

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

State report

Nagaland



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	7
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/standposts	11
Annexure 3: List of villages where 15 FHTCs were not found	13
Annexure 4: Indicative proportion of functional tap connections by districts	13
Annexure 5: List of villages where samples failed for given quality parameter	14

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 Nagaland the survey was conducted in 450 households from 94 villages in 11 districts.

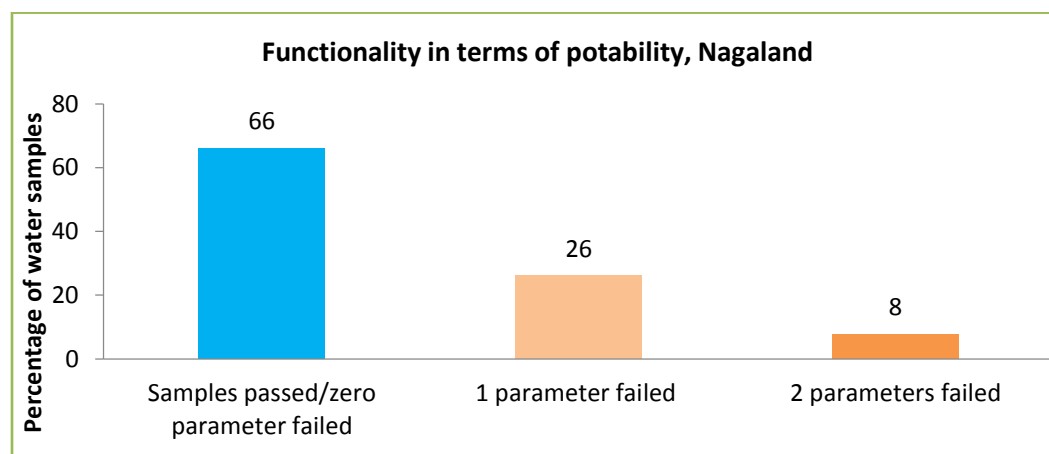
4. Key Findings

SL.	INDICATOR	Nagaland	India
Household level			
1	Average household size	4.6	5.6
2	Percent of households using FHTC for drinking purpose	99.8	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	93.6	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	0.7	7.6
4b	3 – 4 days	13.8	10.4
4c	5 – 6 days	0.0	1.5
4d	7 days	85.6	80.5
5	Number of water supply days in the last week		
5a	0 days	0.0	2.4
5b	1 – 2 days	4.2	9.7
5c	3 – 4 days	12.9	14.8
5d	5 – 6 days	2.7	4.9
5e	7 days	80.2	68.1
6	Percentage of households reporting reliability of water supply days	94.9	86.5
7	Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months	97.6	84.6
8	Average number of times water is supplied on the days of supply		
8a	1 time	31.1	56.6
8b	2 times	5.6	28.2
8c	3 times	3.3	6.1
8d	4 times/24 hours	60.0	9.1
9	Percentage of households reporting reliability of supply for different supply timings	90.6	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	90.4	80.1
10b	Afternoon	98.0	84.6
10c	Evening	66.7	84.8
11	Percentage of households reported paying water tariff – separately or along with other taxes	33.1	52.8
12	Percentage of households reported receiving 55 lpcd or more	94.3	83.5
13	Percentage of households having potable water *	66.2	61.3
14	Percentage of households reporting regularity of supply	90.7	87.2
15	Percentage of households reporting functional tap connections	53.3	47.8
Village level			
16	Percentage villages having functional water and sanitation committees	79.8	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	64.9	86.0
18	Percentage of in-village schemes having O&M undertaken by village water	100.0	83.1

SL.	INDICATOR	Nagaland	India
	and sanitation committee or by Panchayat		
19	Percentage of sample schemes reported having faced challenges in the last one year		
19a	Inadequate infrastructure	26.3	40.2
19b	Poor water availability at the source	21.1	33.0
19c	Poor maintenance	84.2	46.2
19d	Natural calamity	21.1	63.4
20	Percentage of schemes reporting measure to improve source sustainability	55.3	59.9
21	Number of sample villages found with no scheme (defunct/under construction/not handed over/not constructed)	29	751

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

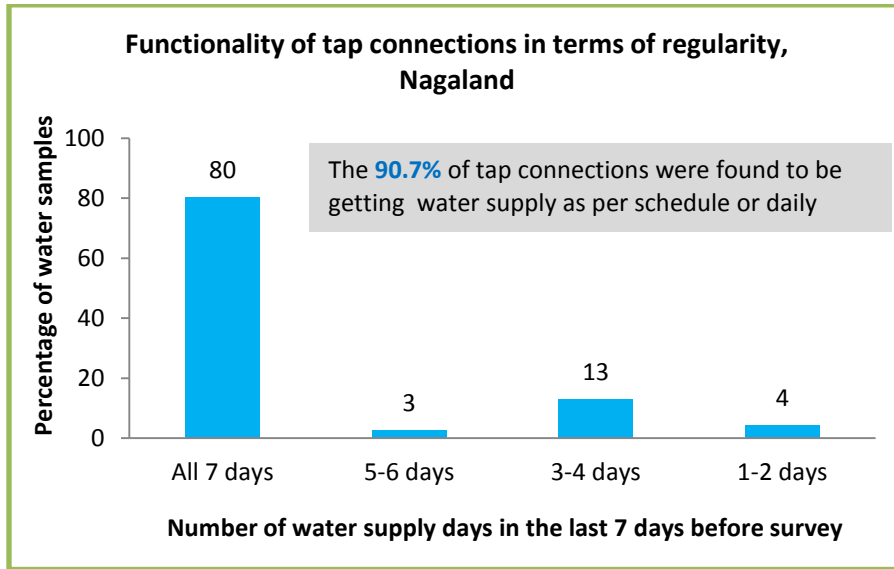
Fig 1: Functionality of the household tap connection in terms of potability - Nagaland



Base: Households with water quality testing done, N: 65

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.

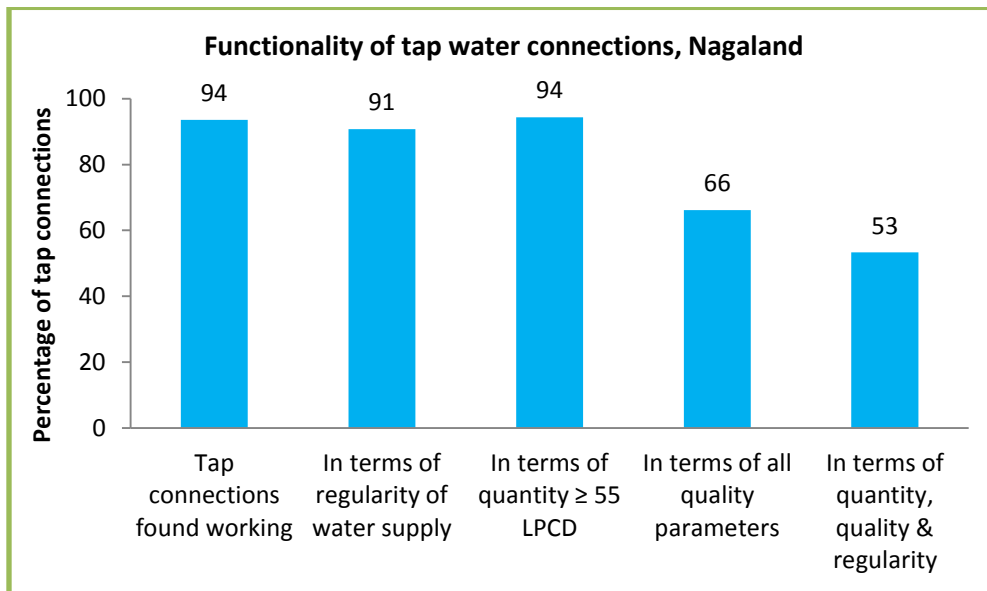
Fig 2: Functionality of the household tap connection in terms of regularity - Nagaland



Base: All Households, N: 450

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 - Nagaland

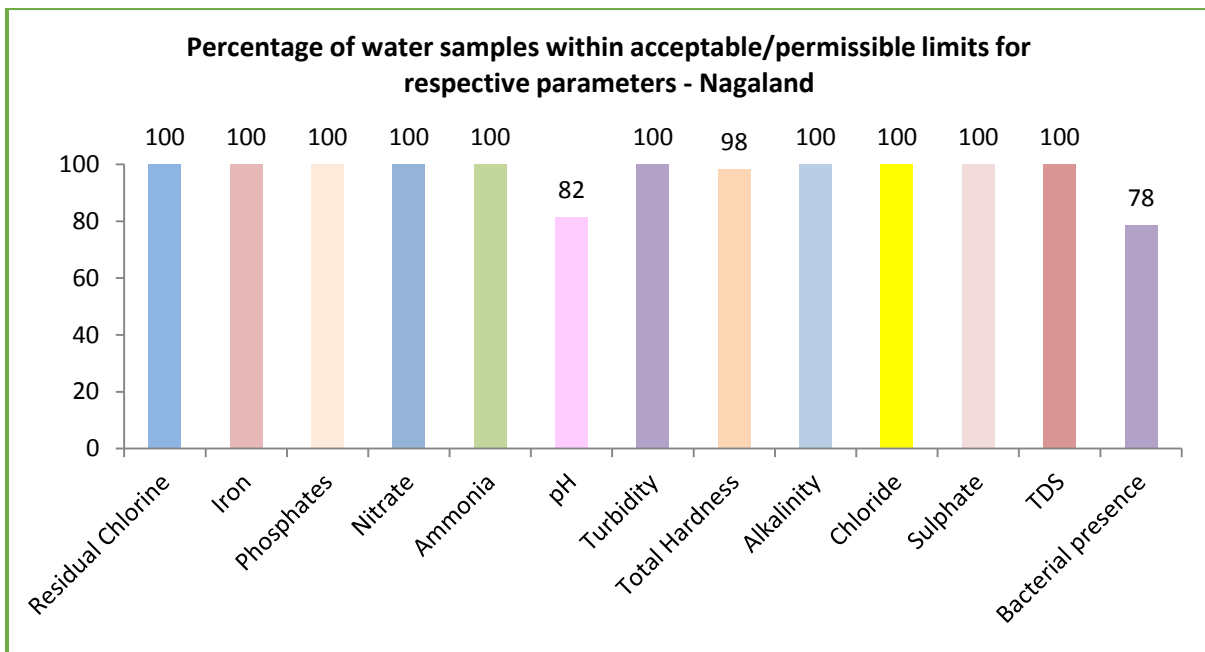


Base: Total count of tap connections considered for functionality assessment, N: 420

A total of 65 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 Nagaland – 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 Residual Chlorine, Iron, Phosphates, Nitrate, Ammonia, Turbidity, Total Hardness, Alkalinity, Chloride, Sulphate and TDS within acceptable/permissible limits. Bacterial presence (total coliform) and pH were the key issues.

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



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



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



5. Conclusions

Nagaland had slightly higher functional tap connections (53.3%) as compared with the national average. About 94 percent of the households were estimated to be supplied 55 lpcd or more and 91 percent of tap connections were found to be supply water daily or as per schedule. However, the proportion of households receiving potable water is less - about 66 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 lower proportion of households had functional tap connections is mostly due to the lower proportion of households having a combination of potability and regularity (58.6% households having adequate quantity and potable water; 55.2% households having potable water received on a regular basis; while 88.8% households had adequate quantity of water supply on a regular basis).

The main issues with the samples which were not found potable were bacterial presence (total coliform) and pH being above permissible limits.

For most of the schemes water supply was scheduled as daily supply but there seems to be variation from the schedule in the actual supply in the last 7 days. A lower proportion of those households who reported that water supply was usually daily provided (85.6%), has reported receiving water supply on a daily basis in the last 7 days (80.2%). Almost one thirds of the households have reported being supplied water once a day, and the rest, mostly 4 times or more 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 33 percent households have reported paying water tariff. As per the JJM guidelines, the State Government needs to ensure 100% fund requirement for operation and maintenance of the schemes are met by the Agency responsible for water supply provision to function as a utility.

Around four fifth of the villages reported having water and sanitation committees and wherever available, 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. A little more than half 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.	Dimapur	Aghunaqa	Khehuto	Khehuto	Khehuto	SVS	Under construction	Scheme is there but not started supply as on 10th December 2020
2.	Dimapur	Aghunaqa	P. Vihoto	P. Vihoto	Gps P Vihoto	SVS	No scheme	There is no scheme in the village
3.	Dimapur	Dhansiripar	Kiyeto	Kiyeto	Ganeshnagar, Doyapur Bazar, Keyeto	MVS	Under construction	Scheme is under construction as on 1st December 2020
4.	Dimapur	Kuhuboto	Luzheto	Luzheto	Luzheto	SVS	Under construction	Scheme is under construction as on 3rd December 2020
5.	Dimapur	Kuhuboto	Suhoi	Suhoi	Suhoi	MVS	No scheme	There is no scheme in the village
6.	Dimapur	Niuland	Ghokuto	Ghokuto	Ghokuto	SVS	No scheme	There is no scheme in the village
7.	Kiphire	Khonsa	Moya	Moya	Gms Moya	SVS	No scheme	There is no scheme in the village
8.	Kiphire	Kiphire	Kichang	Kichang	Ghs Kichang	SVS	No scheme	There is no scheme in the village
9.	Kiphire	Pungro	Jenty	Jenty	Jenty	SVS	No scheme	There is no scheme in the village
10.	Kiphire	Sitimi	Samphure	Samphure	Sampore	SVS	No scheme	There is no scheme in the village
11.	Longleng	Longleng	Orangkong	Orangkong	Orangkong	SVS	Under construction	Scheme is there but not started supply as on 10th December 2020
12.	Mokokchung	Kubolong	Alongchen	Alongchen	Ghs Alongchen	SVS	No scheme	There is no scheme in the village
13.	Mokokchung	Kubolong	Asalenden	Asalenden	Asalenden	SVS	No scheme	There is no scheme in the village
14.	Mokokchung	Mangkolemba	Molungkimong	Molungkimong	Gps Pongentem	SVS	No scheme	There is no scheme in the village
15.	Peren	Athibung	Libemphai	Libemphai	Libhenphai	SVS	Scheme is defunct	Scheme is defunct since last 2 years
16.	Peren	Jalukie	Lower	Lower Gaili	Lower Gaili Namdi	SVS	No scheme	There is no scheme in the village

Functionality Assessment Survey 2020-21- Nagaland

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of largest scheme in the village	Type	Status of the Scheme	Remarks
			Gaili (Namdi)	(Namdi)				
17.	Peren	Jalukie	Ngwalwa Village	Ngwalwa Village	Ngwala New	SVS	No scheme	There is no scheme in the village
18.	Peren	Tening	Tening Town	Tening Town	Tening Town	SVS	No scheme	There is no scheme in the village
19.	Peren	Tening	Tening Village	Tening Village	Tening Vilage	SVS	Under construction	Scheme is under construction
20.	Wokha	Changpan g	Longtsiri	Longtsiri	Longtsiri	SVS	No scheme	There is no scheme in the village
21.	Wokha	Changpan g	Zekheshe	Zekheshe	Zekheshe	SVS	No scheme	There is no scheme in the village
22.	Wokha	Chukitong	Longla	Longla	Longla	SVS	No scheme	There is no scheme in the village
23.	Wokha	Chukitong	Mungya	Mungya	GMS Mungya	SVS	No scheme	There is no scheme in the village
24.	Wokha	Chukitong	Nungying	Nungying	Nungying	SVS	No scheme	There is no scheme in the village
25.	Wokha	Ralan	Yampha	Yampha	Yampha	SVS	Under construction	Scheme is under construction
26.	Wokha	Sanis	Lakhuti	Lakhuti	Lakhuti GPS A	SVS	No scheme	There is no scheme in the village
27.	Wokha	Sanis	Morokjo	Morokjo	Morakjo	SVS	No scheme	There is no scheme in the village
28.	Zunheboto	Tokiye	Tokiye Town	Tokiye Town	GPS Ghokishe	MVS	No scheme	There is no scheme in the village
29.	Zunheboto	Zunheboto	Sheipu	Sheipu	Sheipu	SVS	No scheme	There is no scheme in the village

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

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of Largest Scheme in the Village	Type	Remarks
1.	Mon	Tobu	Changlangshu	Changlangshu	Changlangshu	SVS	Village has been complete with all the required modules
2.	Kohima	Chunlikha	Tsonsa	Tsonsa	Tsonsa	SVS	No FHTC. Water supply through tap stand only
3.	Kohima	Jakham	Kezo Basa	Kezo Basa	Kezo Basa	SVS	No FHTC. Water supply through tap stand only
4.	Kohima	Sechuzubza	Peducha	Peducha	Peducha Gms Kiruphema	SVS	No FHTC. Water supply through tap stand only
5.	Kohima	Tseminyu	Zumphacrbc	Zumphacrbc	Zumphacrbc	SVS	No FHTC. Water supply through tap stand only
6.	Longleng	Longleng	Amosen	Amosen	Amosen Village	SVS	No FHTC. Water supply through tap stand only
7.	Longleng	Longleng	Sangla (Sanglu)	Sangla (Sanglu)	Sangla (Sanglu)	SVS	No FHTC. Water supply through tap stand only
8.	Longleng	Longleng	Shamshangching	Shamshangching	Shamshangching	SVS	No FHTC. Water supply through tap stand only
9.	Mokokchung	Ongpang(S)	Longjongkong	Longjongkong	Longjongkong (New Camp)	SVS	No FHTC. Water supply through tap stand only
10.	Mokokchung	Ongpang(S)	Longkhum	Longkhum	GPS Tongpangriju	SVS	No FHTC. Water supply through tap stand only
11.	Mokokchung	Ongpang(S)	Satsu	Satsu	Satsu	SVS	No FHTC. Water supply through tap stand only
12.	Mokokchung	Tsurangkong	Satsukba	Satsukba	Satsuk	SVS	No FHTC. Water supply through tap stand only
13.	Peren	Peren	Old Jalukie Lower	Old Jalukie Lower	Jalukie Old	SVS	No FHTC. Water supply through tap stand only
14.	Peren	Tening	Lalong	Lalong	Lalong GPS	SVS	No FHTC. Water supply through tap stand only
15.	Peren	Tening	Nsong Town	Nsong Town	Nsong Town GMS	SVS	No FHTC. Water supply through tap stand only
16.	Peren	Tening	Nzauna	Nzauna	Njauna Gms	SVS	No FHTC. Water supply through tap stand only
17.	Phek	Chiza	Theisumi	Theisumi	Theisumi	SVS	No FHTC. Water supply

Functionality Assessment Survey 2020-21- Nagaland

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of Largest Scheme in the Village	Type	Remarks
		mi	(Thetsumi)	(Thetsumi)	(Thetsumi)		through tap stand only
18.	Phek	Kikruma	Kikrūma	Kikrūma	GMS Kikruma	SVS	No FHTC. Water supply through tap stand only
19.	Phek	Kikruma	Phusachodu	Phusachodu	Phusachodu	SVS	No FHTC. Water supply through tap stand only
20.	Phek	Pfutsero	Khezhakeno Eac Hq.	Khezhakeno Eac Hq.	Khezhakeno EAC HQ.	SVS	Water pipeline is damaged
21.	Phek	Phek	Chepoketa	Chepoketa	Chepoketa	SVS	No FHTC. Water supply through tap stand only
22.	Phek	Phek	Sohomi	Sohomi	Sohomi	SVS	No FHTC. Water supply through tap stand only
23.	Phek	Sekruzu	Chozouba Village	Chozouba Village	GMS Chozouba Village	SVS	No FHTC. Water supply through tap stand only
24.	Phek	Sekruzu	Runguzu Nawe	Runguzu Nawe	Runguzu Nawe	SVS	No FHTC. Water supply through tap stand only
25.	Tuensang	Chare	New Chungliymti	New Chungliymti	GPS Chungliymti B	SVS	No FHTC. Water supply through tap stand only
26.	Tuensang	Chessore	Chessore Hq.	Chessore Hq.	Chessore HQ	SVS	No FHTC. Water supply through tap stand only
27.	Tuensang	Longkhim	New Sangsomong	New Sangsomong	Longkhim	MVS	No FHTC. Water supply through tap stand only
28.	Tuensang	Noklak	Kingpao (Kingphu)	Kingpao (Kingphu)	Kingpao (Kungphu)	SVS	No FHTC. Water supply through tap stand only
29.	Zunheboto	Akultoto	V.K. Town	V.K. Town	VK Town	MVS	No FHTC. Water supply through tap stand only
30.	Zunheboto	Gathashi	Ighanumi	Ighanumi	GPS Ighanumi	SVS	No FHTC. Water supply through tap stand only
31.	Zunheboto	Satakha	Tukunasami	Tukunasami	Tukunasami	SVS	No FHTC. Water supply through tap stand only
32.	Zunheboto	Suruhoto	Kikhevi	Kikhevi	GPS Kikhevi	SVS	Scheme is available and supplying water through stand post only.
33.	Zunheboto	Tokiyee	Hoshepu Village	Hoshepu Village	Hoshepu Village	SVS	No FHTC. Water supply through tap stand only
34.	Zunheboto	Tokiyee	Lizutomi Old	Lizutomi Old	GPS Atokiji	SVS	No FHTC. Water supply through tap stand only
35.	Zunheboto	Tokiyee	Luvishhe	Luvishhe	GPS	MVS	No FHTC. Water supply

Functionality Assessment Survey 2020-21- Nagaland

S.No	District Name	Block Name	Panchayat Name	Village Name	Name of Largest Scheme in the Village	Type	Remarks
	oto	e	New	New	L/Shevishe		through tap stand only

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.	Kohima	Chiephobozou	Ziezou	Ziezou	Ziezou (Phekerkie)	SVS	10
2.	Kohima	Jakhama	Kidima	Kidima	Kidima	SVS	6

Annexure 4: Indicative proportion of functional tap connections by districts

S.No	District	Percentage Functional Taps
1.	Dimapur	48.3
2.	Kiphire*	22.2
3.	Kohima	54.7
4.	Mokokchung*	66.7
5.	Mon*	100.0
6.	Peren*	73.3
7.	Tuensang	47.8
8.	Wokha*	0.0
9.	Zunheboto*	100.0

* The denominator is less than 50

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.	Dimapur	Chumukedima	Chekiye - B (Ikishe)	Chekiye - B (Ikishe)
2.	Dimapur	Niuland	Kuhoxu	Kuhoxu
3.	Kiphire	Kiphire	Keor	Keor
4.	Kiphire	Kiphire	Lihtsaoung	Lihtsaoung
5.	Kohima	Kohima	Science College Jotsoma	Science College Jotsoma
6.	Kohima	Sechu-Zubza	Peducha	Peducha
7.	Mokokchung	Ongpangkong(N)	Ungma	Ungma
8.	Peren	Tening	Lalong	Lalong
9.	Peren	Tening	Nsong Town	Nsong Town
10.	Tuensang	Chessore	Sotokur	Sotokur
11.	Tuensang	Noklak	Kingpao (Kingphu)	Kingpao (Kingphu)
12.	Wokha	Sanis	Aree Old	Aree Old
Villages with failed water samples for Total Hardness test				
1.	Phek	Chizami	Theisumi (Thetsumi)	Theisumi (Thetsumi)
Villages with failed water samples for Bacteriological present/ absence test using H2S vials				
1.	Kiphire	Kiphire	Keor	Keor
2.	Kiphire	Kiphire	Lihtsaoung	Lihtsaoung
3.	Longleng	Longleng	Amosen	Amosen
4.	Longleng	Longleng	Sangla (Sanglu)	Sangla (Sanglu)
5.	Longleng	Longleng	Shamshangching	Shamshangching
6.	Mokokchung	Ongpangkong(S)	Longkhum	Longkhum
7.	Peren	Tening	Lalong	Lalong
8.	Tuensang	Chare	Tsadang Old	Tsadang Old
9.	Tuensang	Noklak	Kingpao (Kingphu)	Kingpao (Kingphu)
10.	Tuensang	Sangsangnyu	Ngangpong	Ngangpong
11.	Wokha	Sanis	Aree Old	Aree Old
12.	Zunheboto	Akuluto	V.K. Town	V.K. Town
13.	Zunheboto	Satakha	Tukunasami	Tukunasami
14.	Zunheboto	Tokiye	Hoshepu Village	Hoshepu Village