

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

State report

Sikkim



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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. Introduction2

2. Objectives of the study2

3. Approach and Methodology2

4. Key Findings3

5. Conclusions8

Annexure 1: List of village with no scheme/defunct schemes/under construction9

Annexure 2: List of villages with schemes supplying only through tap stand9

Annexure 3: List of villages where 15 FHTCs were not found9

Annexure 4: Indicative proportion of functional tap connections by districts9

Annexure 5: List of villages where samples failed for given quality parameter9

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 H₂S 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 Sikkim the survey was conducted in 600 households from 40 villages in 4 districts.

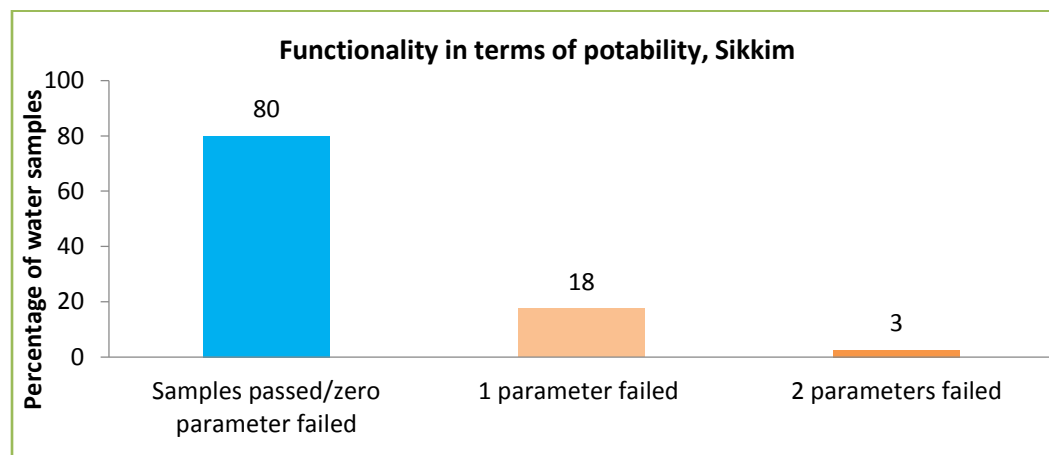
4. Key Findings

SL.	INDICATOR	Sikkim	India
Household level			
1	Average household size	5.1	5.6
2	Percent of households using tap connection for drinking purpose	100.0	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	96.5	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	2.3	7.6
4b	3 – 4 days	3.3	10.4
4c	5 – 6 days	0.5	1.5
4d	7 days	93.8	80.5
5	Number of water supply days in the last week		
5a	0 days	0.0	2.4
5b	1 – 2 days	2.2	9.7
5c	3 – 4 days	3.7	14.8
5d	5 – 6 days	3.5	4.9
5e	7 days	90.7	68.1
6	Percentage of households reporting reliability of water supply days	65.7	86.5
7	Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months	87.5	84.6
8	Average number of times water is supplied on the days of supply		
8a	1 time	3.5	56.6
8b	2 times	2.3	28.2
8c	3 times	0.0	6.1
8d	4 times/24 hours	94.2	9.1
9	Percentage of households reporting reliability of supply for different supply timings	82.9	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	88.6	80.1
10b	Afternoon	100.0	84.6
10c	Evening	100.0	84.8
11	Percentage of households reported paying water tariff – separately or along with other taxes	21.2	52.8
12	Percentage of households reported receiving 55 lpcd or more	99.5	83.5
13	Percentage of households having potable water *	80.0	61.3
14	Percentage of households reporting regularity of supply	96.8	87.2
15	Percentage of households reporting functional tap connections	76.8	47.8
Village level			
16	Percentage villages having functional water and sanitation committees	62.5	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	97.9	86.0
18	Percentage of in-village schemes having O&M undertaken by village water	100.0	83.1

SL.	INDICATOR	Sikkim	India
	and sanitation committee or by Panchayat		
19	Percentage of sample schemes reported having faced challenges in the last one year		
19a	Inadequate infrastructure	37.5	40.2
19b	Poor water availability at the source	33.3	33.0
19c	Poor maintenance	62.5	46.2
19d	Natural calamity	95.8	63.4
20	Percentage of schemes reporting measure to improve source sustainability	15.4	59.9
21	Number of sample villages found with no scheme (defunct/under construction/not handed over/not constructed)	0	751

Figures 1, 2 and 3 depicts the functionality aspects of the household tap connections in Sikkim. 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.

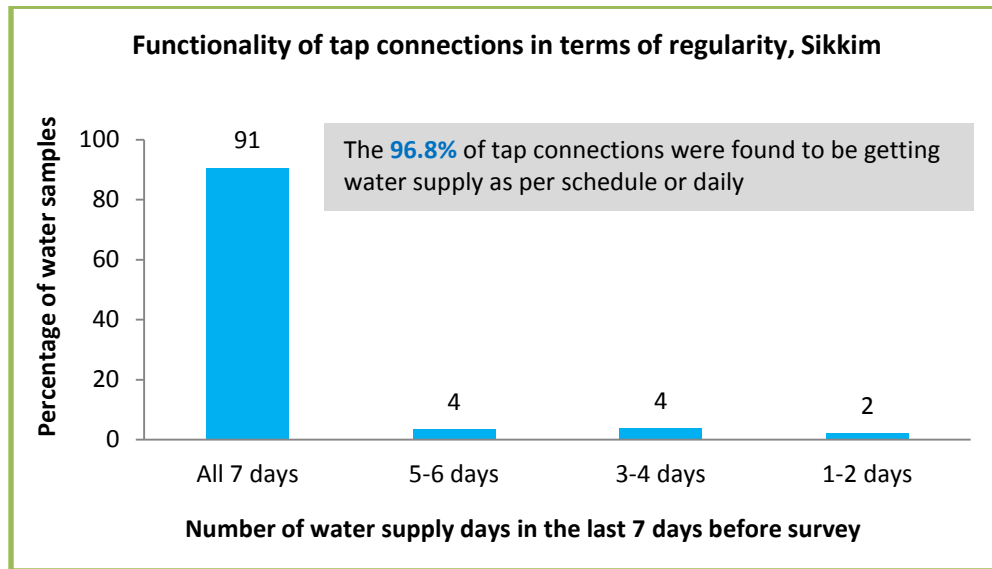
Fig 1: Functionality of the household tap connection in terms of potability - Sikkim



Base: Households with water quality testing done, N: 40

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.

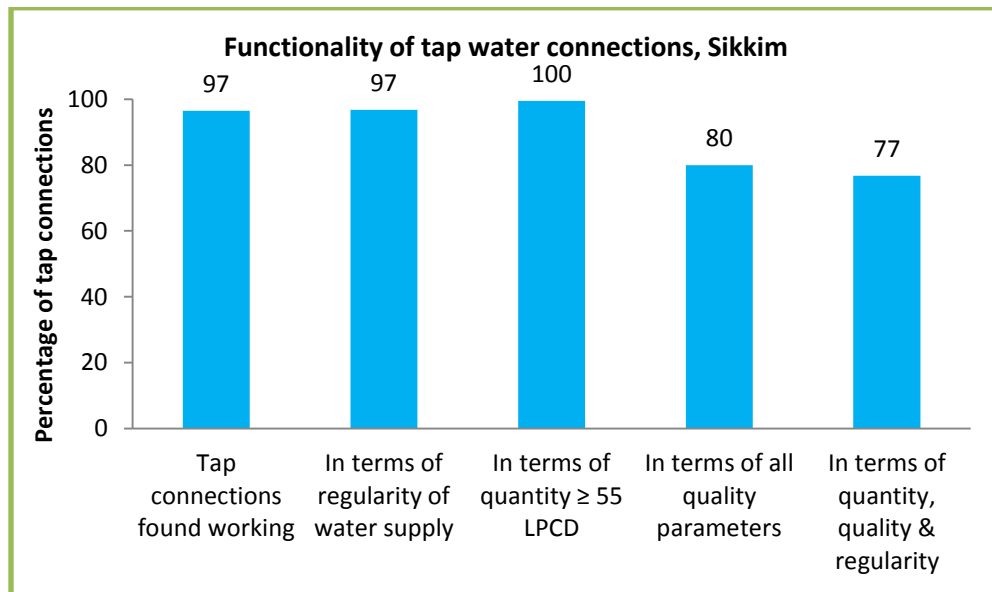
Fig 2: Functionality of the household tap connection in terms of regularity - Sikkim



Base: All Households, N: 600

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 - Sikkim

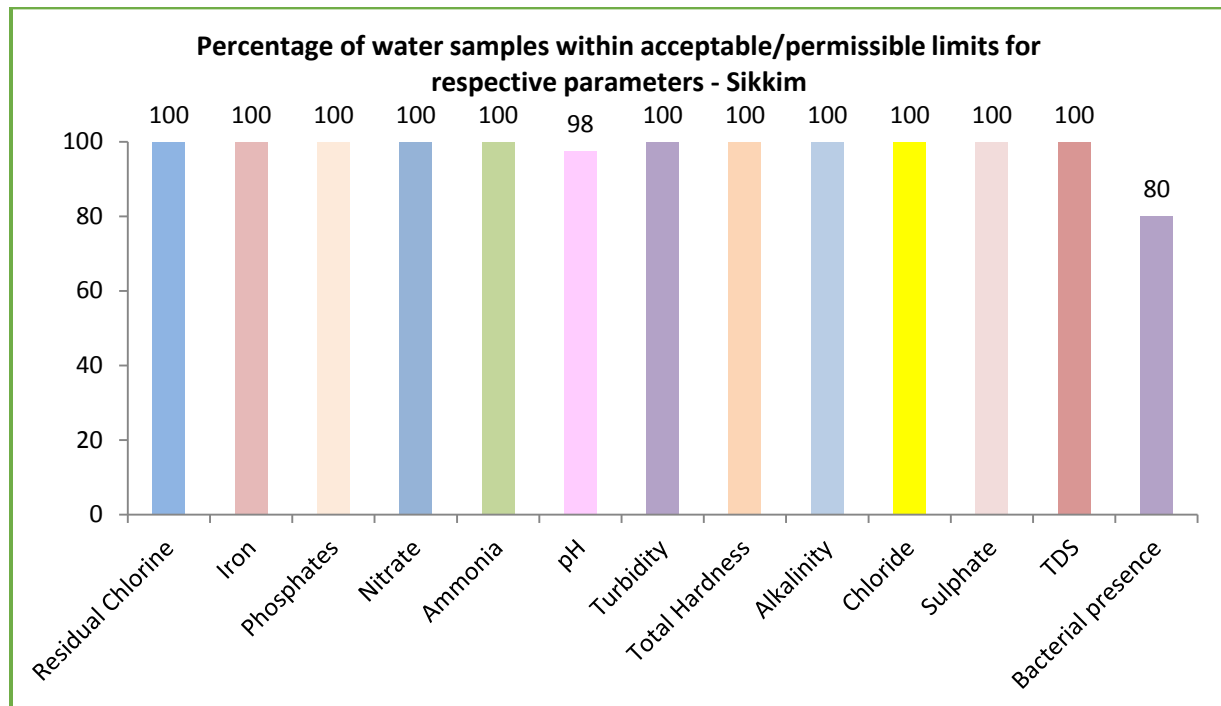


Base: Total count of tap connections considered for functionality assessment, N: 600

A total of 40 water samples were tested in Sikkim 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 Sikkim – 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 (98% or more) had all parameters within acceptable/permissible limits – except for the Bacteriological (Total Coliform) presence/absence test, where 80 percent of the sample were tested to be free from Bacteriological presence.

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



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



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



5. Conclusions

Sikkim has performed well in the functionality assessment with 77 percent of the taps assessed to be functional as per the JJM guidelines – far higher than the national average. All households have been estimated to have been provided with 55 lpcd or more water supply, while 97 percent households have reported daily water supply or water supply on scheduled days. The proportion of taps supplied with potable water is 80 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) – a lower proportion of tap connections were considered functional, due comparatively lower proportion of taps supplied with potable water, as compared with the proportion of taps estimated with adequate an regular water supply (79.5% households having adequate quantity and potable water; 77.3% households having potable water received on a regular basis; while 96.3% households had adequate quantity of water supply on a regular basis).

Almost all the water samples (98% or more) had all parameters within acceptable/ permissible limits – except for the Bacteriological (Total Coliform) presence/absence test, where 80 percent of the sample were tested to be free from bacteriological presence. Thus, the main issue with the water quality was the presence of Coliform Bacteria, for samples that were not found potable.

Almost all the households (93.8%) have reported that the water supply is usually supplied on a daily basis and almost 91 percent households have also reported receiving daily water supply in the last week before the survey. Moreover, 97 percent of the taps were found to be currently working at the time of survey. However, although schemes the water supply is not always reliable, as two thirds of the households have reported that they can rely on receiving water supply on the scheduled water supply days. However, if the supply is available, the supply timings are reported to be reliable by 83 percent of the households.

In Sikkim, the water supply is usually through gravity based schemes and the supply is continuous – most households have reported receiving more than 4 times supply or 24 hour supply. Almost all the households have reported adequate water pressure across all supply timings. About 88 percent households mentioned that the taps have worked on a continuous basis for more than 15 days a month for the last 12 months.

Despite being provided with good water supply service, only about 21 percent of the households with tap connection 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.

Almost two thirds of the villages have reported having water and sanitation committees – and in all of these villages, the water and sanitation committees were actually taking responsibility for operation and maintenance activities of the PWS schemes. Almost all villages have reported that natural calamities pose a challenge in the operation of the scheme. Poor maintenance of the scheme is reported by a majority of the villages reporting having faced a challenge in the last one year. Only about 15 percent of the schemes had reported undertaking some initiatives for source sustainability.

Annexures to this report includes:

- 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

No villages present with no scheme/defunct schemes/under construction.

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

No villages present with schemes supplying only through tap stand.

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

No villages present with less than 15 FHTCs.

Annexure 4: Indicative proportion of functional tap connections by districts

S.No	District	Percentage Functional Taps
1	East-Sikkim	98.7
2	North-Sikkim	100.0
3	South-Sikkim	68.7
4	West-Sikkim	40.0

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

S.No.	District name	Block name	Gram panchayat name	Village name
Villages with failed water samples for pH test				
1.	South	Namchi	Maniram Phalidara	Maniram
Villages with failed water samples for Bacteriological present/ absence test using H2S vials				
1.	South	Namchi	Maniram Phalidara	Maniram
2.	South	Timi Tarku	Temi	Temi
3.	West	Chongrang	Karzi Mangnam	Mangnam
4.	West	Daramdin	Lungchok Salyangdang	Lungchok
5.	West	Gyalshing	Darap Nambu	Darap
6.	West	Kaluk	Sangadorji	Sangadorji
7.	West	Kaluk	Tadong Rinchenpong	Tadong
8.	West	Mangalbarey	Khaniserbong Suntoley	Khaniserbung