

# Assessment of functionality status of household tap connections in rural areas (2020-21)

**State report**

**Uttarakhand**



**Submitted to:**

**National Jal Jeevan Mission**

**Department of Drinking Water and Sanitation**

**Ministry of Jal Shakti**

**Report prepared by:**

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**Table of Contents**

**1. Introduction..... 2**

**2. Objectives of the study ..... 2**

**3. Approach and Methodology ..... 2**

**4. Key Findings..... 3**

**5. Conclusions..... 8**

**Annexure 1: List of village with no scheme/defunct schemes/under construction ..... 9**

**Annexure 2: List of villages with schemes supplying only through tap stand/standpost ..... 10**

**Annexure 3: List of villages where 15 FHTCs were not found ..... 11**

**Annexure 4: Indicative proportion of functional tap connections by districts ..... 11**

**Annexure 5: List of villages where samples failed for given quality parameter ..... 12**

## **1. Introduction**

Announced in 2019, the Jal Jeevan Mission – Har Ghar Jal (JJM – HGJ) is implemented by Department of Drinking Water and Sanitation (DDWS), Ministry of Jal Shakti in partnership with States/ UTs. JJM aims to provide a Functional Household Tap Connection (FHTC) to every rural home in the country by 2024. A household tap connection is said to be functional when the tap water supply is of adequate quantity (minimum 55 lpcd) and prescribed quality (as per BIS:10500) on regular and long-term basis. Further, JJM seeks to promote holistic management of local water sources and not just provide tap water connections.

The DDWS had engaged Nielsen (India) Private Limited to undertake 'Functionality Assessment' of household tap connections. The assessment covered household tap connections in 6,992 villages across 704 districts from 31 States/ UTs. The survey was undertaken in November – December 2020.

## **2. Objectives of the study**

The main objectives were an assessment of Functionality of Household Tap Connections (FHTCs) under JJM on various parameters; ascertaining, in the form of data, on-ground progress of JJM in terms of adequate quantity of prescribed quality of drinking water supplied to rural households on regular basis; and engaging with Gram Panchayats and/ or its sub-committees of the sample villages and soliciting their feedbacks and recommendations for improving the programme implementation; and to suggest measures for mid-course correction for improvement in functionality of household tap connections.

## **3. Approach and Methodology**

The approach followed was to assess the functionality of household tap connections (within premises) and in-village drinking water supply infrastructure. The selection of sample villages was from the JJM-Integrated Management Information System (IMIS) data-base of villages having at least 15 household tap connections. In each sample village, the largest PWS scheme was sampled. The survey was planned as in-person Computer Aided Personal Interview (CAPI) survey, and included an on-ground assessment of the functionality of sample PWS schemes and tap connections attached to the same. The survey included measurement of the quantity of water received at the household level through the tap connection, as well as water testing to check whether the quality of the drinking water is as per the BIS standards, using Field Test Kits (FTKs) and H<sub>2</sub>S vials. The study also collected supply side information, including assessment of the quantity of water supplied by the scheme, operation and maintenance arrangements, availability and functionality of scheme level infrastructure and the aspects related to source and system sustainability.

A sample of 10 villages from every district in the State were selected following probability proportionate to size (PPS) systematic random sampling method ensuring due representation of SC/ SC majority villages as well as quality-affected villages. In each selected village, households for the survey were selected at head end, middle and tail end of the selected piped water supply network. In Uttarakhand the survey was conducted in 1615 households from 130 villages in 13 districts.

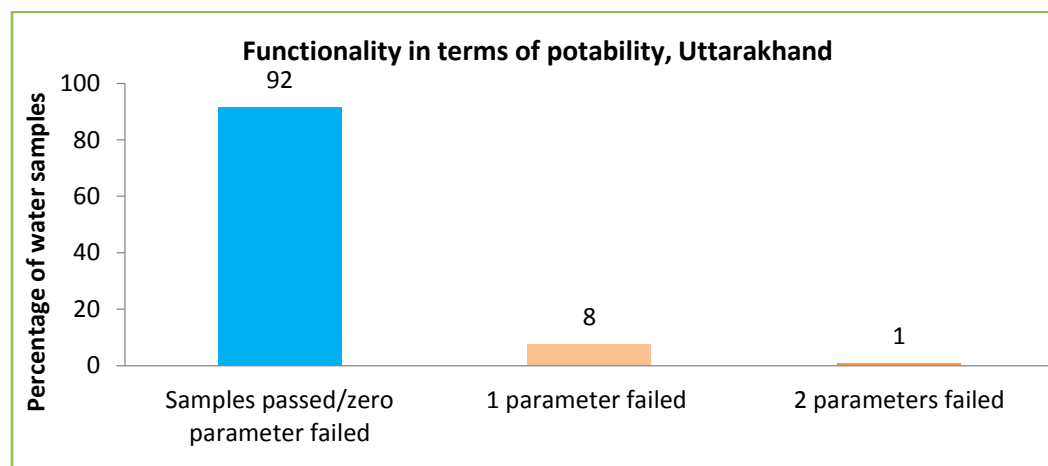
#### 4. Key Findings

SL.	INDICATOR	Uttarakhand	India
<b>Household level</b>			
1	Average household size	5.8	5.6
2	Percent of households using tap connection for drinking purpose	98.6	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	98.4	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	0.2	7.6
4b	3 – 4 days	4.0	10.4
4c	5 – 6 days	0.3	1.5
4d	7 days	95.4	80.5
5	Number of water supply days in the last week		
5a	0 days	0.2	2.4
5b	1 – 2 days	0.2	9.7
5c	3 – 4 days	7.2	14.8
5d	5 – 6 days	1.4	4.9
5e	7 days	91.0	68.1
6	Percentage of households reporting reliability of water supply days	94.1	86.5
7	Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months	98.5	84.6
8	Average number of times water is supplied on the days of supply		
8a	1 time	25.8	56.6
8b	2 times	30.3	28.2
8c	3 times	2.9	6.1
8d	4 times/24 hours	41.0	9.1
9	Percentage of households reporting reliability of supply for different supply timings	93.1	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	82.5	80.1
10b	Afternoon	86.8	84.6
10c	Evening	89.3	84.8
11	Percentage of households reported paying water tariff – separately or along with other taxes	67.3	52.8
12	Percentage of households reported receiving 55 lpcd or more	93.8	83.5
13	Percentage of households having potable water *	91.7	61.3
14	Percentage of households reporting regularity of supply	95.4	87.2
15	Percentage of households reporting functional tap connections	82.9	47.8
<b>Village level</b>			
16	Percentage villages having functional water and sanitation committees	39.2	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	96.2	86.0

SL.	INDICATOR	Uttarakhand	India
18	Percentage of in-village schemes having O&M undertaken by village water and sanitation committee or by Panchayat	76.0	83.1
19	Percentage of sample schemes reported having faced challenges in the last one year		
19a	Inadequate infrastructure	39.5	40.2
19b	Poor water availability at the source	39.5	33.0
19c	Poor maintenance	23.7	46.2
19d	Natural calamity	50.0	63.4
20	Percentage of schemes reporting measure to improve source sustainability	31.3	59.9
21	Number of sample villages found with no scheme (defunct/under construction/not handed over/not constructed)	6	751

Figures 1, 2 and 3 depicts the functionality aspects of the household tap connections in Uttarakhand. Figure 1 presents the details of the potability aspects – the proportion of samples which have qualified as per all 13-15 parameters, as well as the proportion of sample which have failed due to one/two/three/more than three parameters.

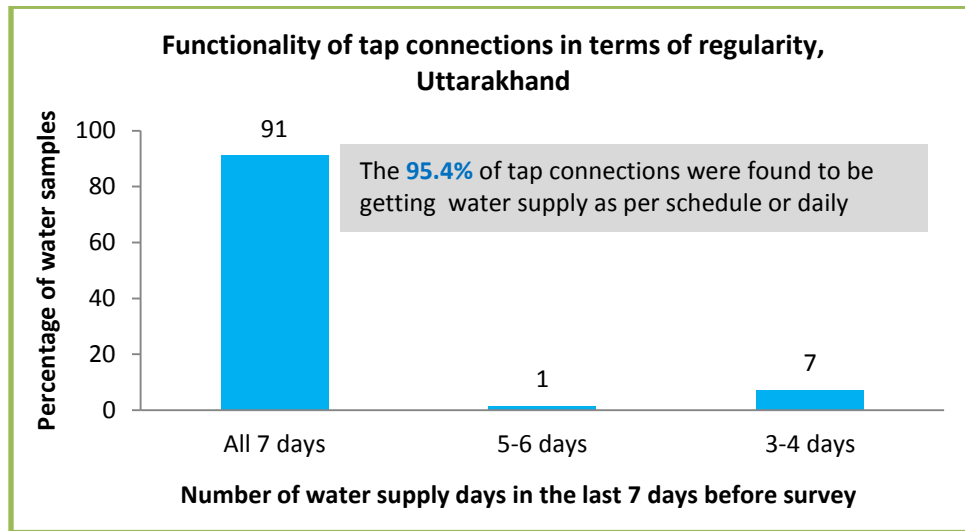
**Fig 1: Functionality of the household tap connection in terms of potability - Uttarakhand**



**Base: Households with water quality testing done, N: 120**

Figure 2 presents functionality in terms of regularity, and presents the water supply situation in the last 7 days (before survey date). This includes information on the proportion of taps supplying water on all 7 days, 5-6 days, 3-4 days, 1-2 days and zero days in the last 7 days. As not all schemes are planned to supply water daily, the information of the proportion of taps supplying water daily or as per the water supply schedule is also presented.

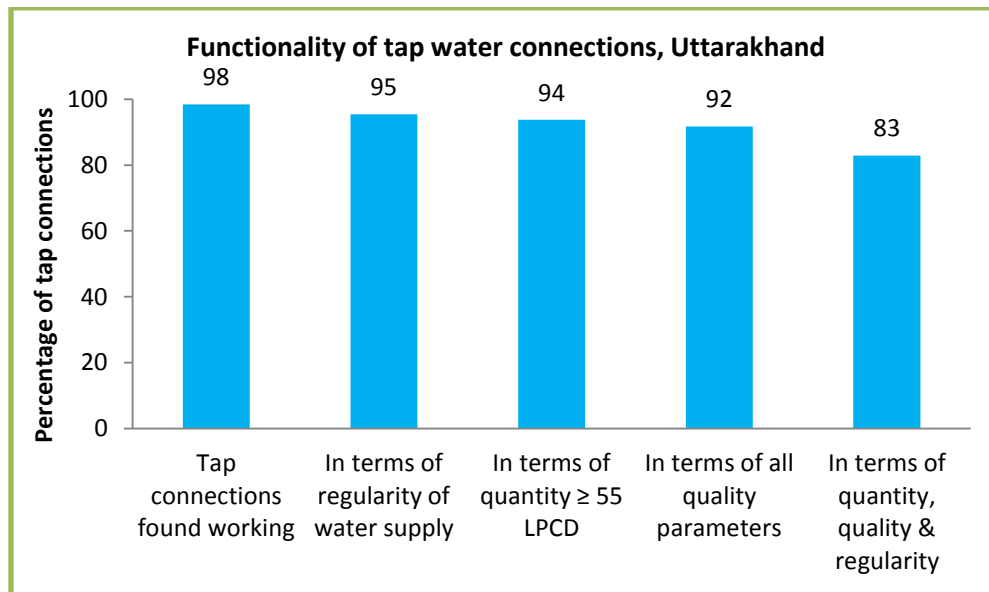
**Fig 2: Functionality of the household tap connection in terms of regularity - Uttarakhand**



**Base: All Households, N: 1615**

Figure 3, presents the summary situation of the working tap connections (defined as supplying water atleast on one day in the last 7 days), the functionality in terms of the proportion of tap connections which have qualified regularity, quantity, quality parameters, and the proportion which have qualified all 3 parameters.

**Fig 3: Overall functionality of the household tap connection - Uttarakhand**

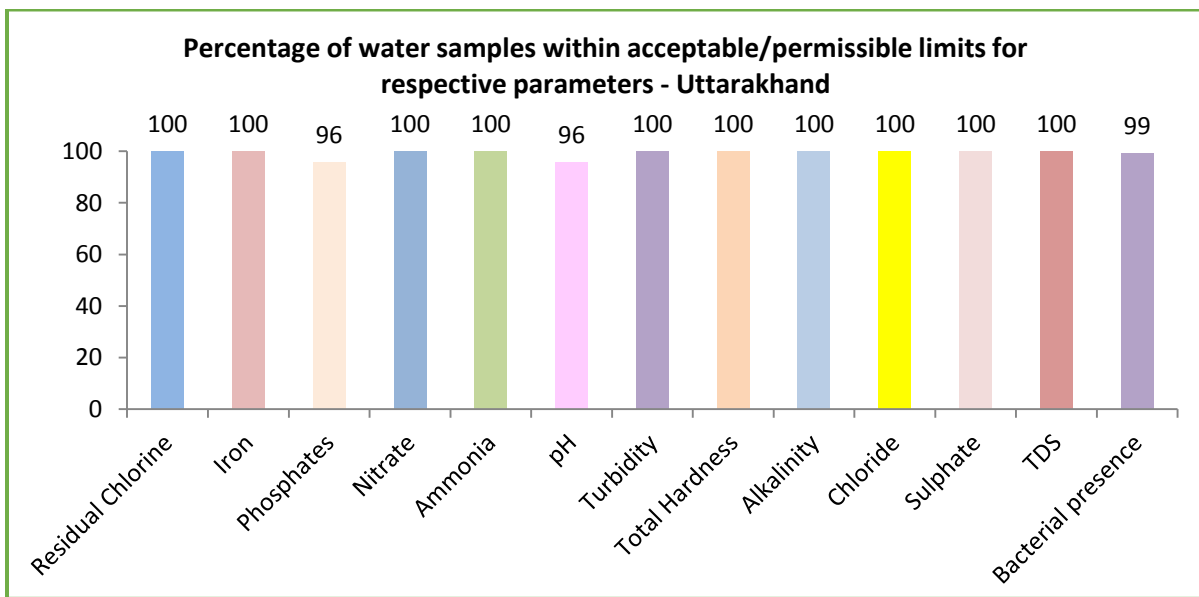


**Base: Total count of tap connections considered for functionality assessment, N: 1560**

A total of 120 water samples were tested as per BIS: 10,500 standards for all 13 parameters. All the water samples were taken from a randomly selected head end household of selected sample PWS schemes in the sample villages of Uttarakhand – one sample for each of separate water sources in the village. The figure below shows the proportion of samples in which different parameters were found within acceptable/ permissible limits.

As can be seen, almost all the samples (99% or more) had Residual Chlorine, Iron, Nitrate, Ammonia, Turbidity, Total Hardness, Alkalinity, Chloride, Bacterial presence (Total Coliform) and Sulphate within acceptable/ permissible limits. Phosphates and pH were the key issues.

**Fig 4: Percentage of water samples within acceptable/permissible limits for respective parameters - Uttarakhand**



**Pic 1: Household survey being undertaken in one of the villages in Uttarakhand**



**Pic 2: Water quality sample testing being undertaken in a village in Uttarakhand**





## 5. Conclusions

Uttarakhand had higher functional tap connections (82.9%) as compared with the national average. About 94 percent of the households were estimated to be provided 55 lpcd or more water supply and 95 percent tap connections reported daily water supply or supply on scheduled days. However, the proportion of households receiving potable water is comparatively a little less - about 92 percent. Since the tap connections considered to be functional were as per the JJM guidelines of including adequate quantity (55 lpcd or more), potability (as per BIS:10500 standards) and regularity of water supply (all days or as per the water supply schedule), the reason that a slightly lower proportion of households had functional tap connections is mostly due to the lower proportion of households having a combination of potability and regularity (85.7% households having adequate quantity and potable water; 86.6% households having potable water received on a regular basis; while 90.9% households had adequate quantity of water supply on a regular basis).

The main issues with the samples which were not found potable were Phosphates and pH being above permissible limits.

For most of the schemes water supply was scheduled as daily supply (95.4%) and almost all these households have also reported daily water supply in the last 7 days (91%). Around one fourth of the households have reported being supplied water once a day, 30 percent twice a day and the rest, mostly four times a day or 24 hours. A majority of the households have reported a reliability of water supply timings as well as adequate water pressure.

However, despite good quality water supply service delivery, around 67 percent households have reported paying water tariff. As per the JJM guidelines, the State Government needs to ensure 100 percent fund requirement for operation and maintenance of the schemes are met by the Agency responsible for water supply provision to function as a utility.

A little less than two fifth of the villages have reported having water and sanitation committees – of these villages, in 76 percent, the water and sanitation committees were actually taking responsibility for operation and maintenance activities of the PWS schemes. As reported by the communities 'natural calamities, inadequate infrastructure, poor water availability at source and poor maintenance' were the main challenges faced by the schemes. About one thirds of the schemes had taken any initiatives for source sustainability.

### **Annexures to this report includes:**

- List of village with no scheme/defunct schemes/under construction is placed as Annexure 1,
- List of villages with schemes supplying only through tap stand/stand posts is placed as Annexure 2,
- List of villages where 15 FHTCs were not found is placed as Annexure 3,
- Indicative proportion of functional tap connections by districts is placed as Annexure 4, and
- List of villages where samples failed for given quality parameter is placed as Annexure 5

**Annexure 1: List of village with no scheme/defunct schemes/under construction**

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of Largest Scheme in the Village	Type	Status of the Scheme	Remarks
1.	Almora	Sult	Taya	Taya	Talya	SVS	Scheme is defunct	Scheme is not functional since last 3 years
2.	Chamoli	Ghaat	Maharbagti	Maharbagti	Sakand W/S	MVS	No scheme	No scheme in the village
3.	Chamoli	Karanpryag	Dharkot	Badiyas	Dharkot W/S Scheme	MVS	No scheme	No scheme in the village
4.	Hardwar	Rooke	Baladi Salapur	Belrhi Salahapur	Beladi Salahapur W/S Swajal	SVS	Under construction	Scheme is approved but work has not yet started
5.	Hardwar	Rooke	Saliyer Salhapur	Saliyer Salhapur	Saliyar Salah Pur	SVS	Scheme is defunct	Due to national highway road construction entire pipe line is damaged since last -13- month
6.	Udham Singh Nagar	Kashipur	Baghele Wala	Baghele Wala	Mahuakhera Water Supply	MVS	No scheme	There is a tanker that everyone uses.

**Annexure 2: List of villages with schemes supplying only through tap stand/standpost**

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of Largest Scheme in the Village	Type	Remarks
1.	Almora	Hawalbag	Sarso	Sarso	Almora W/S Scheme	MVS	No FHTC. Water supply through tap stand only
2.	Almora	Tarikhet	Kapina	Kapina	Chelliyanaula Gov Pumping W/S Scheme Ujn	MVS	No FHTC. Water supply through tap stand only
3.	Champawat	Barakot	Bairaom	Bairaom	Bageda W/S Scheme	MVS	No FHTC. Water supply through tap stand only
4.	Champawat	Pati	Chora Saun	Churasoon	Dungra Kot W/S Scheme	SVS	No FHTC. Water supply through tap stand only
5.	Champawat	Pati	Ladi	Lari	Porakhet W/S	MVS	No FHTC. Water supply through tap stand only
6.	Champawat	Pati	Peepal Teeng	Pipalding	Peepal Teeng Water Supply Scheme	MVS	No FHTC. Water supply through tap stand only
7.	Garhwal	Dwarikhali	Karheti	Karheti	Dhoulna Tok	MVS	No FHTC. Water supply through tap stand only
8.	Garhwal	Pauri	Wajali	Wajali	Vajale	MVS	No FHTC. Water supply through tap stand only
9.	Garhwal	Thalisain	Naudi	Naudi	Gulayari	MVS	No FHTC. Water supply through tap stand only
10.	Tehri Garhwal	Chamba	Payal Gaon	Payal Gaon	Ghantakaran Pumping Water Supply Scheme	MVS	No FHTC. Water supply through tap stand only
11.	Tehri Garhwal	Jaunpur	Agyarna	Saunri Lagga Kyari	That Pagari WSS	MVS	No FHTC. Water supply through tap stand only
12.	Tehri Garhwal	Kirtinagar	Jakher	Jakher May Umari	Lachmoli Hadim Ki Dhar G.O.V. Pumping W/S Scheme	MVS	No FHTC. Water supply through tap stand only
13.	Tehri Garhwal	Kirtinagar	Sirsed	Sir Shet	Koteswar Silkakhal (Chunni Khal) Gov W/S Scheme	MVS	No FHTC. Water supply through tap stand only
14.	Uttarkashi	Bhatwari	Bagori	Bagori	Bagori W/S Scheme	SVS	Stand post only-replaced village-Khand

**Annexure 3: List of villages where 15 FHTCs were not found**

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of Largest Scheme in the Village	Type	Number of households surveyed
1.	Almora	Dwarahat	Majethi	Majethi	Majethi W/S Scheme	SVS	14
2.	Champawat	Lohaghat	Jakh Jindi	Jakh	Jakh	MVS	6
3.	Rudrapur	Jakholi	Ladiyasu	Lariyasu	Jawari Routhiya Gov WS Scheme	MVS	4
4.	Tehri Garhwal	Devpariyag	Nandoli	Nandoli	Koteswar Jhandidhar G.O.V. (Paurikhal Area) P.W.S	MVS	6
5.	Uttarkashi	Chinyalisaur	Udkhola	Udkhola	Udkhola W/Ss	SVS	10

**Annexure 4: Indicative proportion of functional tap connections by districts**

S.No	District	Percentage Functional Taps
1.	Almora	58.1
2.	Bageshwar	73.3
3.	Chamoli	97.5
4.	Champawat	71.6
5.	Dehradun	99.3
6.	Garhwal	81.0
7.	Hardwar	85.0
8.	Nainital	52.7
9.	Pithoragarh	80.7
10.	Rudrapur	100.0
11.	Tehri Garhwal	100.0
12.	Udham Singh Nagar	83.6
13.	Uttarkashi	98.1

**Annexure 5: List of villages where samples failed for given quality parameter**

S.No.	District name	Block name	Gram panchayat name	Village name
<b>Villages with failed water samples for pH test</b>				
1.	Bageshwar	Bageshwar	Jolkande	Jolkandey
2.	Champawat	Lohaghat	Jakh Jindi	Jakh
3.	Garhwal	Thalisain	Bharnou	Bharno
4.	Hardwar	Bahadrabad	Bhagtanpur Abidpur	Bhagtanpur Abidpur
5.	Udham Singh Nagar	Khatima	Bilhari	Vilhari (Chakarpur)
<b>Villages with failed water samples for Phosphate test</b>				
1.	Almora	Dwarahat	Majethi	Majethi
2.	Nainital	Haldwani	Dhaura Khera	Dhaulakhera
3.	Nainital	Haldwani	Haldu Chaur Jaggi	Dungarpur
4.	Nainital	Haldwani	Kuriyagaon	Gunipur Jiwanand
5.	Nainital	Kotabagh	Bailpadav	Bail Parao
<b>Villages with failed water samples for Bacteriological present/ absence test using H2S vials</b>				
1.	Hardwar	Bahadrabad	Bhagtanpur Abidpur	Bhagtanpur Abidpur