseases in the last year (%)	2	2
Households purifying water before drinking (%)	57	68
Residual Chlorine (RCL) detected with in permissible limits (%)	24	30
Villages with Field Test Kits (%)	30	24
Villages in which bacteriological test was done in last 1 year by VWSC/ Pani Samiti (%)	29	31
Villages reported to have a mechanism for chlorination (%)	21	11

Institutional arrangement	India	Rajasthan
Village reported having presence of VWSC/ Pani Samiti (%)	38	38
Villages in which VWSC/ Pani Samiti is responsible for Operation & Maintenance of PWS schemes (%)	14	12
Villages in which persons are trained to use Field Test Kits (%)	31	25
Villages levying water service delivery to households (%)	34	19
Villages having skilled manpower for Operation & Maintenance of PWS schemes (%)	31	44
Community monitoring of water wastage in villages (%)	19	14
Villages in which signages about JJM were observed (%)	15	6

[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

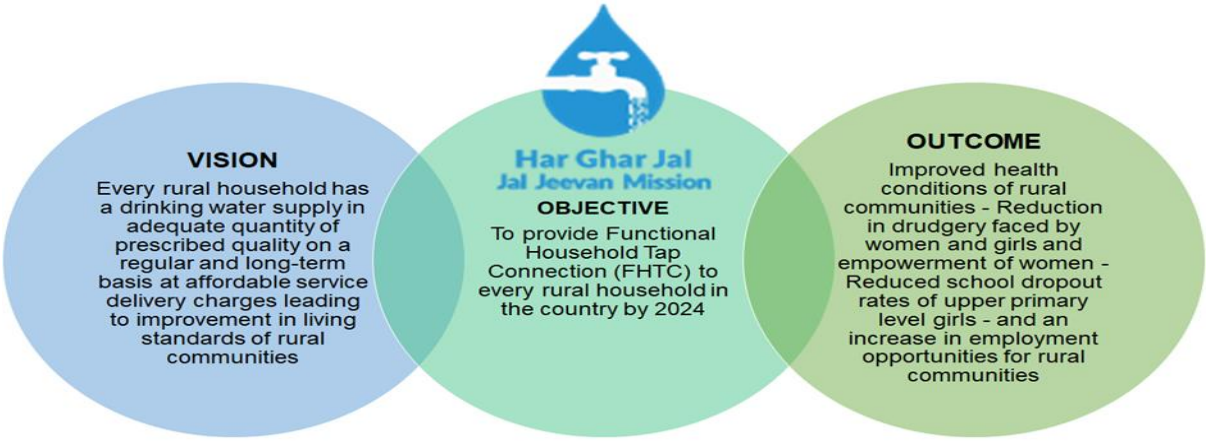
Functionality status of tap connection at households in Har Ghar Districts	India	Rajasthan
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	91	98
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	88	54
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	4	11
Inadequate quantity (<40 LPCD) (%)	8	35
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	84	58
Partially Regular Supply (not as per schedule) (%)	11	18
Irregular Supply (less than 9 months' supply) (%)	5	24
Potable (Quality) water received by households (%)	90	76
Overall functionality (%)	69	38

Functionality status of tap connection at households in Aspirational Districts	India	Rajasthan
Working tap connections- HHs which received water through tap connection at least once in last 7 days (%)	78	100
Quantity of water received by households		
Adequate quantity (>55 LPCD) (%)	85	61
Partially adequate quantity (> 40 LPCD - < 55 LPCD) (%)	5	13
Inadequate quantity (<40 LPCD) (%)	10	26
Regularity of water received by households		
Fully Regular Supply (as per schedule) (%)	77	67
Partially Regular Supply (not as per schedule) (%)	14	16
Irregular Supply (less than 9 months' supply) (%)	9	17
Potable (Quality) water received by households (%)	88	82
Overall functionality (%)	62	43

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: Rajasthan

The state of Rajasthan lies on the western part of India and has a population of 6,85,48,437 people. It has 33 districts and 43323 villages where 9258 villages have PWS schemes. The state lies on the Western Dry region, Central Plateau and Hills region, Trans Gangetic Plains region and receives an average annual rainfall of about 454.9mm. Among the villages with PWS schemes, 7068 villages (16.31%) 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

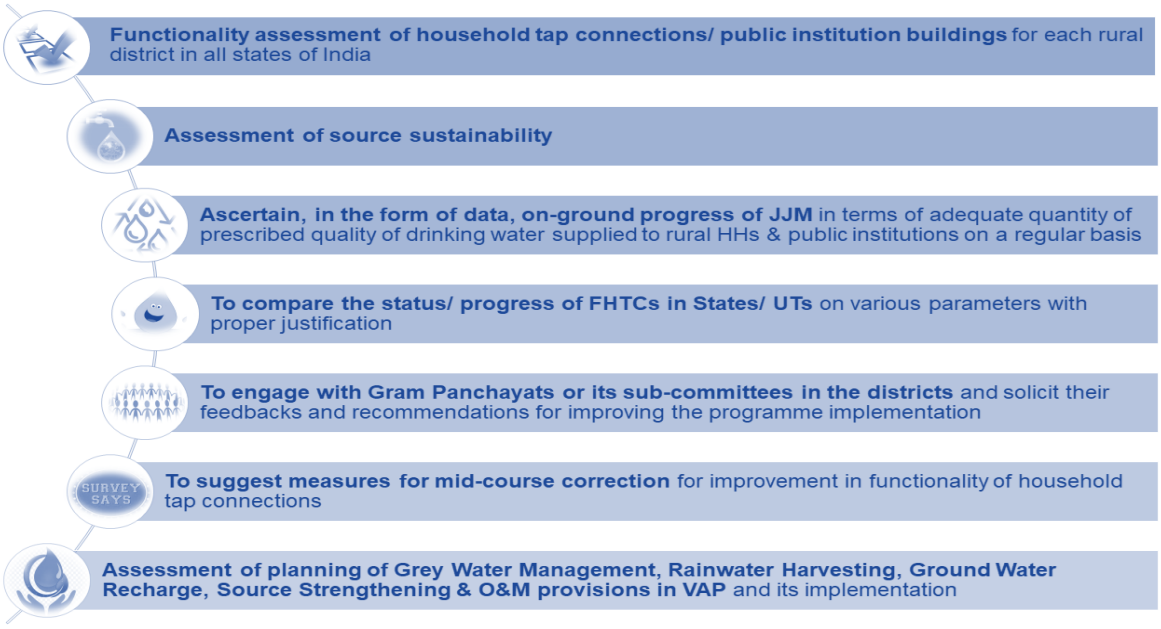
IMIS status:

- Not a Har Ghar Jal state.
- 23 districts are Iron & 33 districts are Fluoride affected
- 7068 (16.31% of all) villages with PWS (>20 FHTC)
- 1.71% villages covered under HH tap connections under HGJ

2.2. FHTC Assessment Objectives

The overall objectives of the FHTC assessment are as presented:

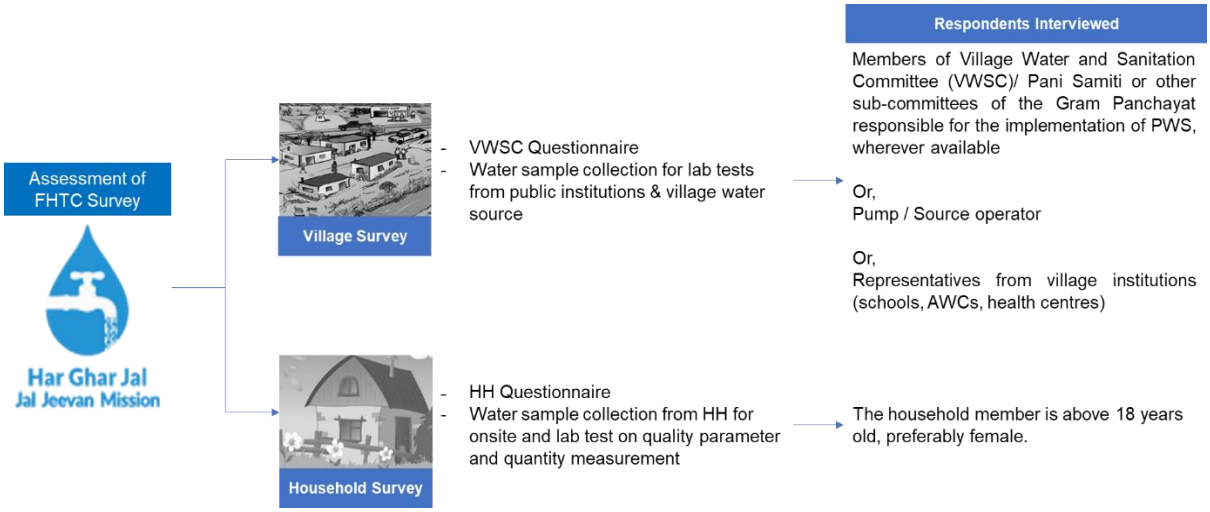
Figure 4: FHTC Assessment Objectives



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.

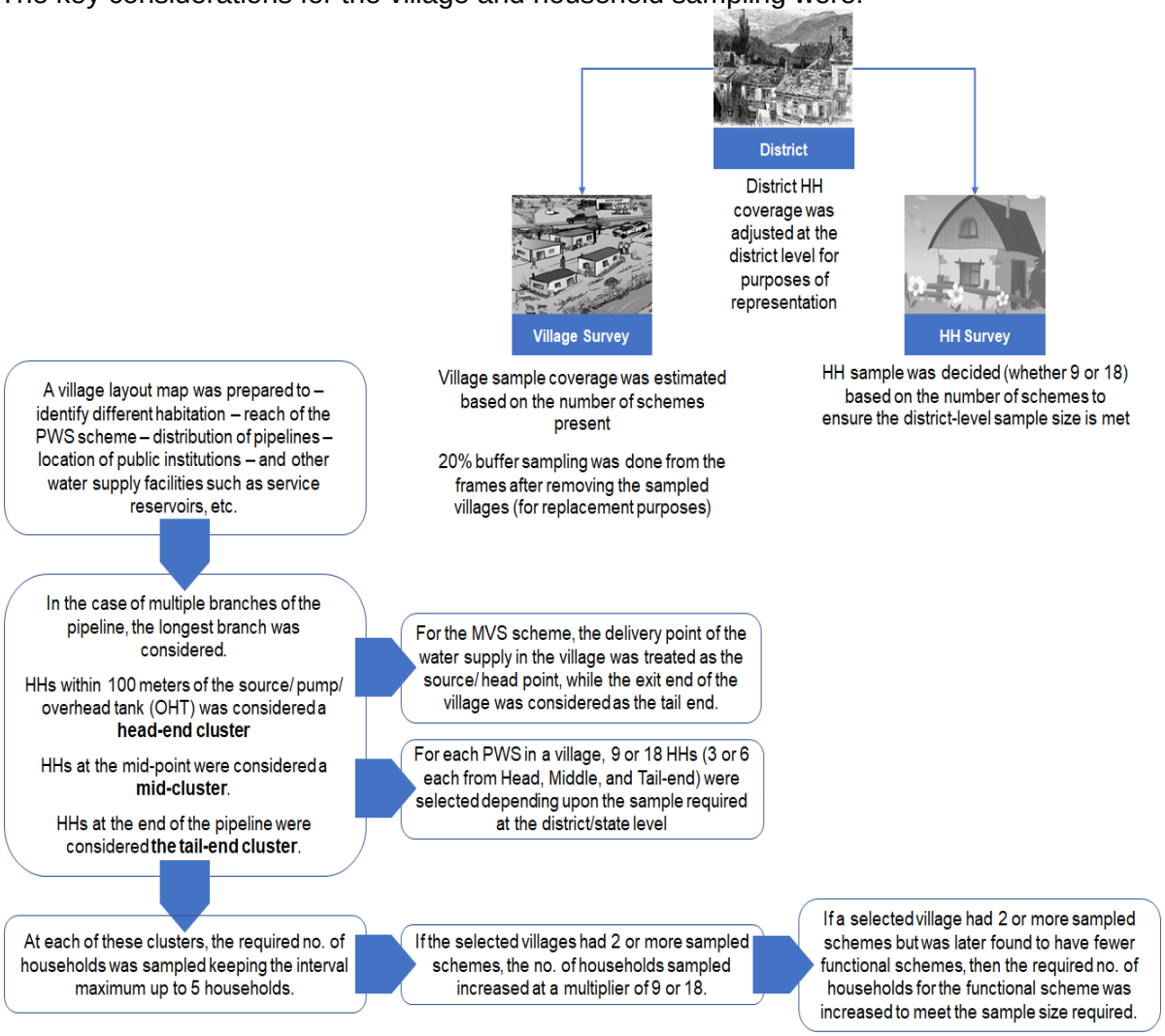
2.5. Sampling Methodology

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:

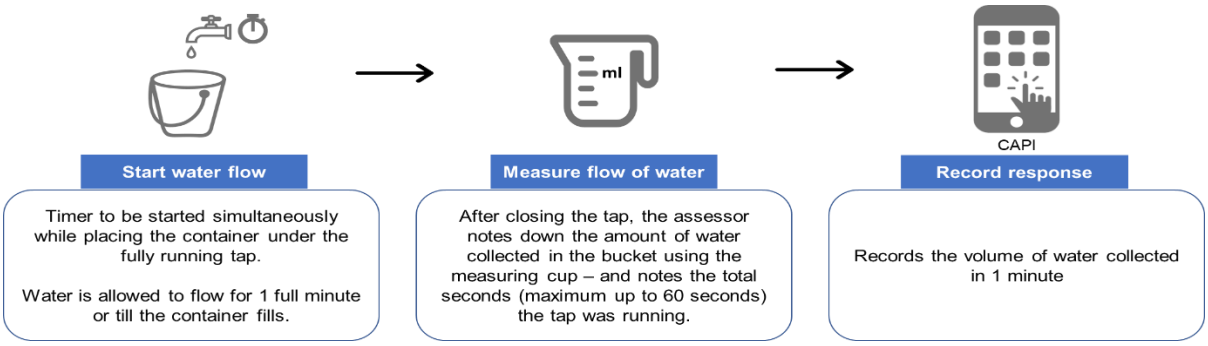


The record of all district-wise village replacements is maintained and reported as part of the annexure.

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:

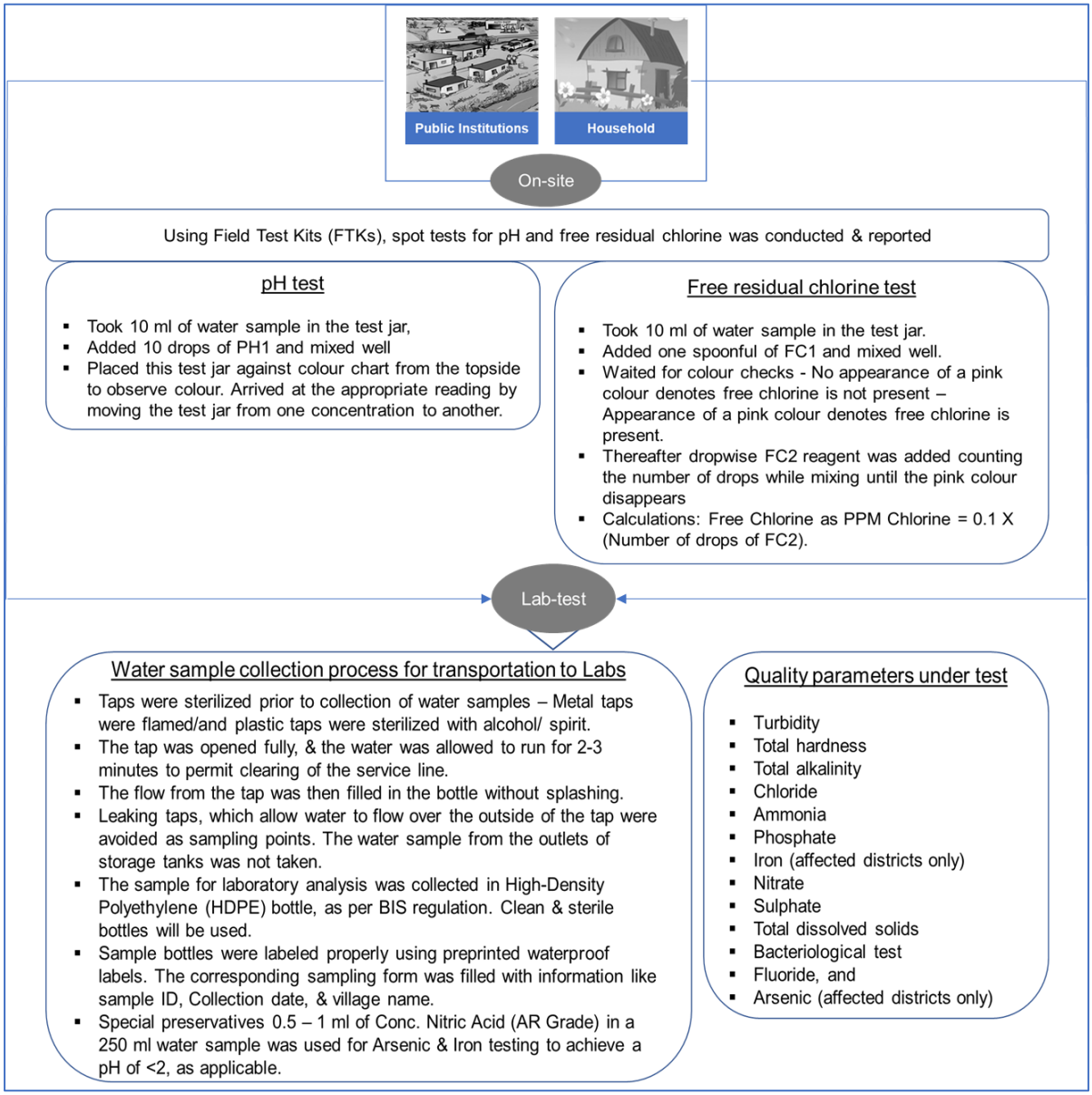
- Assessor first asked and recorded length, breadth, and height.
- Assessor dipped a 5 feet long rod, marked the level of the water table, and calculated the volume – length x breadth x-height of water.
- Next the assessor opened the valve of the connection and allowed the water to flow inside the storage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

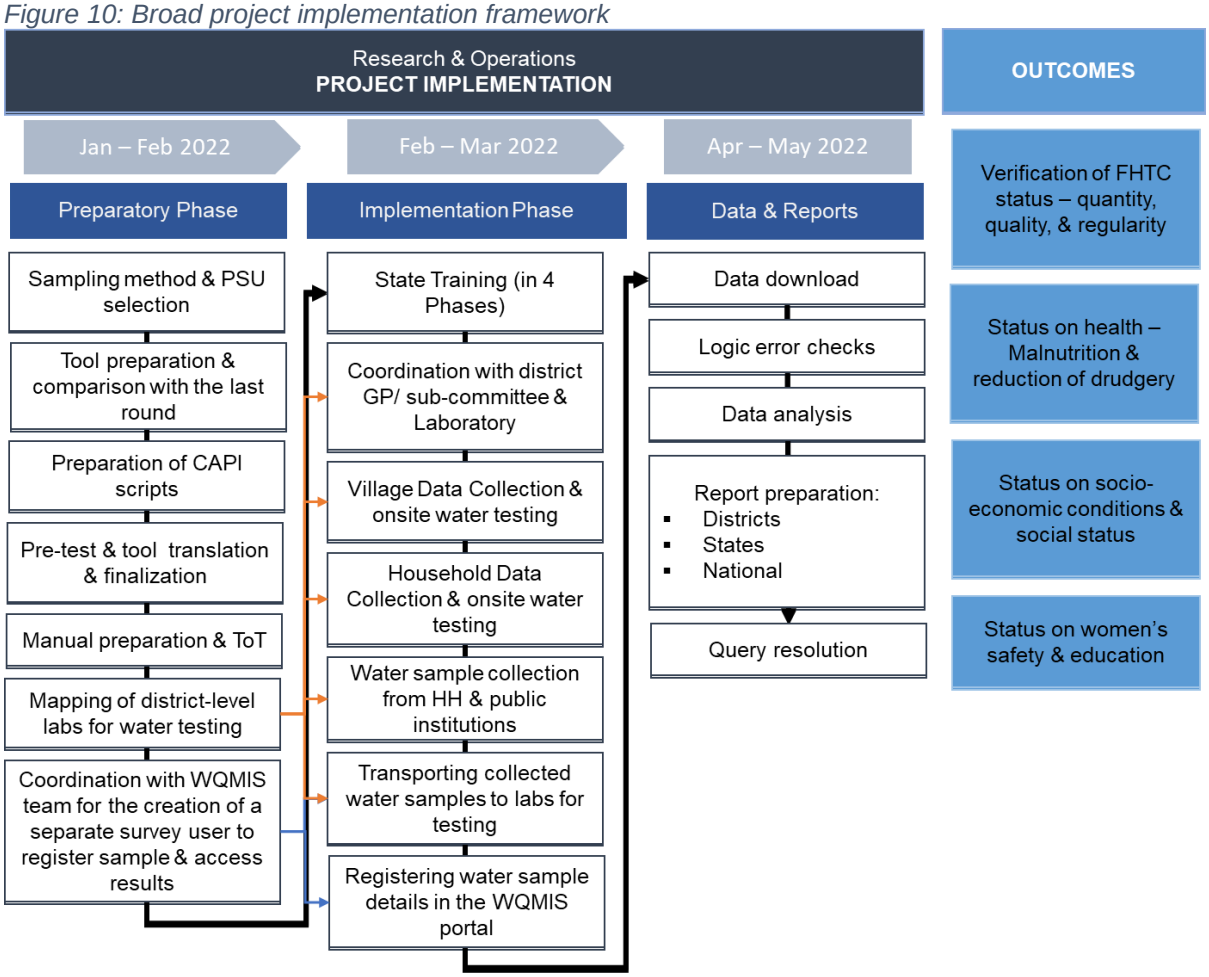


JJM, with the support of the BMI Division of ICMR, enabled a new interface on the WQMIS portal for “Functionality Assessment (FA) User” to enable seamless harmonization of water sample registration, and sample submission for testing, and sharing of results as per the applicable quality parameters.

2.8. Project Implementation

An overview of the project implementation is as presented:

Figure 10: Broad project implementation framework



A total of 14 teams (comprising 14 supervisors, 84 assessors, and 14 water collection assistants) were recruited, trained, and deployed to complete the survey across the states of Rajasthan. 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
Rajasthan	14 Teams	17th February	30th March	42 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						
	Targeted sample			Achieved sample			
State	District	Village	HH	District	Village	HHs	PIs
India	**712**	**13,300**	**3,00,000**	**712**	**13,299**	**3,01,389**	**16,148**
Rajasthan	**33**	**490**	**13,176**	**33**	**490**	**13,332**	**615**

2.10. Sampled village and household profile

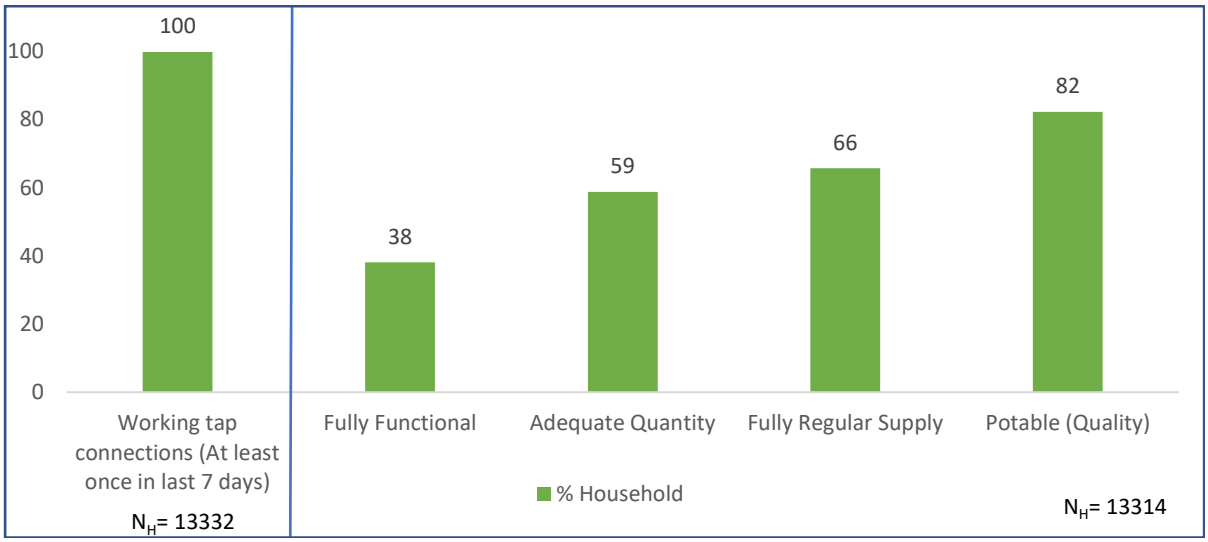
SAMPLED VILLAGES	SAMPLED HOUSEHOLDS
• Total no. of villages covered in the state **– 490** • Percentage of SC dominated villages **– 7.8%** (while at national level the average is 12.6%) • Percentage of ST dominated villages **– 12.7%** (while at national level the average is **20.2%)** • Higher proportion of **pump operator** interviewed at the village level • **3.4%** of the villages reported to have any historical incidence of water contamination	• Total no. of households covered in the state **– 13332 (Respondents: Male 6920, Female 6412)** • Proportion of General – **25.3%**, SC **21.5%**, ST **7.5%**, OBC **45.7%** households • **48.1%** of the FHTC connections are under the name of a female member • Average household size **– 6.3** • **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 ∩ Fully Regular Supply ∩ Potable (Quality)*

Please note: Henceforth, N_H=13314 implies all HHs where water was found on the day of the survey.

It has been found almost 100 percent of the sampled HHs (N=13332) had working tap connections. Moreover, almost 3 out of 5 households (59 percent) received adequate quantity (>=55 LPCD) water supply and more than 3 out of 5 received regular supply (66 percent) of water. The on-site testing and lab test results of the water indicates that more than four-fifth (82 percent) of the sampled households in the state receive potable water.

Out of the 13332 HHs sampled for the FHTC assessment, water was not available in 18 households on the day of the survey.

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.	Churu	96	56	55	100
2.	**RAJASTHAN**	**100**	**59**	**66**	**82**
3.	Ganganagar	100	82	77	86
4.	Bikaner	100	74	52	82
5.	Jhunjhunun	100	70	79	53
6.	Alwar	100	66	70	87
7.	Bharatpur	100	59	43	29
8.	Dhaulpur	100	58	84	100
9.	Sawai Madhopur	100	89	92	74
10.	Jaipur	100	28	85	68
11.	Sikar	100	67	73	66
12.	Ajmer	100	7	68	99
13.	Tonk	100	76	84	86
14.	Jaisalmer	100	61	57	68

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)**
15.	Jodhpur	100	46	36	85
16.	Nagaur	100	39	67	99
17.	Pali	100	24	58	73
18.	Barmer	100	25	48	89
19.	Jalor	100	38	6	57
20.	Sirohi	100	33	23	45
21.	Bhilwara	100	43	46	93
22.	Udaipur	100	27	63	100
23.	Pratapgarh-Rj	100	62	72	100
24.	Chittaurgarh	100	50	61	92
25.	Dungarpur	100	84	83	100
26.	Banswara	100	85	69	88
27.	Bundi	100	79	93	69
28.	Kota	100	88	99	97
29.	Jhalawar	100	79	77	92
30.	Hanumangarh	100	88	63	85
31.	Karauli	100	76	91	97
32.	Dausa	100	54	46	52
33.	Rajsamand	100	54	73	99
34.	Baran	100	79	74	95
# 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	

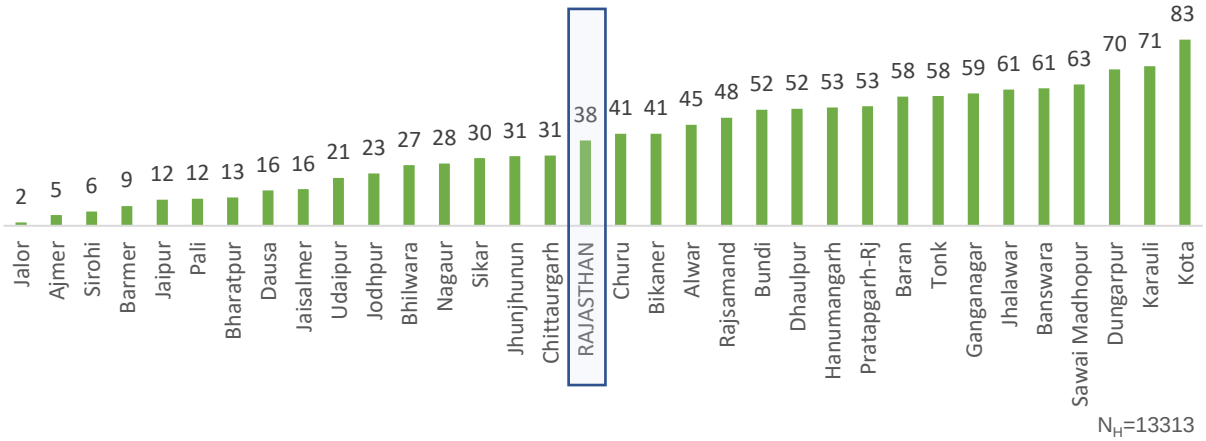
District level comparison across the districts indicate that Churu reported functionality less than the state average. The districts of Kota, Hanumangarh and Sawai Madhopur FHTC provide more than 55 LPCD of water in more than 85 percent HHs.

More than 95 percent HHs in the district of Kota reported to regularly receive water through FHTC. Regular supply of water is less than 50 percent in the districts of Jalor, Sirohi, Jodhpur, Bharatpur, Bhilwara, Dausa and Barmer.

Potability of water was found to be more than 95 percent in the districts of Kota, Karauli, Ajmer, Nagaur, Rajsamand, Dhaulpur, Udaipur, Dungarpur, Churu, and Pratapgarh. Whereas in the districts of Bharatpur and Sirohi the potability of water was found less than 50 percent.

B. District wise functionality status

Figure 12: District wise Functionality of HH tap connection



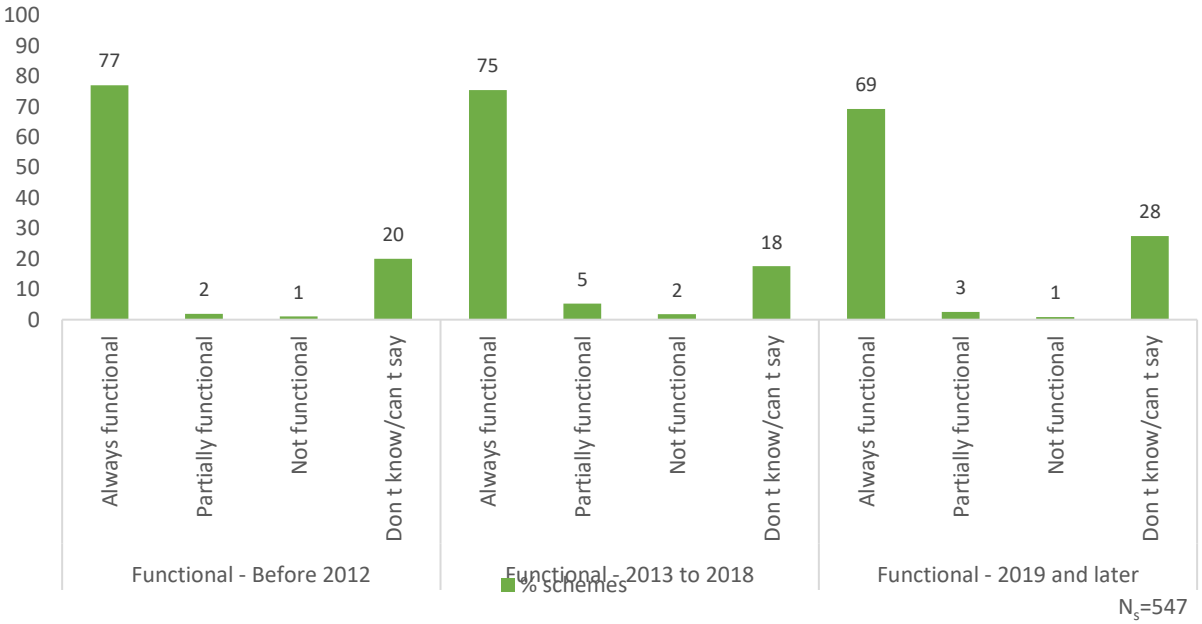
** 'Functionality' has been computed as the intersection of Adequate Quantity, Fully Regular Supply and Potable (Quality) for households wherein water supply was available at the time of survey, i.e., 13313 HHs.*

38 percent HHs in the state were found to have functional HH tap water connection. Kota district reported 83 percent functional households in the state, followed by Karauli with 71 percent functionality. In the districts of Jalor, Ajmer, Sirohi and Barmer, less than one-tenth of the households have functional HH tap water connection highlighting scope for improved service delivery.

C. Age vs functionality of schemes in the villages

More than 7 out 10 schemes were functional before 2012 and more than 7 out of 10 were functional from 2013-18 which reflects a 2-point decline and similar trend was observed from 2019 and later reflecting 6 percent decline.

Figure 13: Age vs functionality of schemes in the villages



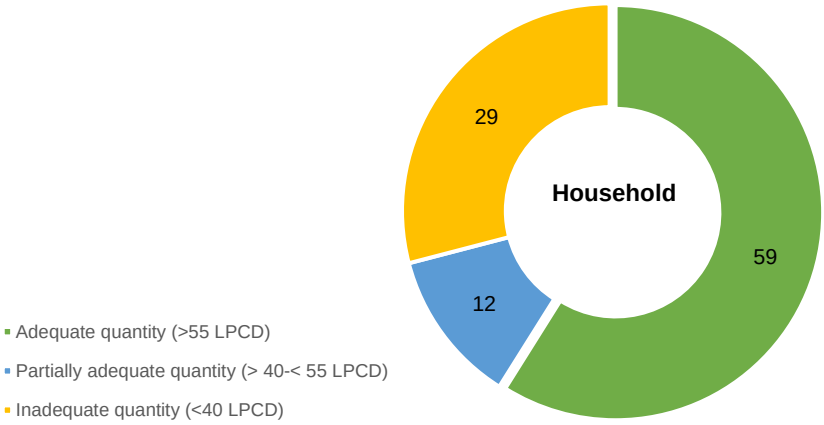
3.2. Quantity, Regularity, and Quality of Water

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)

59% HHs reported receiving adequate quantity of water (more than 55 LPCD of water)

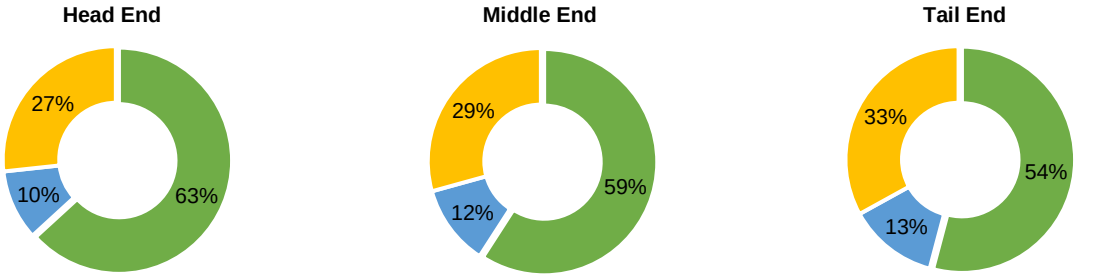
Figure 14: Quantity of water received by households



N_h=13314

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

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

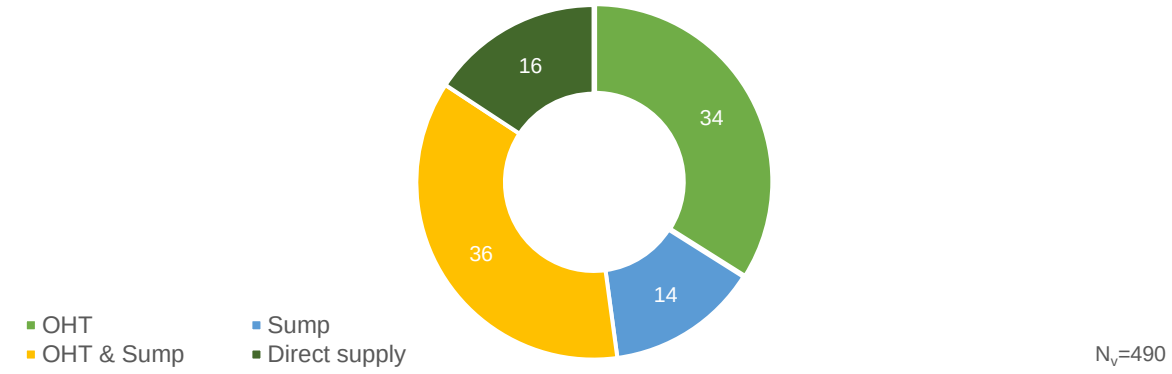


N_h=13314

The quantity of water received across the head, middle, and the tail end was observed to have declined, and more than half (59%) of the sampled households received water in adequate quantity, i.e., greater than or equal to 55 LPCD.

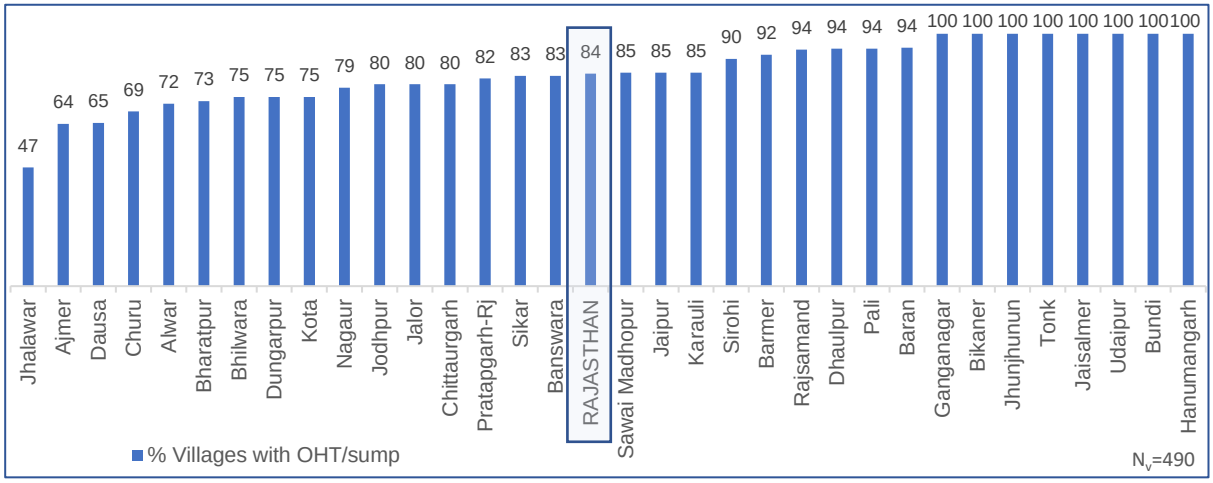
Types of water storage arrangements at village level (in %)

Figure 16: Pipe water supply storage available in village



Less than one out of five respondents in the state reported water being directly supplied. And in 84 percent reported water being stored in sump and overhead tanks.

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

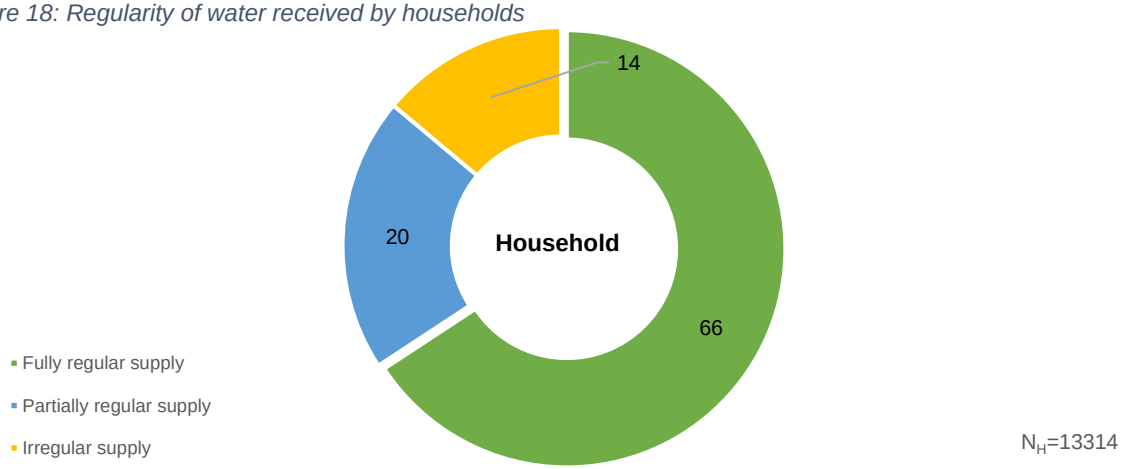


84 percent villages in the state have either an OHT or a sump for storing water for supplying to the households. Ganganagar, Bikaner, Jhunjhunu, Tonk, Jaisalmer, Udaipur, Bundi, and Hanumangarh are the districts where all the villages have either an OHT or a sump.

B. Regularity of water supply to households

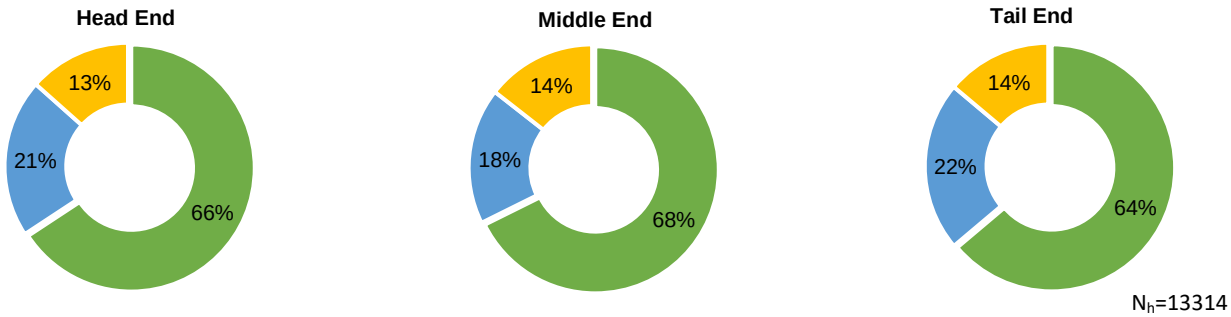
66% HHs receive a regular supply of water (as per agreed schedule).

Figure 18: Regularity of water received by households



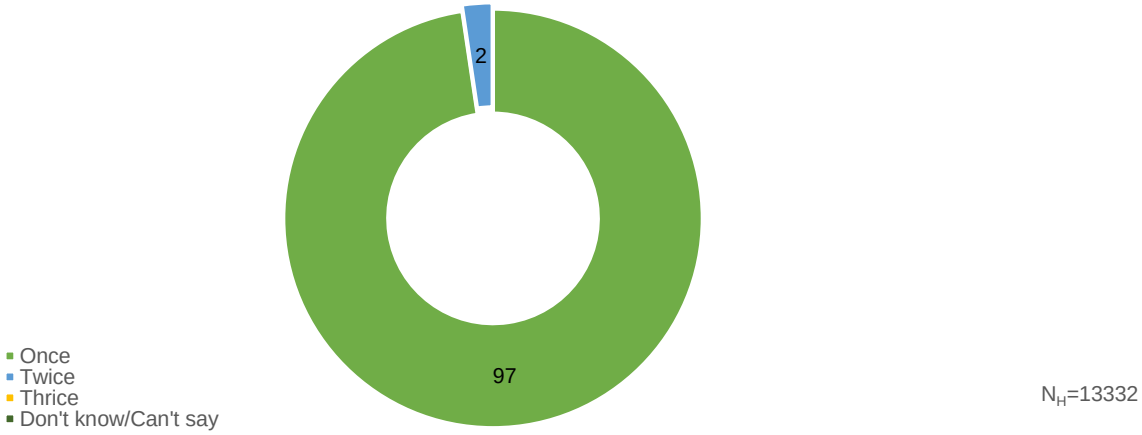
Regularity of water received across head, mid, and tail end

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.

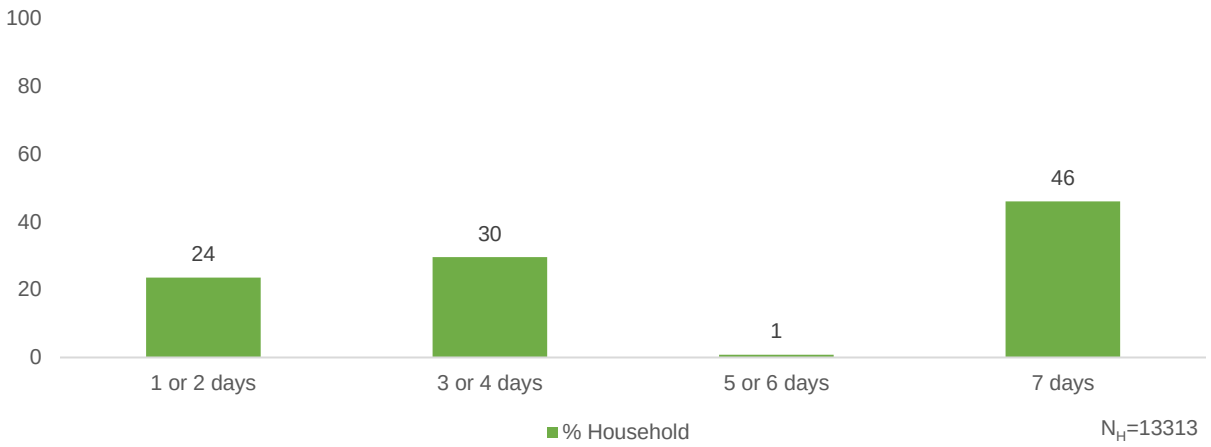
Figure 20: Average no. of times water is supplied in a day



HHs in **97 percent 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

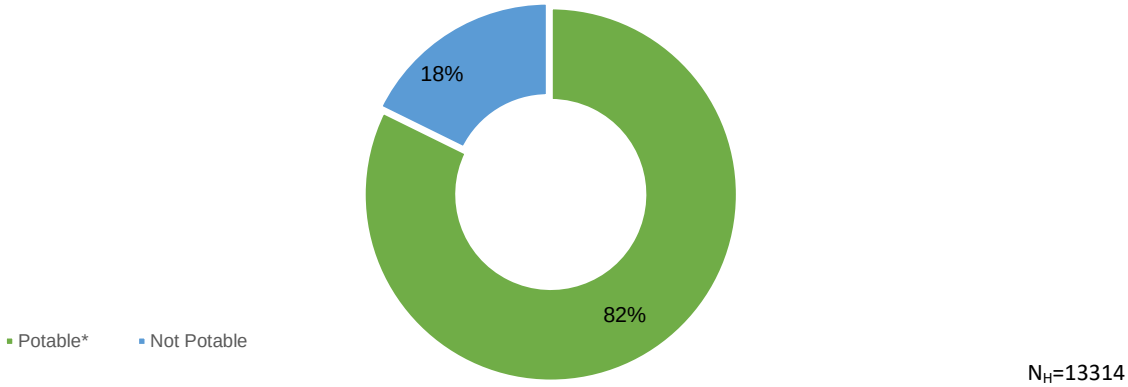
Figure 21: Average number of days households receive water supply in a week (in %)



46 percent of households receive water all seven days 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 Rajasthan where water was found on the day of the survey, the potability of water was found to be 82%.

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

Quality Parameters (N_v=490)	Water Samples Tested from Public Institutes			
	Anganwadi Centre	Health Facility	Schools	Others
pH (on-site)	99	100	99	100
Turbidity	100	97	99	99
Total Hardness	94	100	99	99
Total Alkalinity	94	98	98	100
Chloride	97	100	99	100
Ammonia	Not tested			
Iron	100	100	100	100
Nitrate	75	83	87	90
Sulphate	100	100	100	100
Total Dissolved Solids	90	98	96	99
Bacteriological Test (Absence)	100	100	100	100
Fluoride	86	89	92	100
Arsenic	Not tested			

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=13314). 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)	13314	98
Turbidity	8108	100
Total Hardness	11351	96
Total Alkalinity	11151	99
Chloride	11102	96
Ammonia	Not tested	
Iron	2199	100
Nitrate	11350	90
Sulphate	3699	100
Total Dissolved Solids	10001	94
Bacteriological Test (Absence)	4582	100
Fluoride	9980	91
Arsenic	Not tested	

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

The Residual Chlorine (RC) in the state of Rajasthan was found in 30% samples. Out of which 11% samples were having RC outside range whereas 59% samples, had no RC. Almost all the water samples passed the bacteriological contamination test. However, in 9 samples bacteriological contamination is found, out of which 5 samples had chlorine in permissible range while in 3 samples there was no chlorination and in 1 sample RC was out of range.

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 10 water quality parameters. 13929 water samples were submitted, and 11998 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	Ganganagar	Yes	382	385	353	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
2	Bikaner	Yes	442	444	437	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
3	Churu	Yes	417	416	399	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after

Table No. 6: Performance of Labs						
Sl. No	**District**	**Lab available**	**HH surveyed**	**Samples submitted**	**Report received**	**Overall lab experience**
						couple of week of data collection.
4	Jhunjhunun	Yes	392	403	391	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
5	Alwar	Yes	396	420	390	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
6	Bharatpur	Yes	426	431	421	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
7	Dhaulpur	Yes	438	448	388	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
8	Sawai Madhopur	Yes	383	433	330	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
9	Jaipur	Yes	421	449	444	Initially the lab was not accepting more than 20 sample in a day and refused to take sample on weekends and public holidays.

Table No. 6: Performance of Labs						
Sl. No	**District**	**Lab available**	**HH surveyed**	**Samples submitted**	**Report received**	**Overall lab experience**
10	Sikar	Yes	437	466	208	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
11	Ajmer	Yes	379	410	366	The labs did not have capacity to test more than 20 number of samples and did not accept more than 20 sample in a day.
12	Tonk	Yes	421	453	436	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
13	Jaisalmer	Yes	256	265	265	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
14	Jodhpur	Yes	389	414	404	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
15	Nagaur	Yes	398	405	294	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
16	Pali	Yes	397	397	299	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take

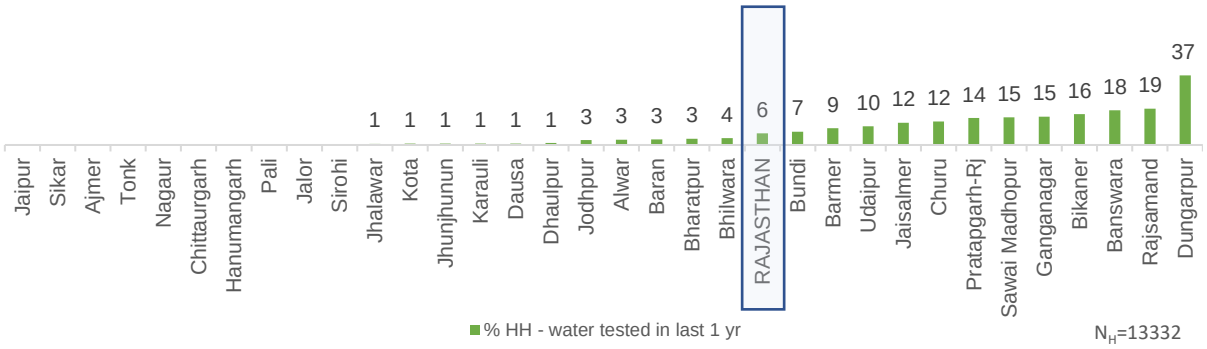
Table No. 6: Performance of Labs						
Sl. No	**District**	**Lab available**	**HH surveyed**	**Samples submitted**	**Report received**	**Overall lab experience**
						sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
17	Barmer	Yes	441	475	451	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
18	Jalor	Yes	386	405	387	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
19	Sirohi	Yes	379	398	398	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
20	Bhilwara	Yes	476	494	423	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
21	Udaipur	Yes	443	462	445	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.

Table No. 6: Performance of Labs						
Sl. No	**District**	**Lab available**	**HH surveyed**	**Samples submitted**	**Report received**	**Overall lab experience**
22	Pratapgarh-Rj	Yes	419	435	420	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
23	Chittaurgarh	Yes	423	435	360	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
24	Dungarpur	Yes	396	421	395	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
25	Banswara	Yes	381	396	391	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
26	Bundi	Yes	399	415	352	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
27	Kota	Yes	406	435	397	The labs did not have capacity to test more than 20 number of samples and did not accept more than 20 sample in a day.
28	Jhalawar	Yes	453	487	161	The labs did not have capacity to test more than 20 number of samples and did not accept more than 20 sample in a day.

Table No. 6: Performance of Labs						
Sl. No	**District**	**Lab available**	**HH surveyed**	**Samples submitted**	**Report received**	**Overall lab experience**
29	Hanumangarh	Yes	416	417	411	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
30	Karauli	Yes	380	392	372	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
31	Dausa	Yes	379	381	209	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
32	Rajsamand	Yes	402	436	431	The State Chief chemist of Rajasthan Mr. Rakesh Mathur has released a letter to accept only 20 sample in a day and take sample in glass bottles only for biological test, due to this we faced issues in initial days however after so many discussion it was sorted out after couple of week of data collection.
33	Baran	Yes	379	406	170	The lab did not accept the sample more than 20 in a day and asked team to enter only 20 sample on portal in a day which causes multiple entries of sample in WQMIS

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

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

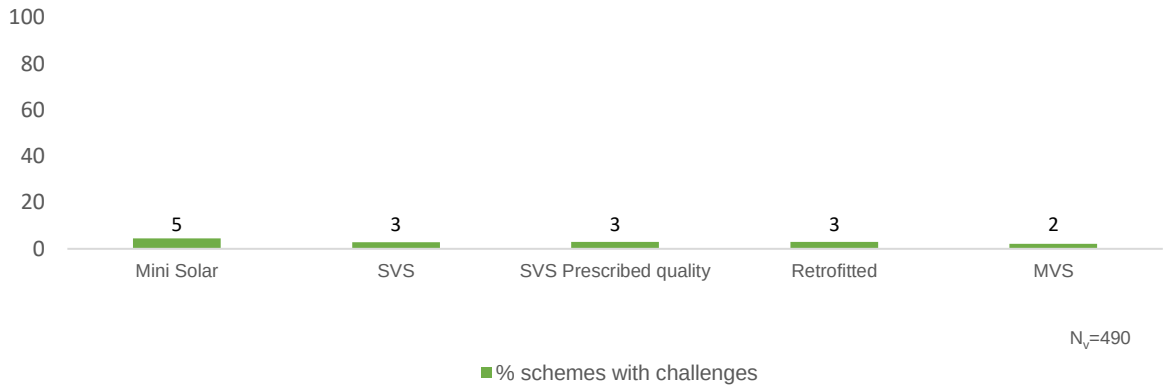


3.3. Operation and Maintenance (O&M) of schemes at village level

Schemes reported to have faced challenge in village

The mini solar scheme faced the most challenges (5%) in comparison to the other schemes in the state

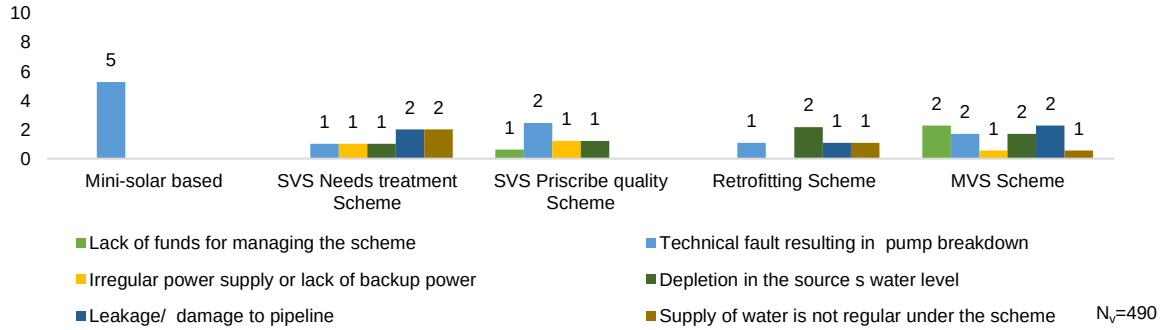
Figure 23: Schemes reported to have faced challenge in village



Type of challenge faced by the schemes

The most faced problem varied from one scheme to another. However, 'Technical fault resulting in pump breakdown' is a problem that was found unanimously in all the schemes.

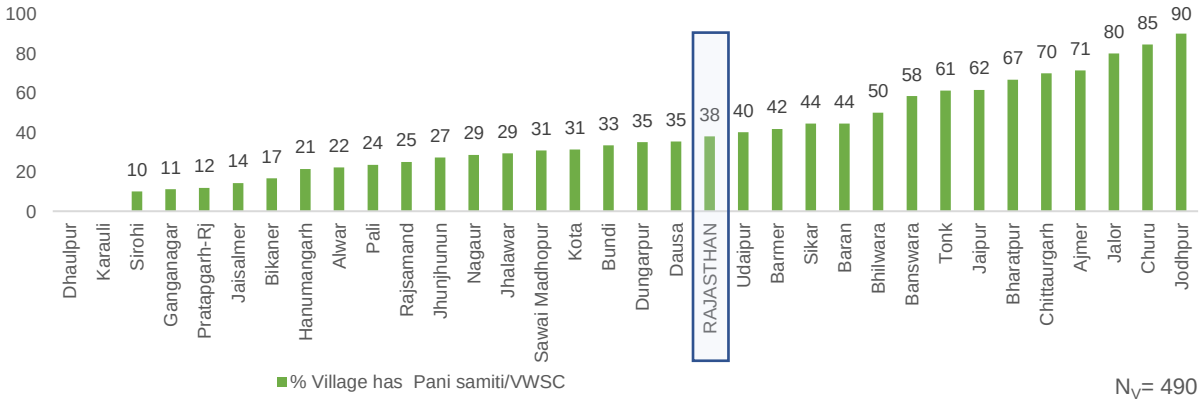
Figure 24: Type of challenge faced by the schemes



A. Presence of VWSC/Pani Samiti

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

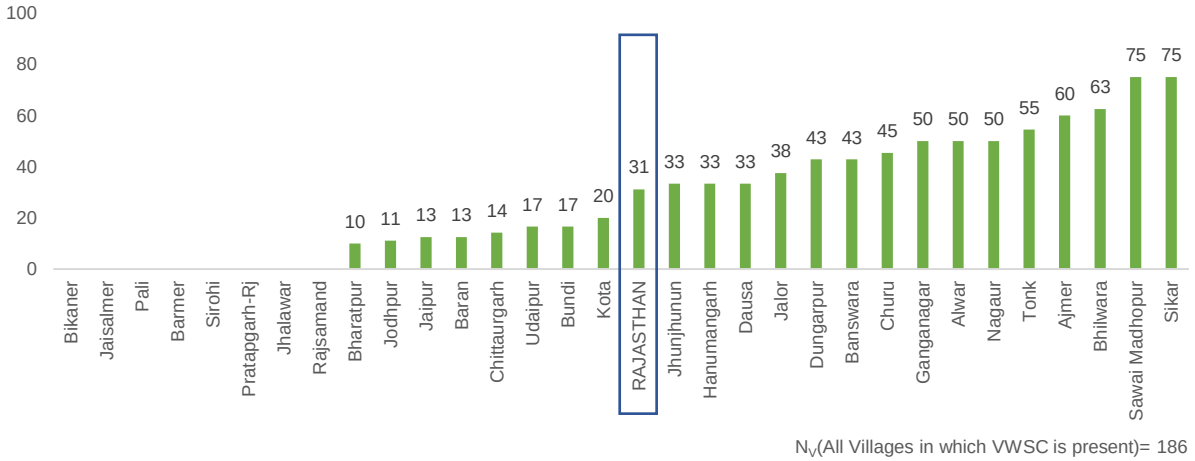
Figure 25: Villages where VWSC/ Pani Samiti is present



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

About 31 percent of the VWSC/Pani Samitis in Rajasthan were having more than 50 percent female members.

Figure 26: VWSC/ Pani Samiti with more than 50 percent female members

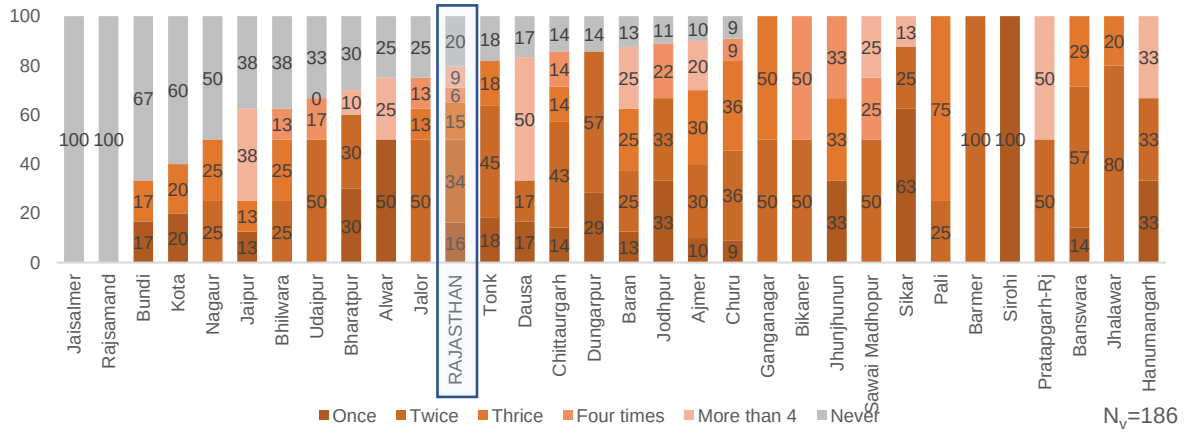


N_V(All Villages in which VWSC is present)= 186

C. VWSC Meetings in last one year

Across the villages in the state, that reported to have VWSC/Pani Samitis (186 villages), two meetings in last one year was reported the most (34 percent)

Figure 27: VWSC meetings held in last one year

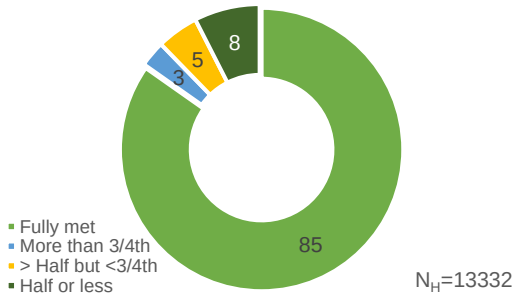


N_V=186

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

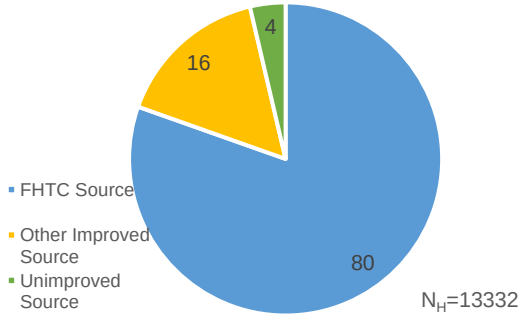
85% of HHs reported that their daily requirement of water was being met by HH tap connections

Figure 28: Daily household's requirement of water being met by FHTC



80% HHs reported HH tap connections as their primary source of drinking water

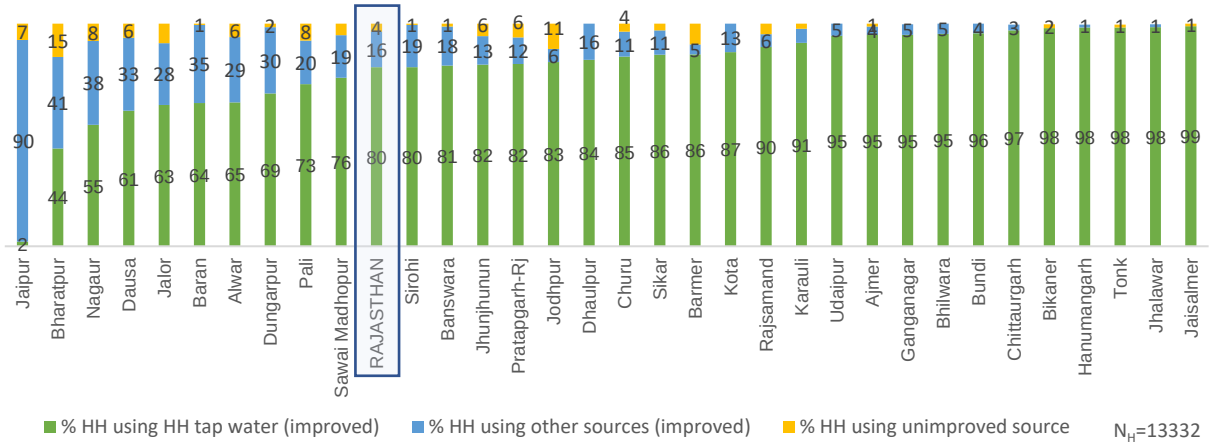
Figure 29: Households reported FHTC as primary source of drinking water



More than 4 out of 5 (85 percent) HHs reported their daily requirement of water being fully met by the HH tap connections. And 80 percent HHs reported used household tap connection for drinking water (primary source). About 16 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, **96 percent of HHs** reported using improved primary source of drinking water, out of which **80 percent of HHs** reported HH tap water as their primary source.

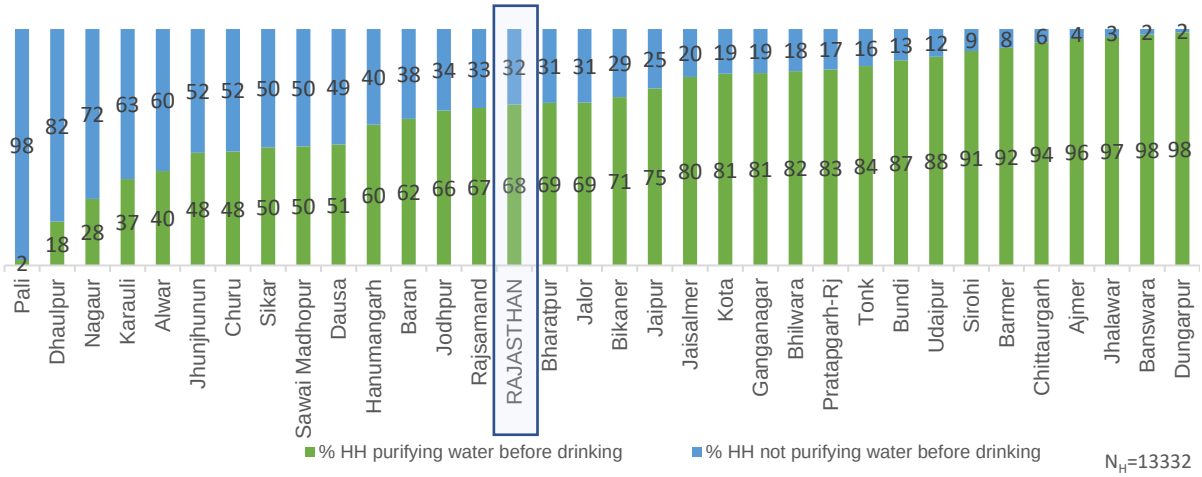
Figure 30: District wise distribution of household's reported FHTC as primary source of drinking water



A. Households who practice of purifying water before drinking

Practice of purifying water before drinking was reported the most in Dungarpur (98 percent) where 69 percent HHs reported using HH tap water as primary drinking water source, while the least was reported in Pali (2 percent) where 73 percent HHs reported using HH tap water as a primary drinking water source.

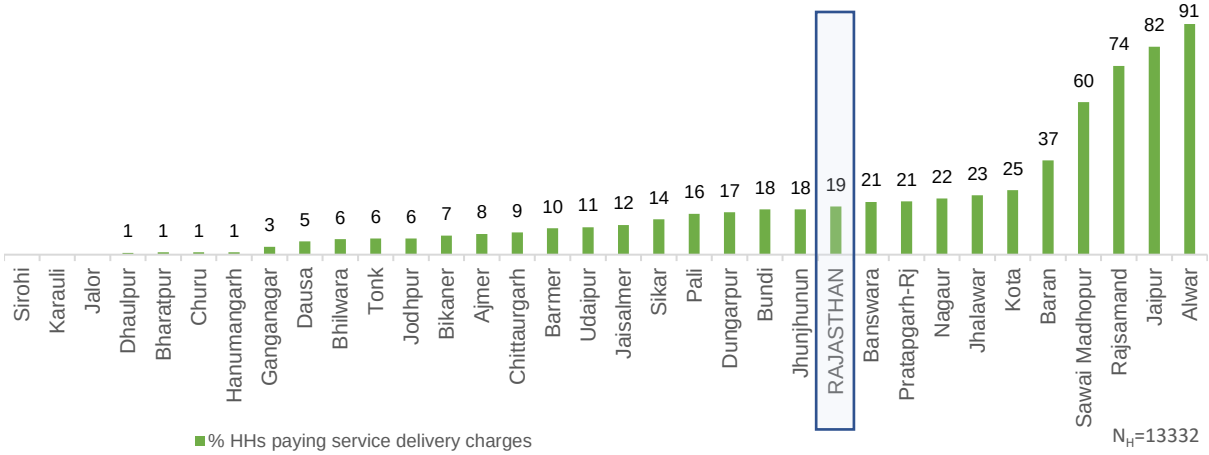
Figure 31: Households who practice of purifying water before drinking



B. Households paying water service delivery charges

In Rajasthan, around 19% of the sampled households were found to be paying service delivery charges, Alwar being the district with the highest percentage of such households (91%) and Jalor, Karauli and Sirohi being the districts in which households reported not paying any water service delivery charges.

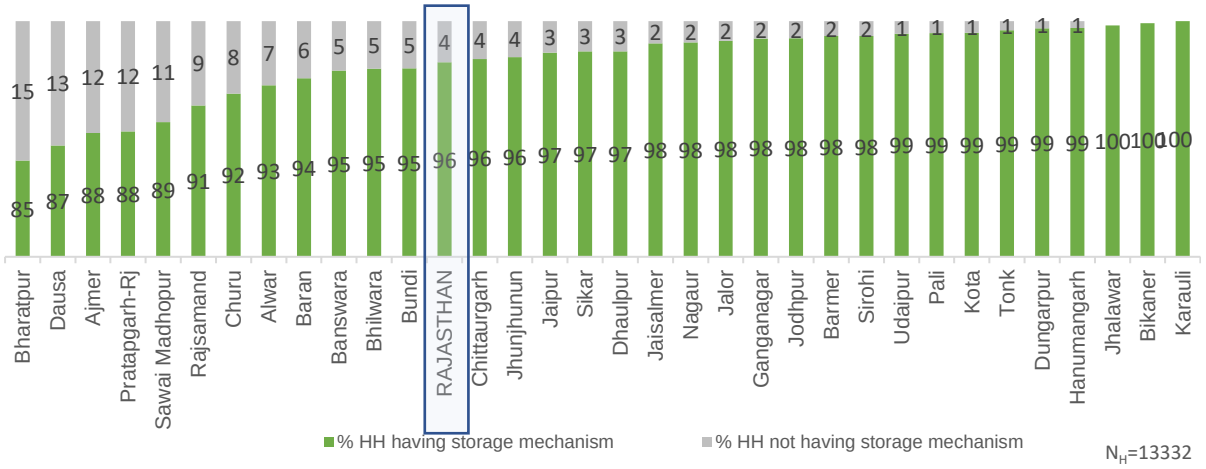
Figure 32: Households paying water service delivery charges



C. Storage mechanism used by households

Overall, 96% households in Rajasthan were found to use some mechanism to store water in the household.

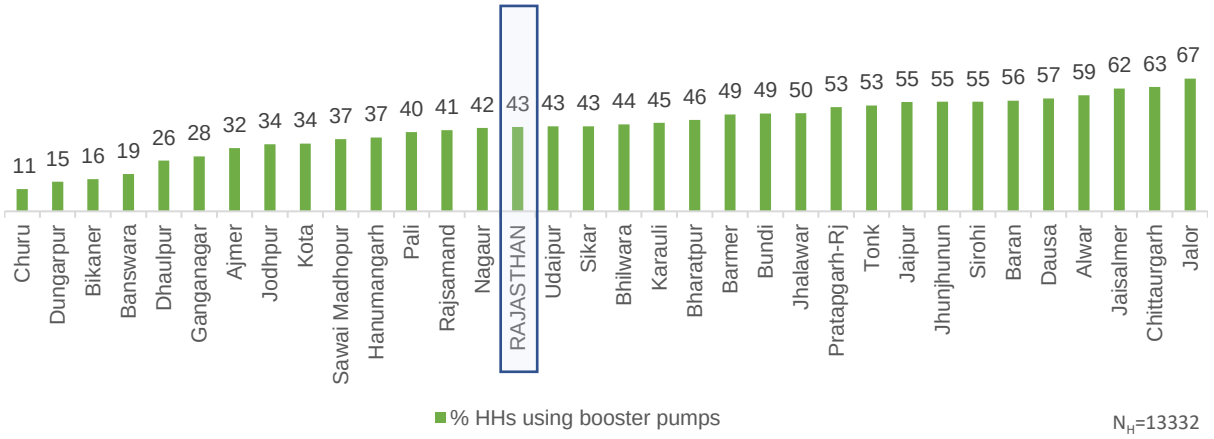
Figure 33: Households reported using some storage mechanism



D. Households using booster pumps

Overall, **43 percent HHs** reported using booster pumps to maximize the water flow through their piped water connections. Jalor and Chittaurgarh reported 67 percent and 63 percent of HHs using booster pump in the state while Churu reported only 11 percent

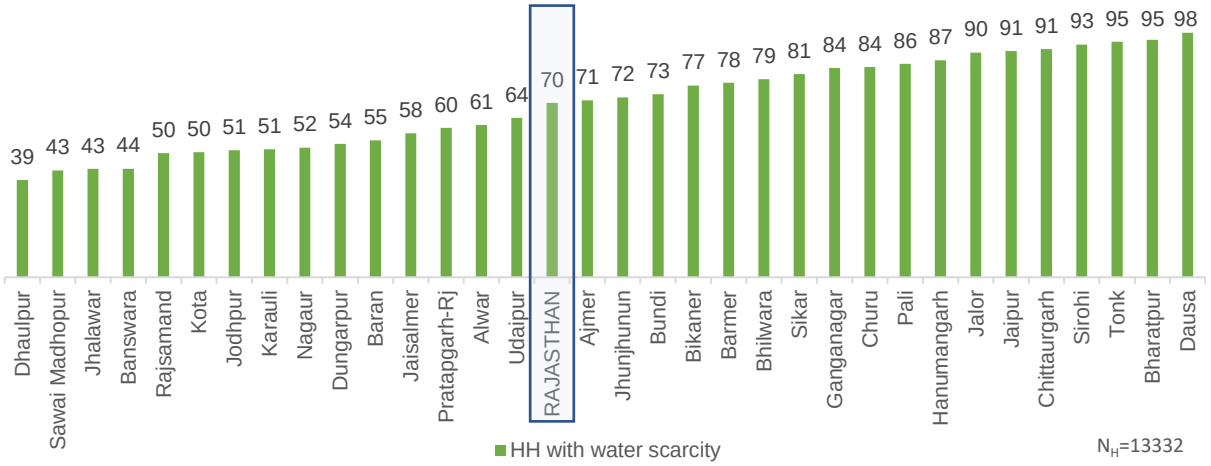
Figure 34: Households reported to use of booster pumps



E. Households who faced shortage of water

In the state, **70% HHs** faced shortage of water during any time of the year.

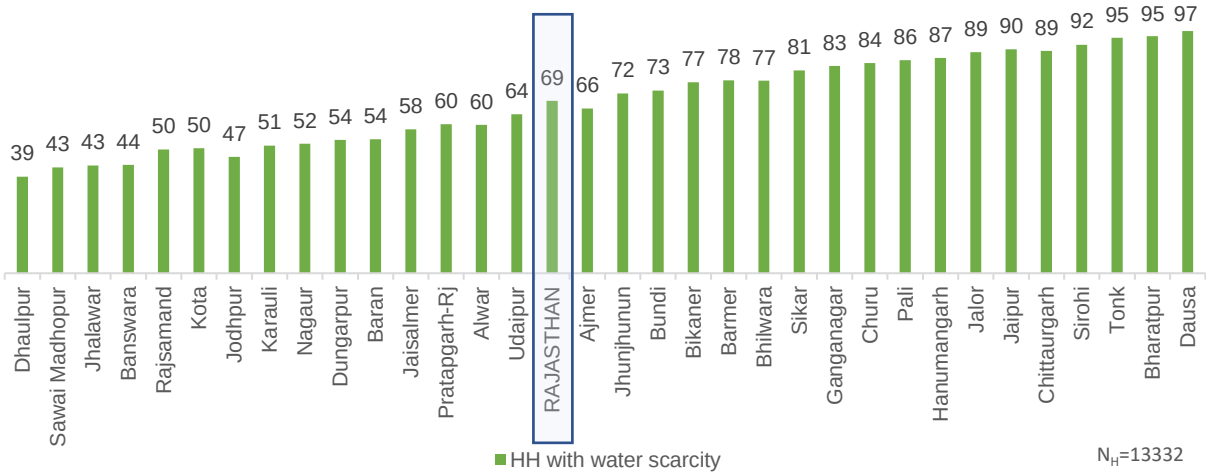
Figure 35:Households who faced water scarcity



F. Households with coping mechanism during scarcity of water

In the state, **70 percent HHs** faced shortage of water during any time of the year, while **69 percent HHs** reported having some mechanism to cope with scarcity of water.

Figure 36: Households reported to have some mechanism to cope with scarcity of water

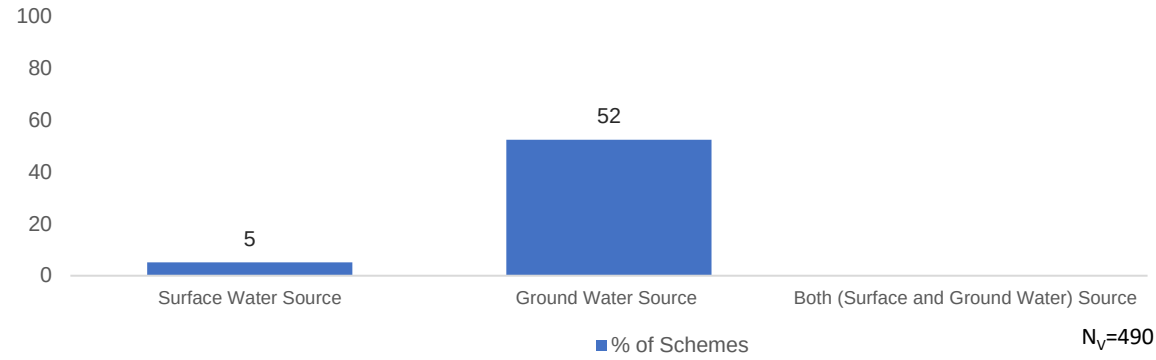


3.5. Source sustainability at the village level

Schemes based on surface and ground water

5% of schemes reported to be based on surface water source while **52% of schemes** reported to based of ground water sources

Figure 37: Schemes based on water source in village

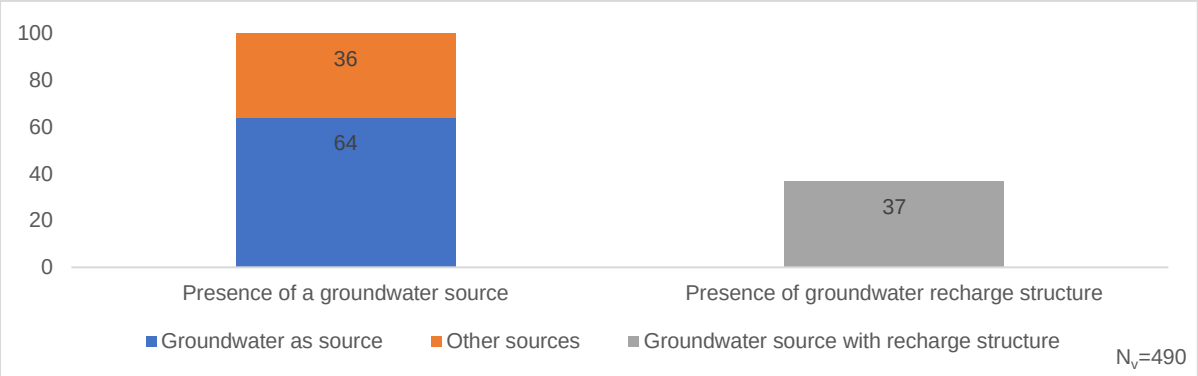


**'Surface Water Source' is Stream, Spring, Glacier, River, lake, pond etc. and Groundwater Source is open well, borewell, tube well, handpump, spring, etc.*

Villages reported having presence of a groundwater source

In the state, **64 percent villages** reported the presence of groundwater sources like improved dug wells and borewells. Out of which, 37 percent of villages reported (i.e., 181 villages) reported having a recharge structure.

Figure 38: Villages reported the presence of groundwater sources and among those how many reported to have a recharge structure

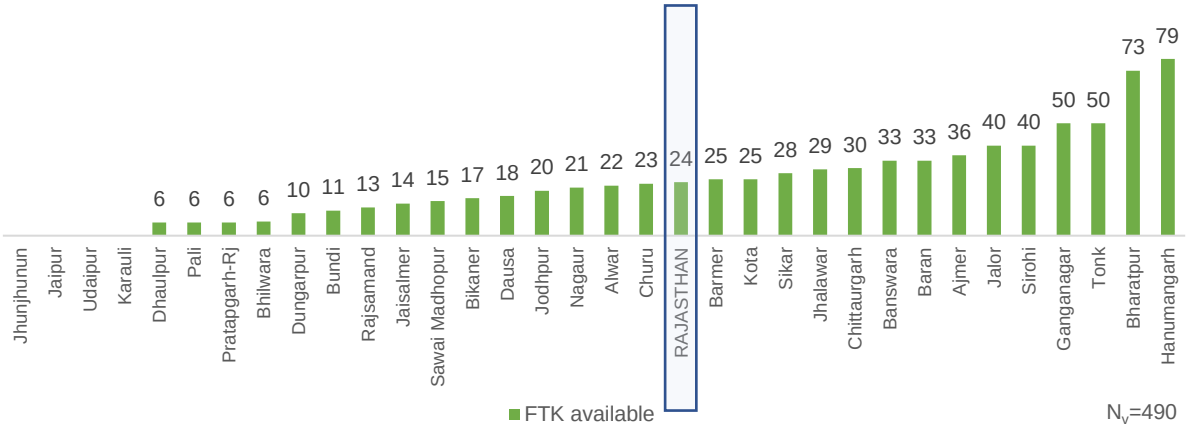


3.6. Water quality monitoring and surveillance in the villages

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

With regards to water quality testing in the village by VWSC, 24 percent villages in the state reported having available field test kits. Hanumangarh reported 79 percent villages having available field test kits for water quality testing, while Jhunjhunun, Jaipur, Udaipur and Karauli reported 0 percent.

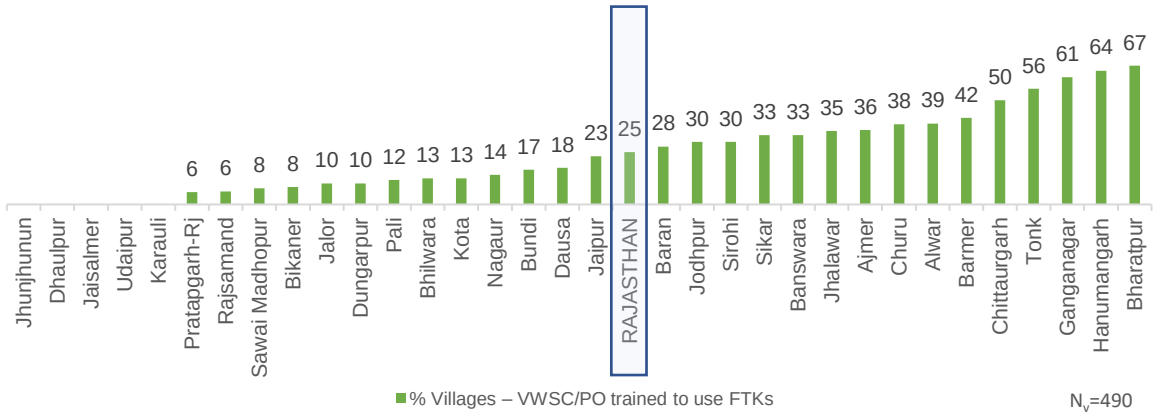
Figure 39: Availability of field test kits with VWSC/ Pani Samiti



B. VWSC/Pani Samiti trained to use field test kits

Overall, **25 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. Bharatpur reported 67 percent VWSC/Pani Samiti or pump operator trained to use field test kits while Jhunjhunun, Dhaulpur, Jaisalmer, Udaipur and Karauli reported no such villages.

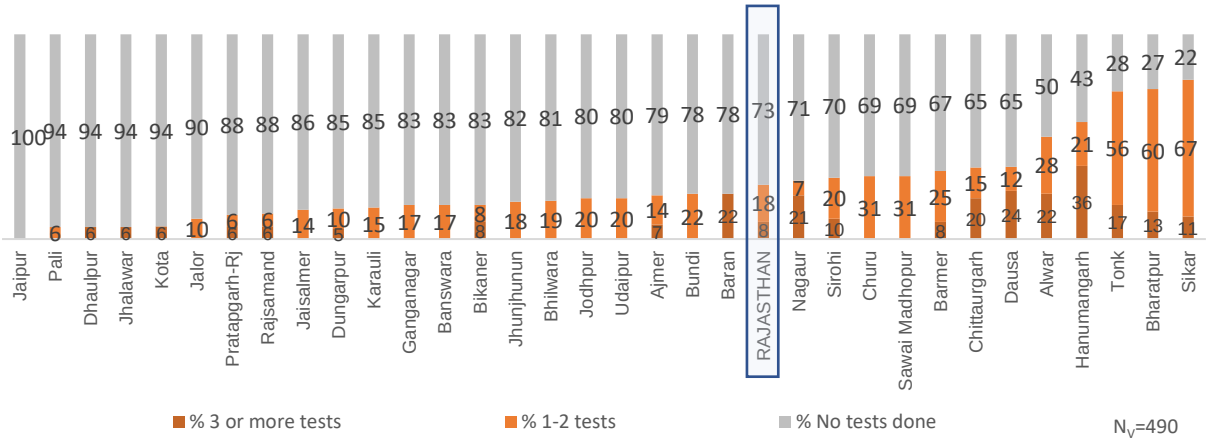
Figure 40: Persons trained to use field test kits



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

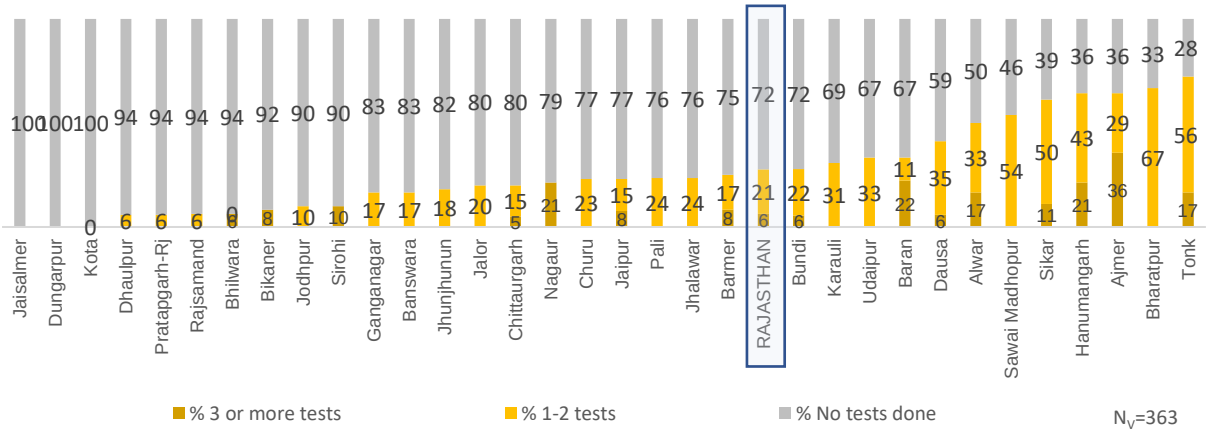
Across the state, 8 percent of the total sampled villages reported that the quality of water (at different points in the respective villages) was checked at least three times using FTKs in last one year. Among the districts, Hanumangarh had the highest proportion of such villages, wherein 36 percent of its villages reported using FTKs three or more times in last one year.

Figure 41: Frequency of testing using FTK in villages



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

Figure 42: Frequency of lab testing

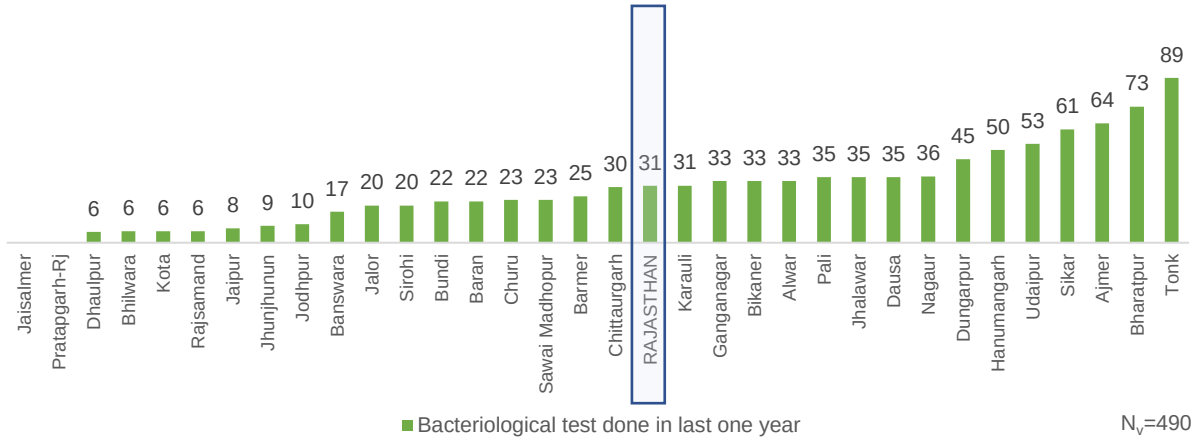


Across the state, 6 percent of the total sampled villages reported that the quality of water (at different points in the respective villages) was checked at least three times through laboratories in last one year. Among the districts, Ajmer had the highest proportion of such villages, wherein 36 percent 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

With regards to water quality testing in the village by VWSC, **31 percent villages** in the state reported having bacteriological test done in the last one year.

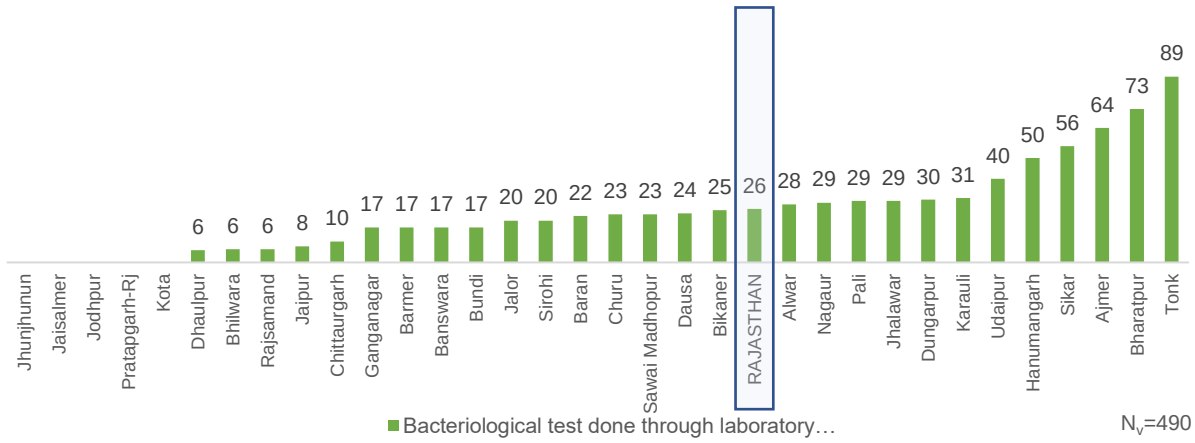
Figure 43: Percent villages in which Bacteriological test was done in the last one year



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 26 percent of sampled villages. 89 percent sampled villages from the districts Tonk reported to have had bacteriological tests done through laboratories in last one year.

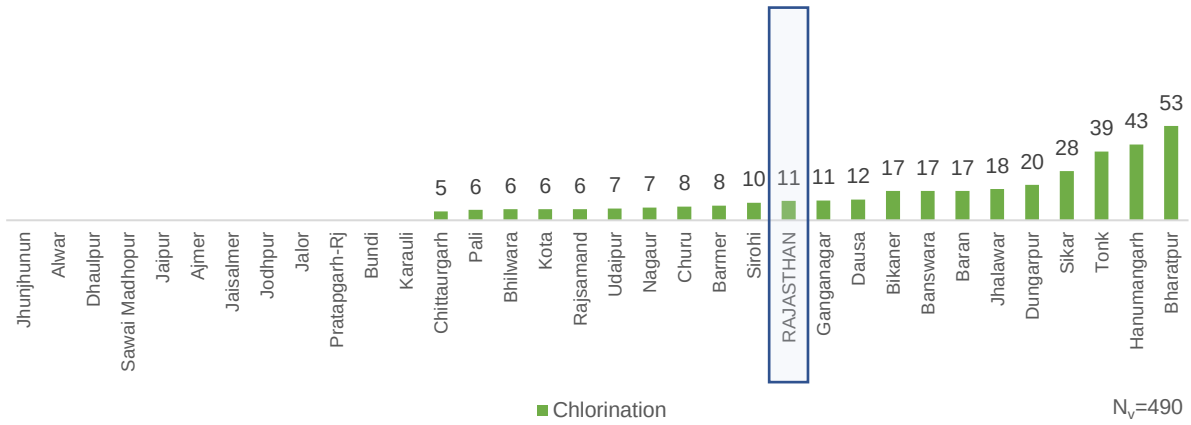
Figure 44: Bacteriological test done through laboratory testing in the last one year



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 30 percent households tested to have for presence of chlorine.

Figure 45: Villages having a mechanism for chlorination

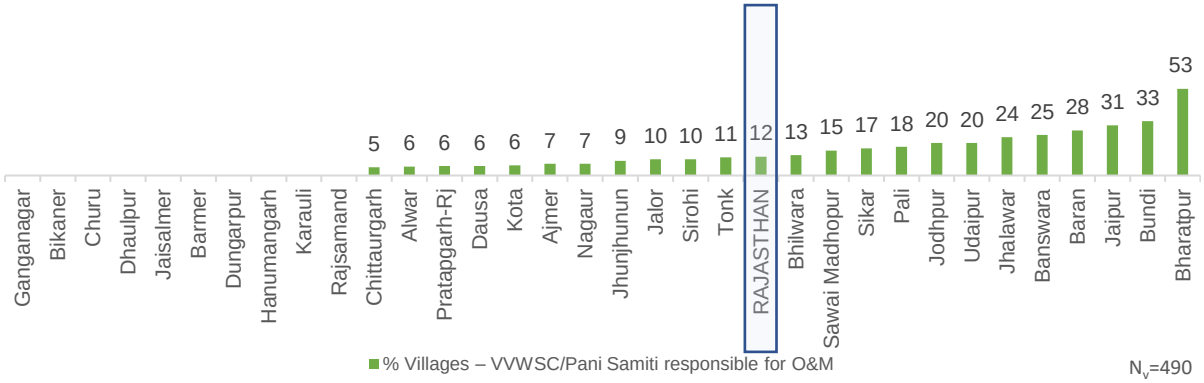


3.7. Management of water service delivery at village level

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

In the state, **12 percent villages** that have VWSC/Pani Samiti reported to be responsible for operation and maintenance of PWS. Ganganagar, Bikaner, Churu, Dhaulpur, Jaisalmer, Barmer and Dungarpur districts reported that VWSC/Pani Samiti are not responsible for operation and maintenance of PWS.

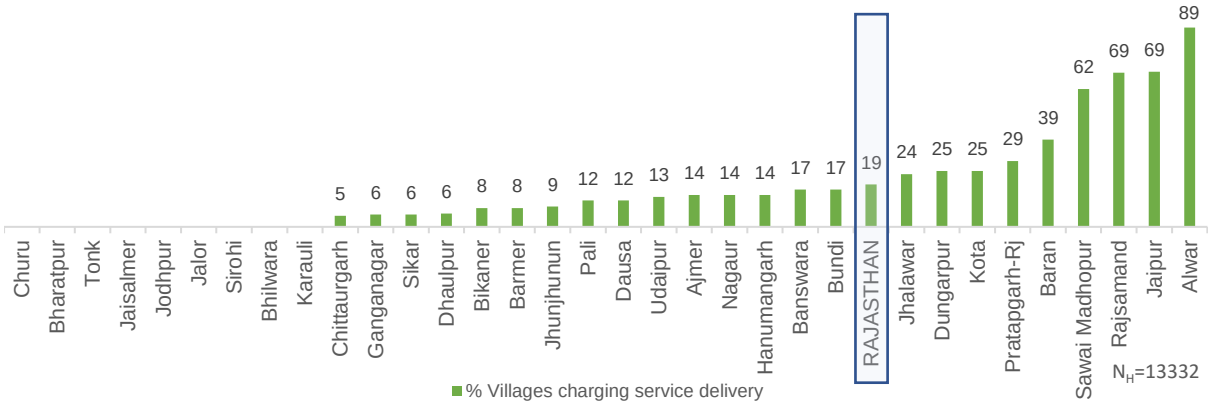
Figure 46: VWSC/Pani Samiti responsibility for O&M of PWS schemes



B. Villages levying water service delivery charges from households

Overall, **19 percent of villages** in the state levy charge for water service delivery to households whereas **19 percent HHs** reported paying water service delivery charges at the households.

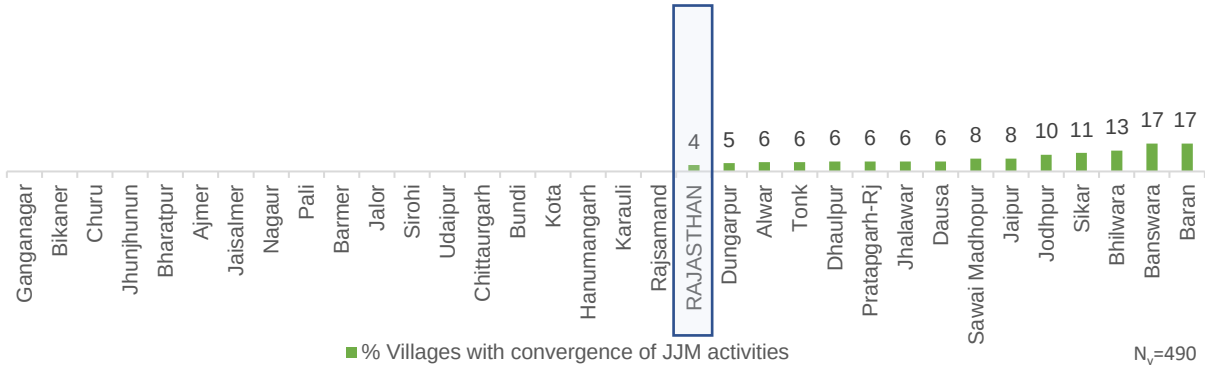
Figure 47: Villages levying water service delivery charges from households



C. Convergence of JJM activities with other schemes in villages

In the state, only **4 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.

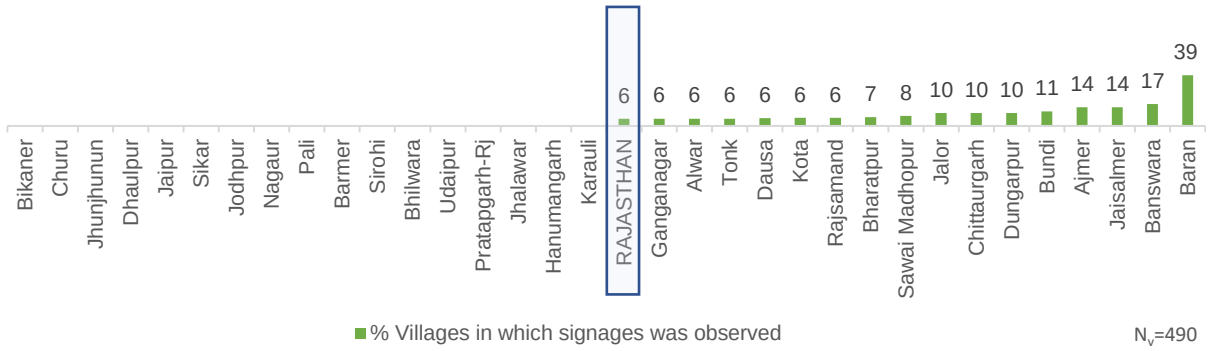
Figure 48: Village reported convergence of JJM activities with other schemes in the village



D. Villages where signages

Signages about JJM were observed in 6 percent of the sampled villages. District Baran had the highest proportion of villages where signages were observed (39 percent).

Figure 49: Villages in which signages about JJM was observed

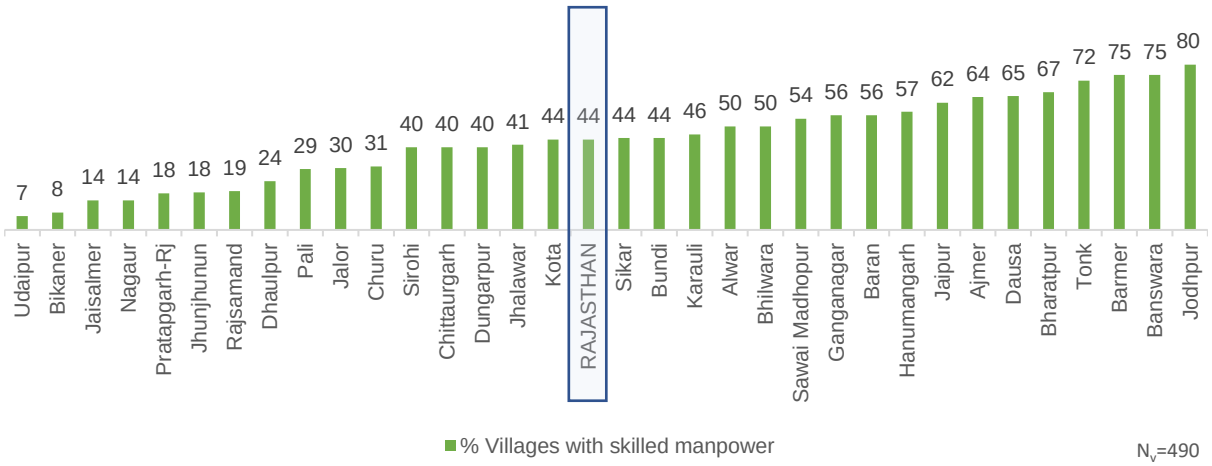


3.8. Status of Operation & Maintenance

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

Across the state, **44 percent villages** in the reported having identified skilled manpower for O&M of PWS schemes, the most reported to be in Jodhpur (80 percent) and the least in Udaipur (7 percent)

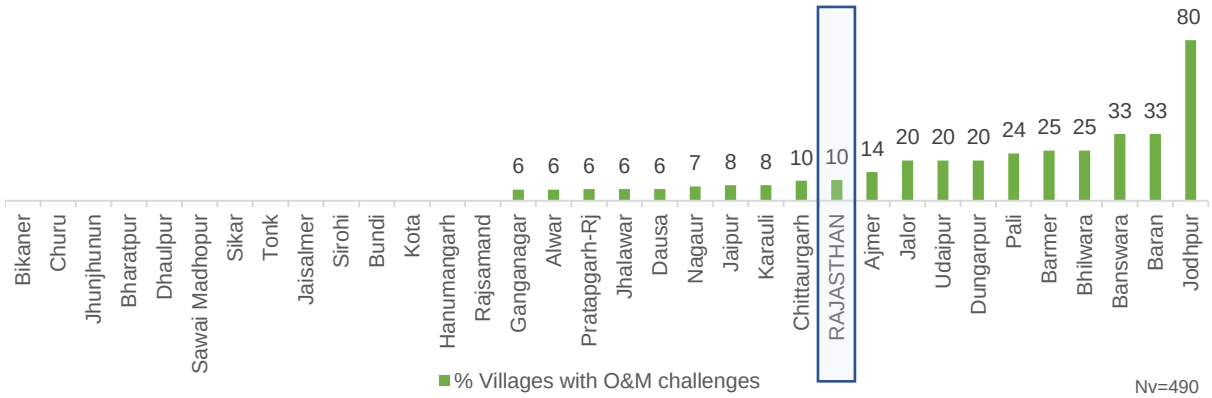
Figure 50: Villages reported having skilled manpower for O&M of PWS schemes



B. Villages with O&M challenges

In the state, **10 percent of villages** in the state reported to have faced challenges with respect to O&M of PWS schemes

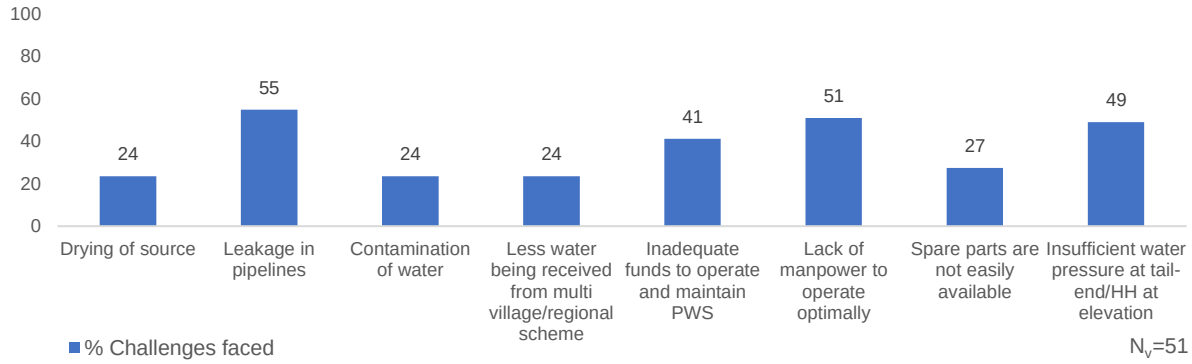
Figure 51: Villages reported having faced O&M challenge



C. Details of challenges faced

Out of the 10 percent of villages that had faced challenges with respect to O&M of PWS schemes (51 villages), 'leakage in pipelines' was attributed the most – at 100 percent.

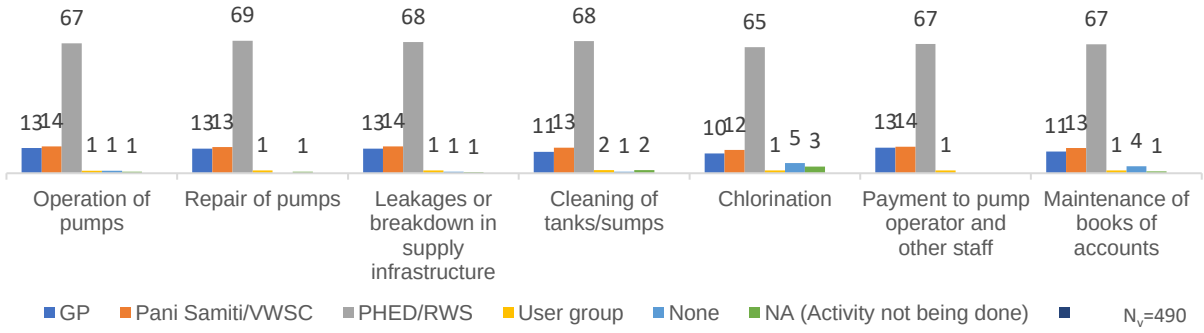
Figure 52: Details of O&M challenges faced by village



D. Responsible for O&M

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

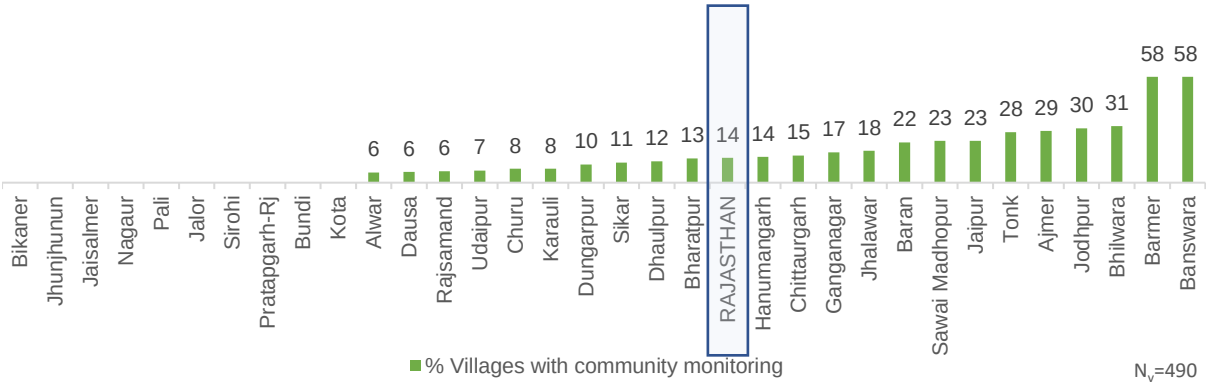
Figure 53: Different bodies responsible for O&M



E. Villages with community level monitoring of water wastage

14 percent of villages in the state reported to have community level monitoring of water wastage

Figure 54: Villages reported having community level monitoring of water wastage

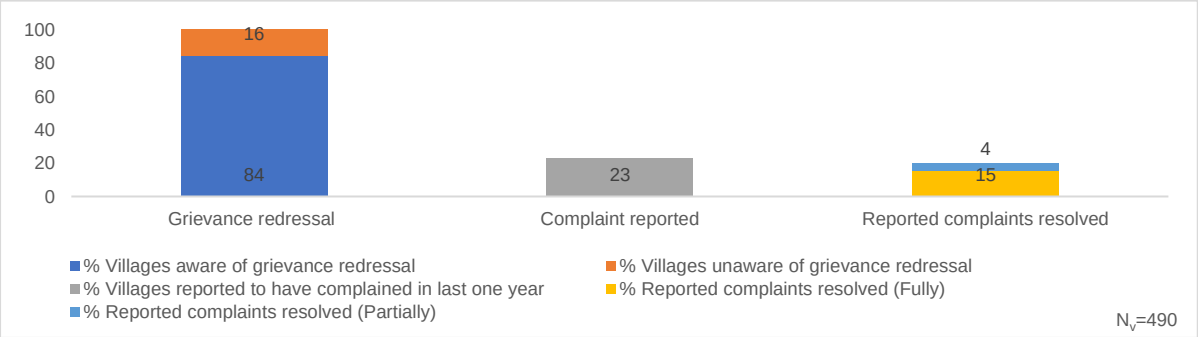


3.9. Status of service delivery related grievances and redressal

A. Village level

Grievance redressal at village

Figure 55: Reporting of grievance redressal at village level

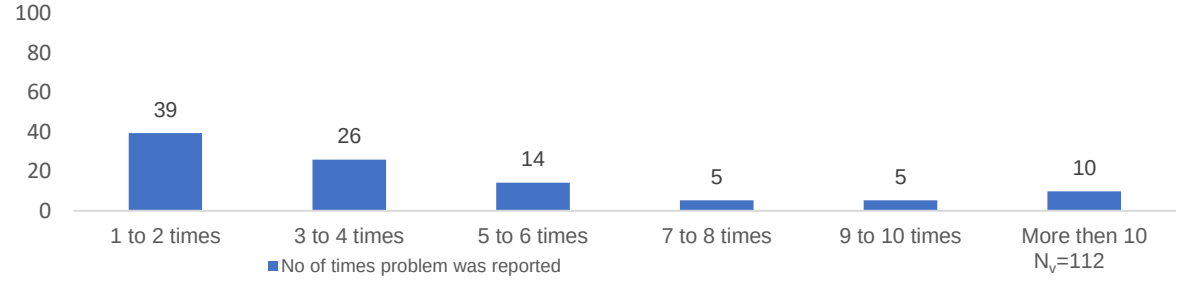


In the state, **84 percent of villages** reported that they are aware of any grievance redressal mechanism, but only 23 percent HHs have reported a complaint in the last one year amongst which 15 percent reported that the complaints are fully resolved while 4 percent of complaints have been partially resolved.

Problem reported in last 1 year

Among the villages who reported a complaint (i.e. 112 villages), 10 percent villages have reported a complaint more than 10 times in the last one year, while 39 percent reported a complaint at least once or twice.

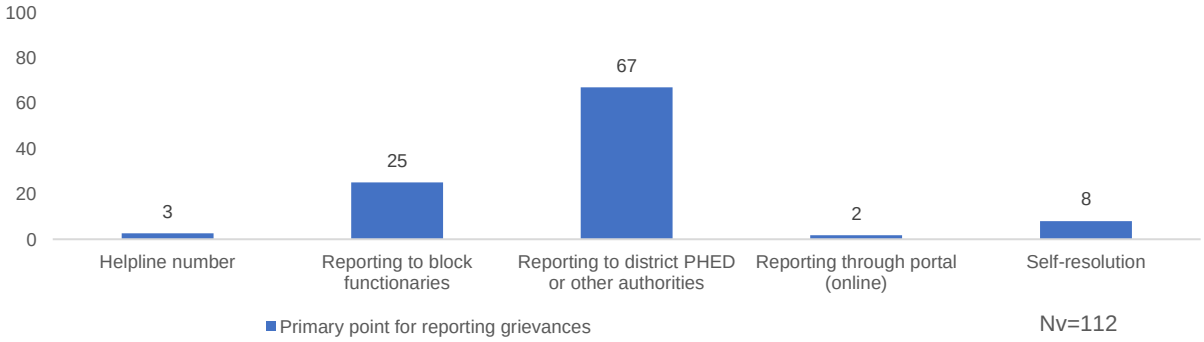
Figure 56: Number of times villages have reported grievance in last 1 year



Primary points for reporting grievances and key problems

Among those who reported complaint (i.e., 23% village, 112 villages), **67% of villages** reported that they report their grievances to **PHED** beside other reporting-points

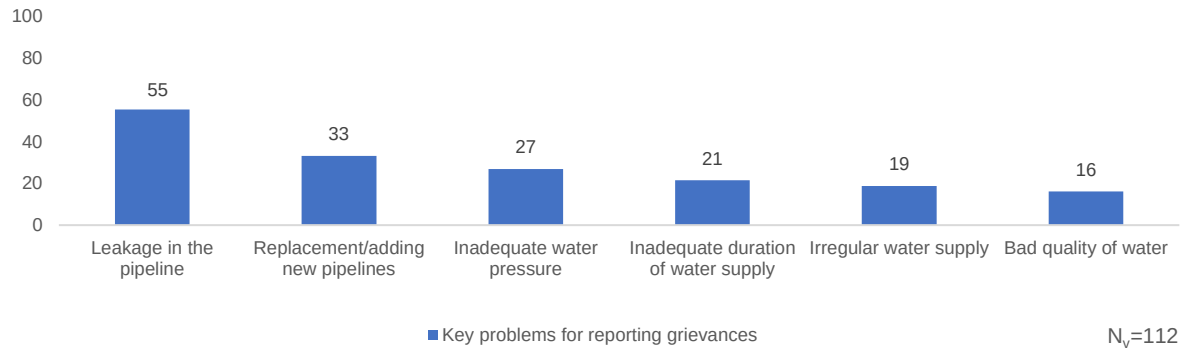
Figure 57: Primary points for reporting grievances by village



Key problems for reporting grievances

Overall, among those who reported complaint (i.e., 23% HHs, 112 villages) **80% of villages** reported that **leakage in the pipeline** is their most encountered problem for reporting grievances

Figure 58: Key problems reported by village

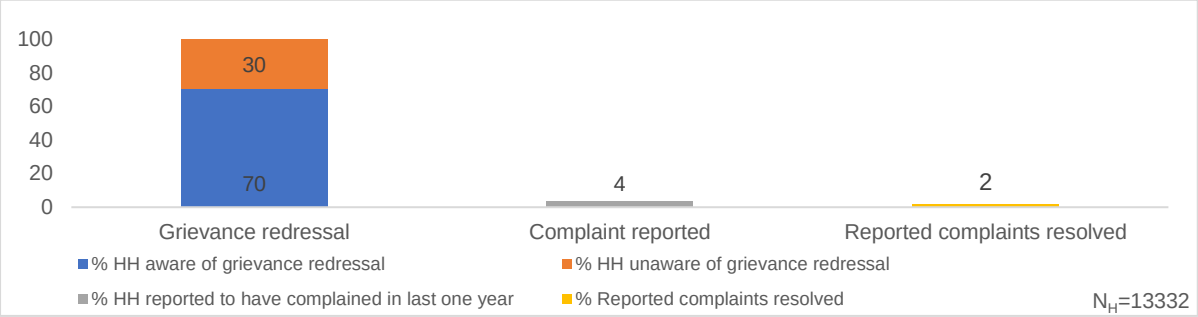


B. Household level

Awareness of grievance redressal at household

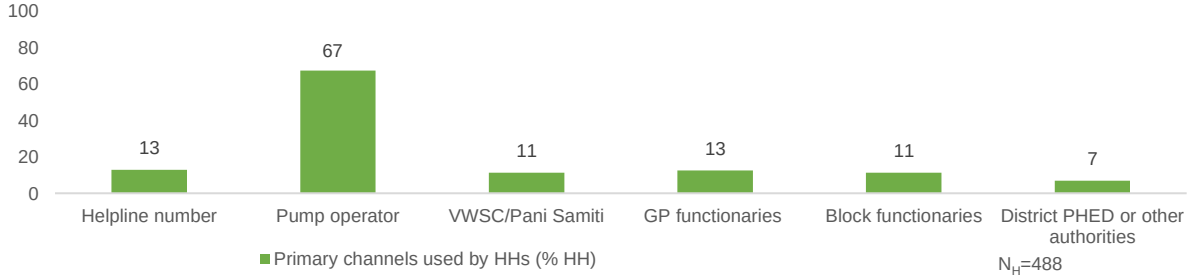
In the state, **70 percent of HHs** reported that they are aware of any grievance redressal mechanism w.r.t. HH tap water through PWS, but only 4 percent HHs have reported a complaint in the last one year and only 2 percent of complaints have been resolved.

Figure 59: Reporting of grievance redressal at household level



Primary channels for reporting grievances by households

Figure 60: Primary channels for reporting grievances by households

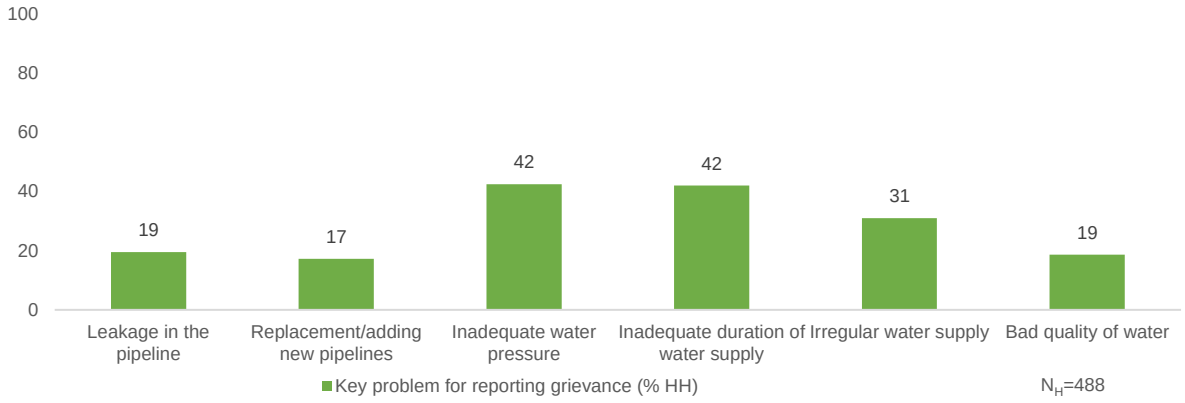


Among those who reported complaint as shown in the above graph (i.e., 4% HHs, 488 HHs), **67%** of the HHs reported their complaints to the **pump operators** beside other reporting-channels

Key problems for reporting grievances

Overall, among those who reported complaint (i.e., 4% HHs, 488 HHs) **42%** of the HHs that reported problems was of **inadequate water pressure,** and **duration of water supply** beside other problems

Figure 61: Key problems reported by households

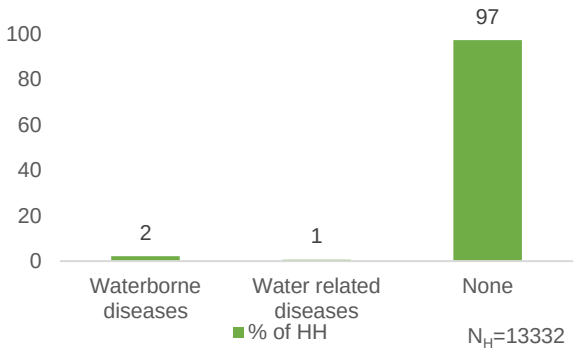


3.10. Perception of HHs on Outcome Indicators

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

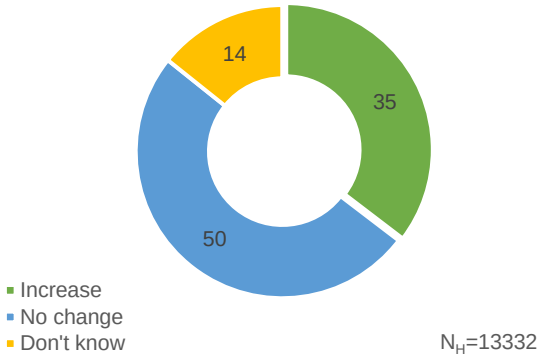
Across the state only 2% HHs reported having an incidence(s) of water borne and 1% of having water related diseases in last one year. The cases recorded were of Dysentery, Diarrhoea, Cholera and Typhoid

Figure 62: Household reported incidence of water borne diseases in last one year



B. Change in employment days since FHTC programmes/schemes

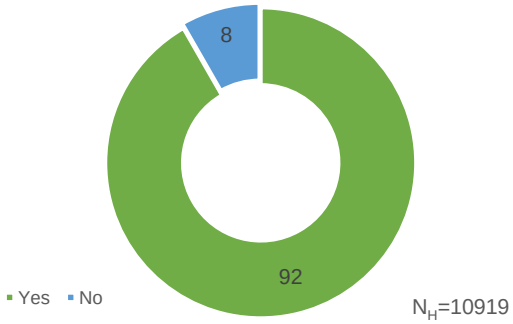
Since having a functional HH tap connection, 35% HHs across the state has reported that there has been a change in the no. of employment days of the adult HH members while 50% HHs reported no change



C. Reduction in time and effort in collecting water

Out of the HHs reported (i.e. 10919) that female members used to fetch water before HH tap connection, 92% reported that post installation of HH tap connection it helped reduction of time and effort in collection of water

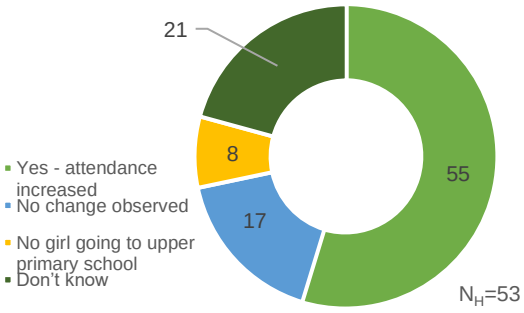
Figure 63: Households reported reduction in time and effort in collecting water



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

Across the state, 55% HHs reported that since having a functional HH tap connection the attendance of the girls going to schools increased, while 17% 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

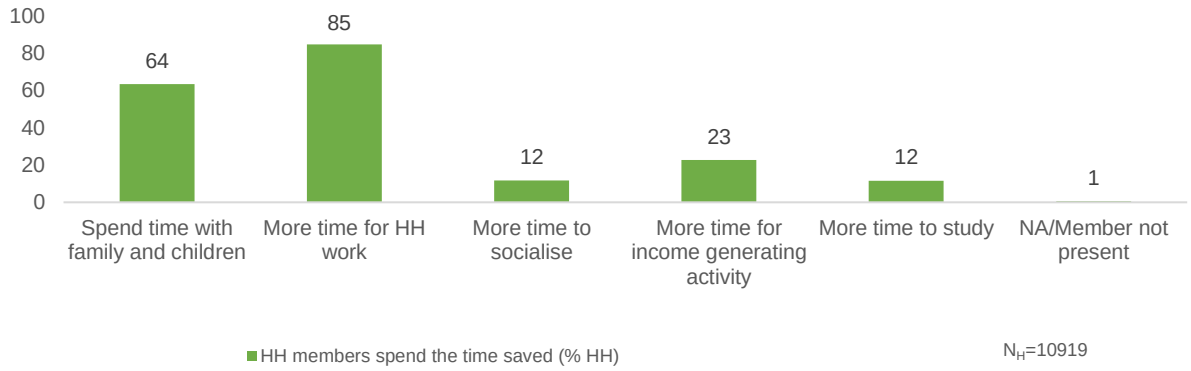
Figure 64: Households reported increase of attendance of girls going to upper primary school



E. Utilization of time saved by households post installation of HH 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 (85 percent).

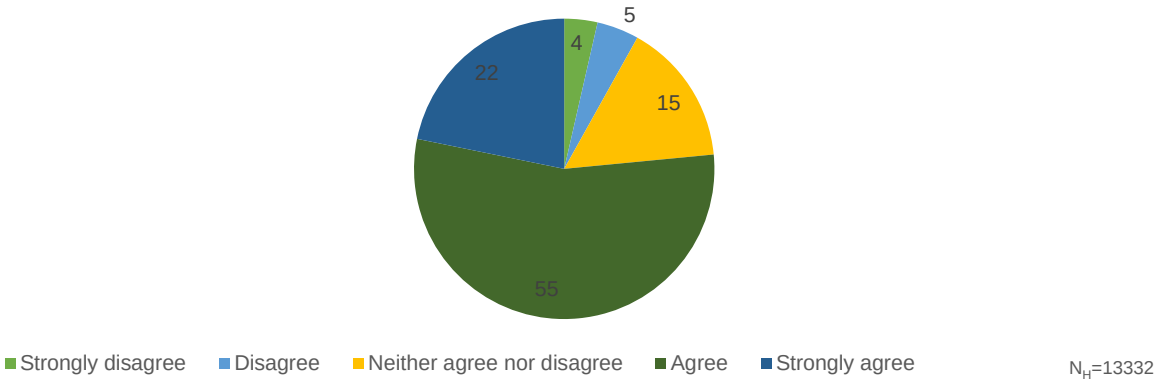
Figure 65: Utilization of time saved by households post installation of HH tap connection



F. Change in social status

Sense of pride and positive change in social status was reportedly realized by 22 percent of HHs post the installation of HH tap connections.

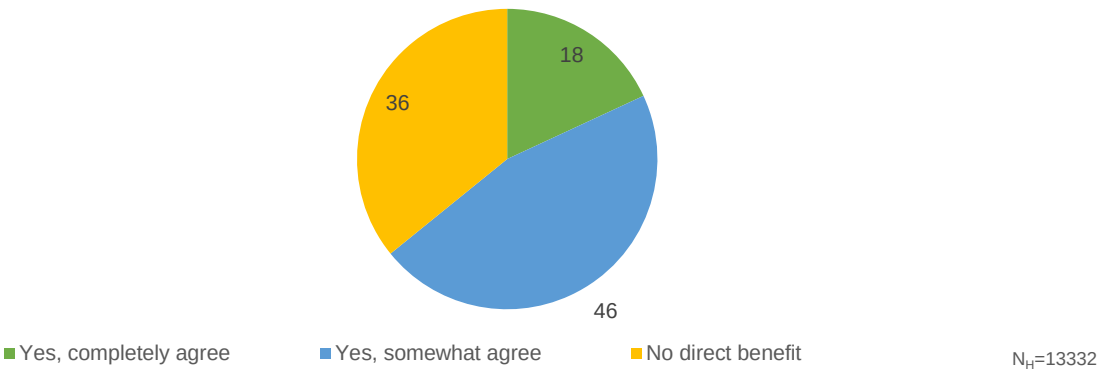
Figure 66: Households reported to have a positive change in social status



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 46 percent HHs reported being in partial agreement against the same.

Figure 67: Households reported to have received direct benefits in terms of income due to FHTC



3.11. User satisfaction

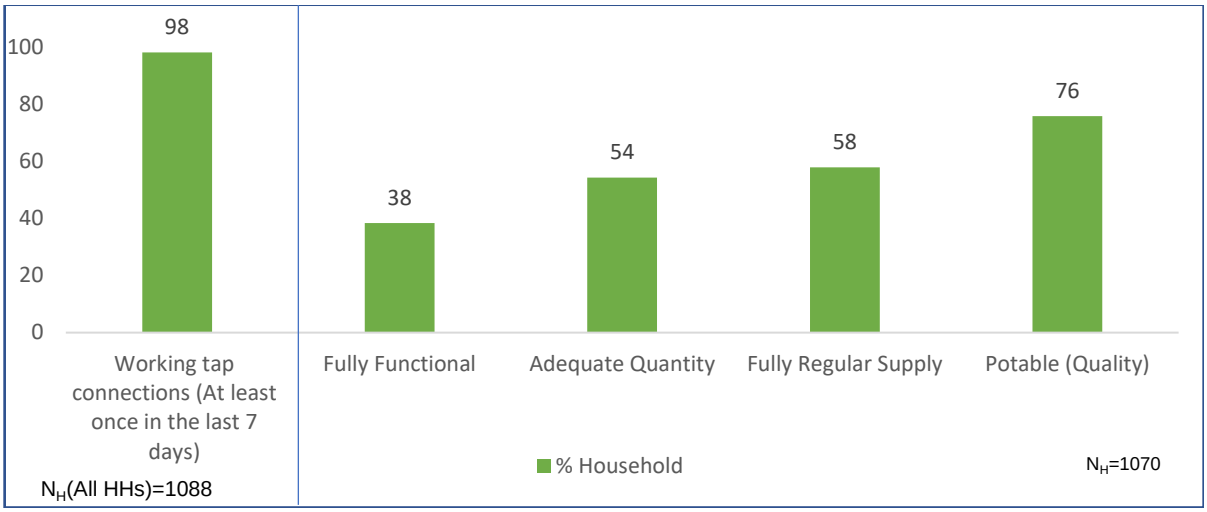
Table No. 7: User satisfaction - more than 75% happy with FHTC services			
S. No.	**Parameter (N_h=13332)**		**In %**
1	Regularity		85.6
2	Overall quality		86.1
3	Colour		91.2
4	Taste		87.6
5	Odour		84.2

Note:
Base (N_v)=490 means all villages sampled and covered in Rajasthan state
Base (N_H)=13332 means all households sampled and covered across the 490 villages in Rajasthan state
Base (N_H)=13313 means all households sampled where water sample be collected across the 490 villages in Rajasthan state
Base (N_H)=10919 means all households sampled where female members used to fetch water before HH tap connection
Base (N_H)=53 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 districts

4.1. Overall Functionality (in %)

Figure 68: Functionality of HH tap connection for Har Ghar Jal districts



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

Please note: For Har Ghar Jal district, N_H=1070 implies all HHs where water was found on the day of the survey.

It has been found that 98 percent of the sampled HHs (N=1088) had working tap connections. 38 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, more than 1 out of 2 households (54 percent) received adequate quantity (>=55 LPCD) of water supply and more than half received regular supply (58 percent) of water. The on-site testing and lab test results of the water indicates that more than 7 out of 10 (76%) sampled households in the state receive potable water.

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)
1.	Churu	88	18	39	36	100
2.	**RAJASTHAN**	**98**	**38**	**54**	**58**	**76**
3.	Ganganagar	100	56	81	83	75
4.	Bikaner	100	18	51	30	41
5.	Jhunjhunun	100	0	76	100	0
6.	Sikar	100	80	93	85	100
7.	Ajmer	100	6	11	33	100
8.	Tonk	100	95	95	100	100
9.	Jodhpur	100	0	0	0	5
10.	Nagaur	100	32	47	68	100
11.	Pali	100	0	0	100	100
12.	Barmer	100	35	35	87	100
13.	Jalor	100	0	5	1	56
14.	Sirohi	100	0	10	6	49
15.	Udaipur	100	0	6	6	100
16.	Chittaurgarh	100	39	56	67	100
17.	Bundi	100	6	83	100	6

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)**
18.	Kota	100	91	91	100	100
19.	Jhalawar	100	96	99	97	100
20.	Hanumangarh	100	53	77	72	84
21.	Dausa	100	42	95	42	100
22.	Rajsamand	100	60	64	91	100
23.	Baran	100	86	92	100	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.						

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

A. Change in employment days since FHTC programmes/ schemes

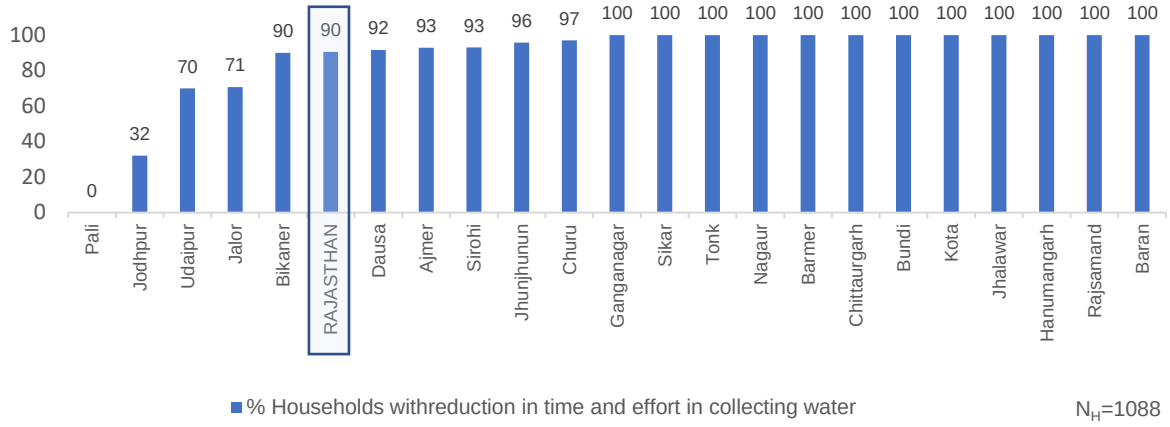
Across the state, one-fourth (27 percent) of the sampled households reported that employment days increased since the installation of FHTC.

Figure 69: 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 90 percent of the sampled households also reported that the effort and time in collecting water reduced after installation of FHTC.

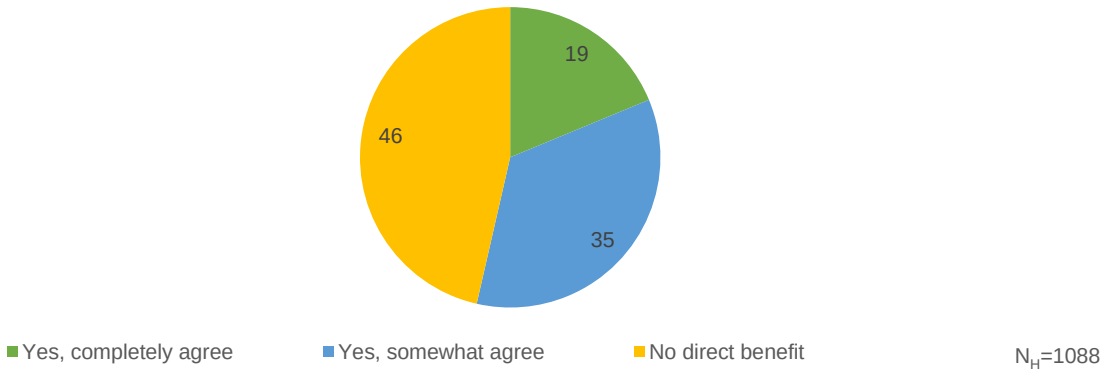
Figure 70: Households reported reduction in time and effort in collecting water in Har Ghar Jal districts



4.3. Direct benefits in terms of income due to FHTC

Across the nation, 19 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 35 percent reported being in partial agreement against the same.

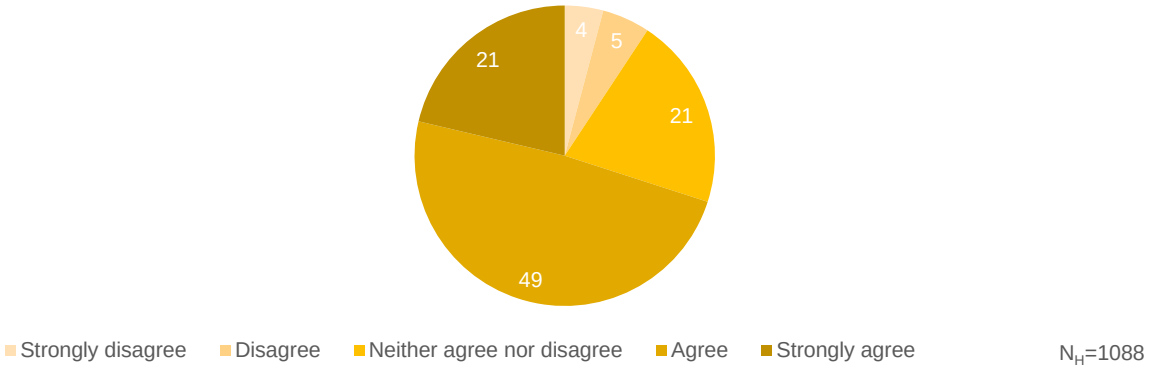
Figure 71: Households reported to have received direct benefits in terms of income due to FHTC in Har Ghar Jal districts



4.4. Change in social status

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

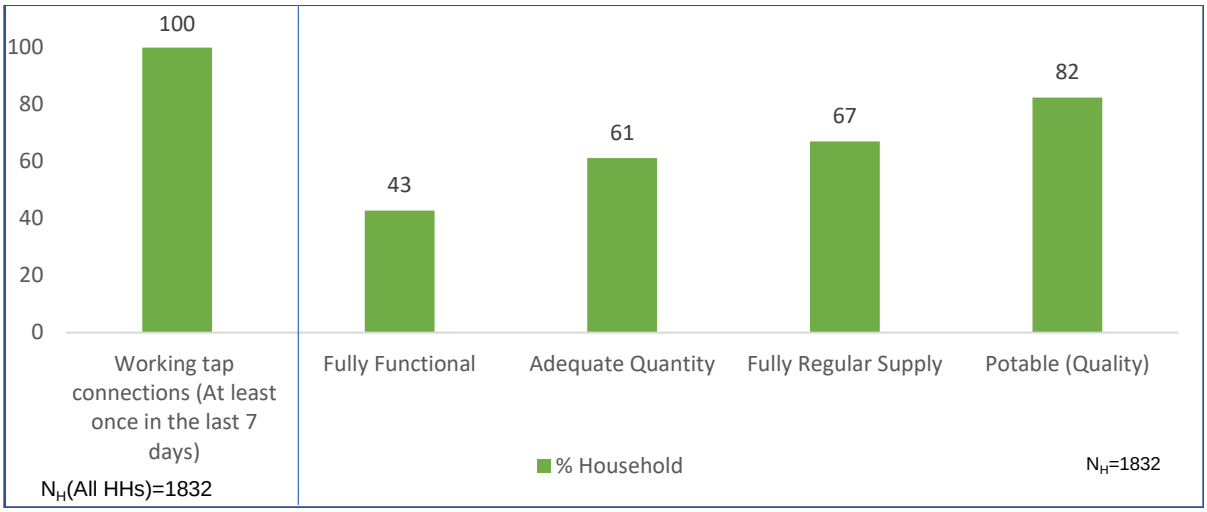
Figure 72: Households reported to have a positive change in social status in Har Ghar Jal districts



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 ∩ Fully Regular Supply ∩ Potable (Quality)*

Please note: For aspirational district, N_H=1832 implies all HHs where water was found on the day of the survey.

It has been found that all the sampled HHs (N=1832) had working tap connections. 43 percent HHs in the state were found to have fully functional HH tap water connection. Moreover, more than 3 out of 5 households (61 percent) received adequate quantity (>=55 LPCD) of water supply and more than 3 out of 5 received regular supply (67 percent) of water. The on-site testing and lab test results of the water indicates that more than 8 out of 10 (82%) 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.	Dhaulpur	100	52	58	84	100
2.	Jaisalmer	100	16	61	57	68
3.	Sirohi	100	6	33	23	45
4.	Karauli	100	71	76	91	97
5.	Baran	100	58	79	74	95
6.	**RAJASTHAN**	**100**	**43**	**61**	**67**	**82**

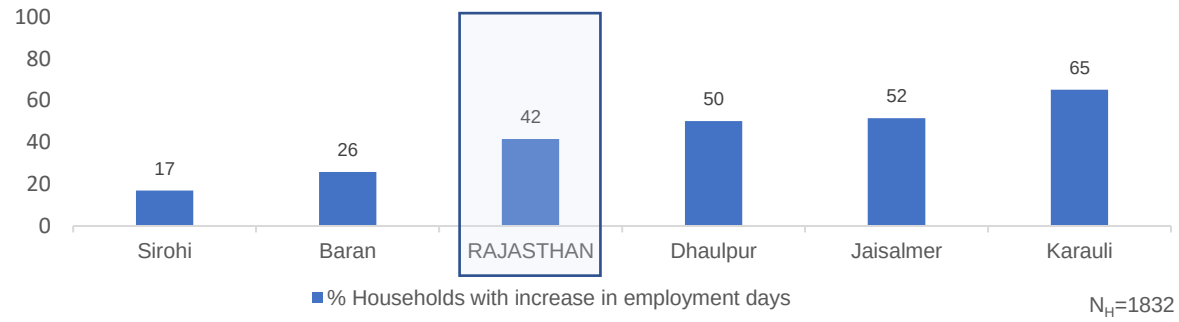
Potable water has been considered basis testing of water samples through laboratory tests for physical, chemical, and bacteriological as given in Table 5 parameters (within acceptable/ permissible range) and onsite testing of pH. The details of laboratory test are mentioned in the table given above in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

5.2. Perception of HHs from aspirational districts on Outcome Indicators

A. Change in employment days since FHTC programmes/ schemes

Only around 42 percent of the households in aspirational districts reported increase in employment days since installation of FHTC.

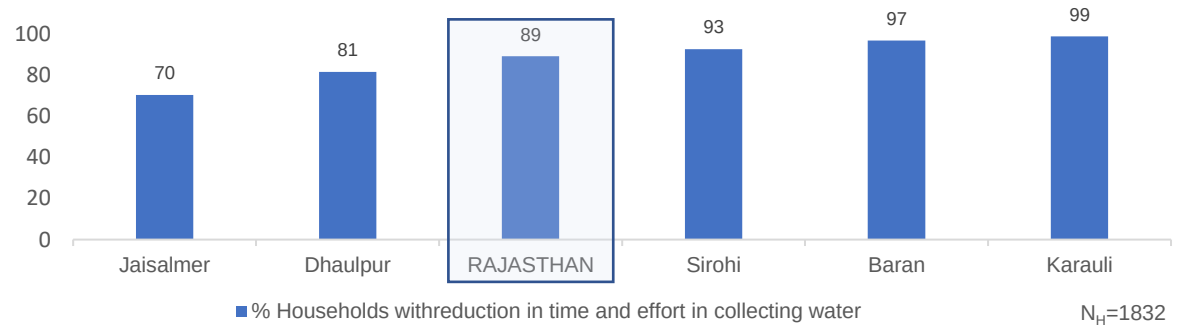
Figure 76: Household reported a change in employment days since FHTC programmes /schemes in Aspirational districts



B. Reduction in time and effort in collecting water

Around 89 percent of the households in aspirational districts reported reduction in time and effort in collecting water.

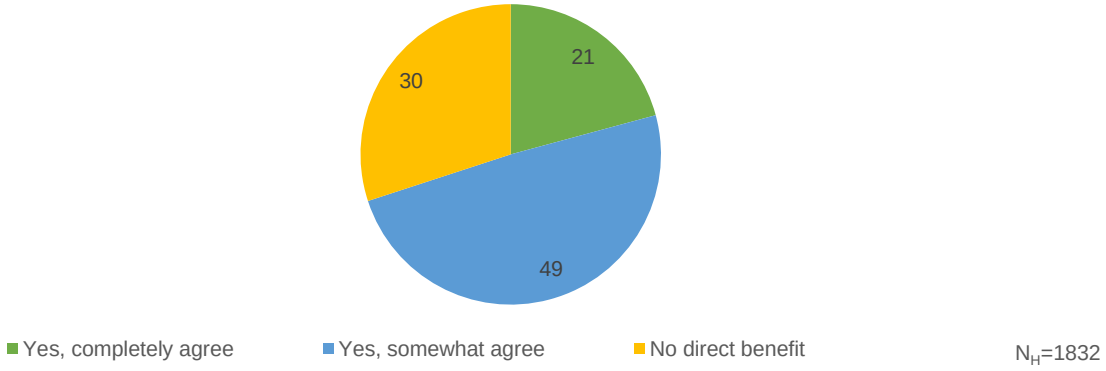
Figure 77: Households reported reduction in time and effort in collecting water in Aspirational districts



5.3. Direct benefits in terms of income due to FHTC

Across the state, 21 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 49 percent reported being in partial agreement against the same.

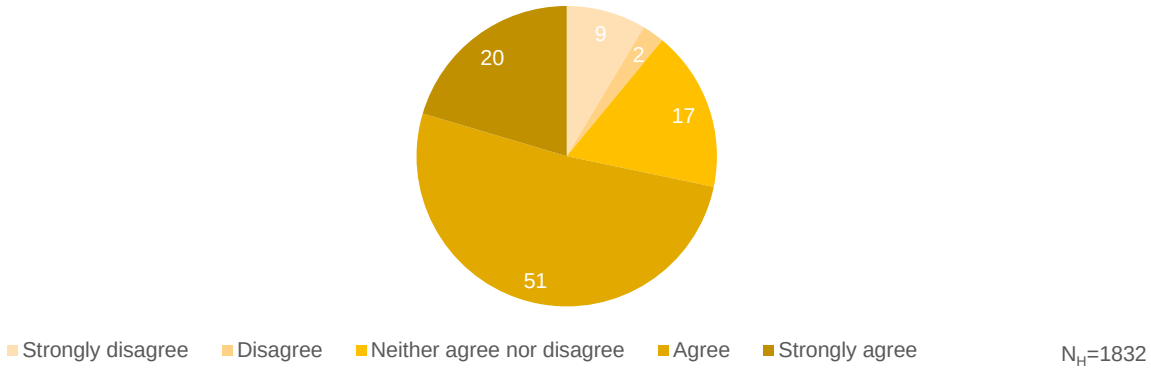
Figure 78: Households reported to have received direct benefits in terms of income due to FHTC in Aspirational districts



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	Bikaner	Jakhasar	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Momasar. Scheme found to be functional in replacement village
2	Churu	Godas	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Kharatwas. Scheme found to be functional in replacement village
3	Churu	Dhani Asha	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Karanpura. Scheme found to be functional in replacement village
4	Alwar	Goonta	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Neemoochana. Scheme found to be functional in replacement village
5	Alwar	Hingota	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Harsana. Scheme found to be functional in replacement village
6	Bharatpur	Dhilawati	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Nagla Chahar. Scheme found to be functional in replacement village
7	Bharatpur	Palla	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Koomha. Scheme found to be functional in replacement village
8	Bharatpur	Au	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bhaisa. Scheme found to be functional in replacement village
9	Jaipur	Chauru	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Bagawas. Scheme found to be functional in replacement village
10	Jaipur	Sukhdeopura @ Nohara	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Goner. Scheme found to be functional in replacement village
11	Sikar	Kachareda	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Raipur Patan. Scheme found to be functional in replacement village
12	Ajmer	Ramsar	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Rajgarh. Scheme found to be functional in replacement village
13	Jodhpur	Doodiya	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Janguwas. Scheme found to be functional in replacement village
14	Barmer	Chiriyara	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Asotara. Scheme found to be functional in replacement village
15	Jalor	Tawab	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Oon. Scheme found to be functional in replacement village
16	Banswara	Madlada	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Garhi. Scheme found to be functional in replacement village
17	Karauli	Dabra	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Salempur. Scheme found to be functional in replacement village
18	Karauli	Irniya	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Barh Salempur. Scheme found to be functional in replacement village

Table No. 10: List of replaced villages

S. No.	District Name	Village Name	Status of the Scheme (No Scheme/Replaced & Defunct)	Remarks
19	Karauli	Pahari	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Jahannagar Morda. Scheme found to be functional in replacement village
20	Dausa	Lotwara	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Norangwara. Scheme found to be functional in replacement village
21	Baran	Bishan Kheri	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Mirzapur. Scheme found to be functional in replacement village
22	Baran	Bamli	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Ratanpura. Scheme found to be functional in replacement village
23	Baran	Miyada	No Scheme	No Scheme present in the sampled village, hence replaced with Village- Jalwara. Scheme found to be functional in replacement village