

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

**State report**

**Goa**



**Submitted to:**  
**National Jal Jeevan Mission**  
**Department of Drinking Water and Sanitation**  
**Ministry of Jal Shakti**

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## **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 Goa the survey was conducted in 300 households from 20 villages in 2 districts.

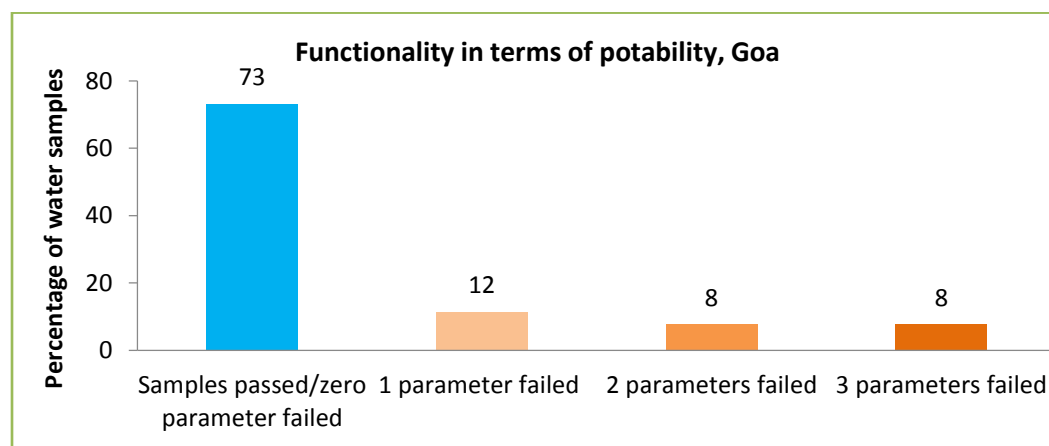
#### 4. Key Findings

SL.	INDICATOR	Goa	India
<b>Household level</b>			
1	Average household size	4.7	5.6
2	Percent of households using FHTC for drinking purpose	97.3	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	100.0	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	0.0	7.6
4b	3 – 4 days	15.0	10.4
4c	5 – 6 days	0.0	1.5
4d	7 days	85.0	80.5
5	Number of water supply days in the last week		
5a	0 days	0.0	2.4
5b	1 – 2 days	1.0	9.7
5c	3 – 4 days	15.0	14.8
5d	5 – 6 days	12.7	4.9
5e	7 days	71.3	68.1
6	Percentage of households reporting reliability of water supply days	49.3	86.5
7	Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months	100.0	84.6
8	Average number of times water is supplied on the days of supply		
8a	1 time	44.3	56.6
8b	2 times	2.0	28.2
8c	3 times	0.0	6.1
8d	4 times/24 hours	53.7	9.1
9	Percentage of households reporting reliability of supply for different supply timings	10.8	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	96.3	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	99.3	52.8
12	Percentage of households reported receiving 55 lpcd or more	95.7	83.5
13	Percentage of households having potable water *	73.1	61.3
14	Percentage of households reporting regularity of supply	86.3	87.2
15	Percentage of households reporting functional tap connections	54.3	47.8
<b>Village level</b>			
16	Percentage villages having functional water and sanitation committees	85.0	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	83.9	86.0
18	Percentage of in-village schemes having O&M undertaken by village water	40.0	83.1

SL.	INDICATOR	Goa	India
	and sanitation committee or by Panchayat		
<b>19</b>	Percentage of sample schemes reported having faced challenges in the last one year		
<b>19a</b>	Inadequate infrastructure	50.0	40.2
<b>19b</b>	Poor water availability at the source	0.0	33.0
<b>19c</b>	Poor maintenance	0.0	46.2
<b>19d</b>	Natural calamity	50.0	63.4
<b>20</b>	Percentage of schemes reporting measure to improve source sustainability	35.0	59.9
<b>21</b>	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 Goa. 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.

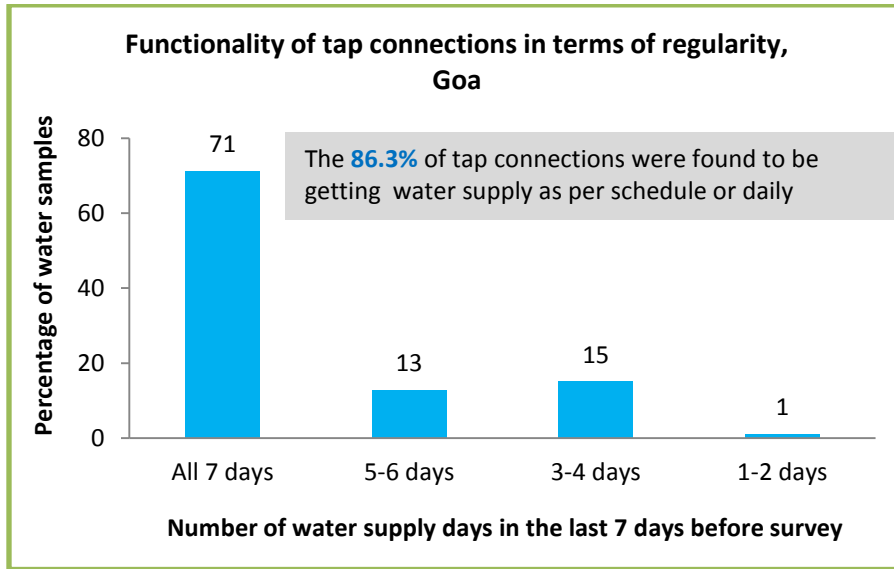
**Fig 1: Functionality of the household tap connection in terms of potability - Goa**



**Base: Households with water quality testing done, N: 26**

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.

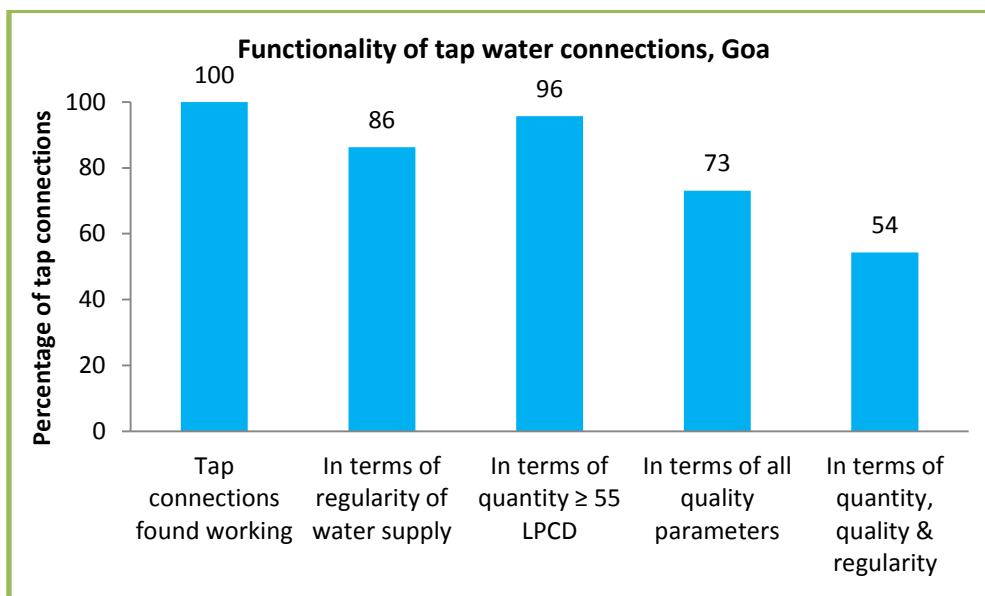
**Fig 2: Functionality of the household tap connection in terms of regularity - Goa**



**Base: All Households, N: 300**

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 - Goa**

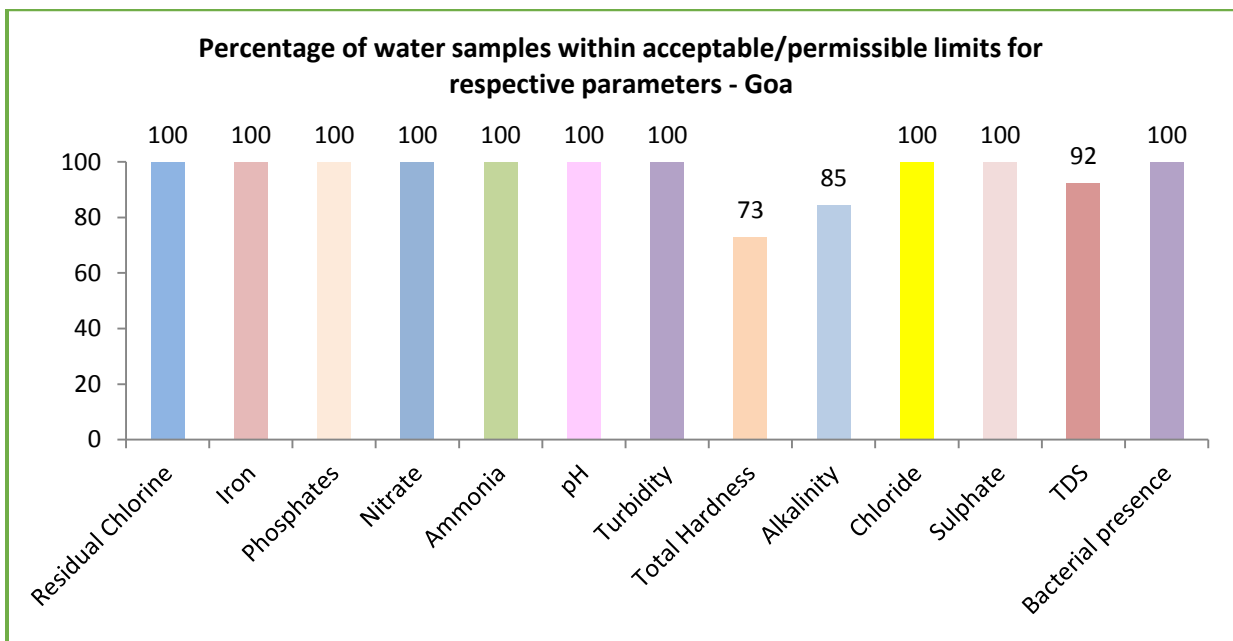


**Base: Total count of tap connections considered for functionality assessment, N: 300**

A total of 26 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 Goa – 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, all the samples had Residual Chlorine, Iron, Phosphates, Nitrate, Ammonia, pH, Turbidity, Chloride, Sulphate and Bacterial presence within acceptable/permissible limits. The key water quality issues were Total Hardness (27%), Alkalinity (15%) and TDS (8%) beyond acceptable/ permissible limits.

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



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



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



## 5. Conclusions

Goa had slightly higher functional tap connections (54.3%) as compared with the national average. About 96 percent of the households were estimated to be supplied 55 lpcd or more and 86 percent with a regular water supply. However, the proportion of households receiving potable water is less - about 73 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 (67.7% households having adequate quantity and potable water; 56.3% households having potable water received on a regular basis; while 82.3% households had adequate quantity of water supply on a regular basis).

The main issues with the samples which were not found potable were Total Hardness, Alkalinity and TDS 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. A much lower proportion of those reporting a usual daily water supply (85.0%), has reported receiving water supply on a daily basis in the last 7 days (71.3%). Around 44 percent of the households have reported being supplied water once a day, and the rest, either 4 or more times a day or for 24 hours. A majority of the households have reported a reliability of water supply timings as well as adequate water pressure. Almost all households (99.3) reported paying water tariff.

Around 85 percent of the villages have reported having water and sanitation committees – of these villages, only in 40 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 and inadequate infrastructure' 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:**

- 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 sampled are without a scheme or any defunct schemes or schemes under construction.

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

No villages present with schemes supplying water only through tap stand.

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

No villages present where 15 FHTCs were not found.

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

S.No.	Districts	Percentage Functional Taps
1.	North Goa	35.3
2.	South Goa	73.3

**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 Total Hardness test</b>				
1.	North Goa	Bardez	Nerul	Nerul
2.	North Goa	Bardez	Assagao	Assagao
3.	North Goa	Bardez	Siolim-Sodiem	Siolim
4.	North Goa	Bicholim	Cudnem	Cudnem
5.	North Goa	Ponda	Panchawadi	Ponchavadi
6.	North Goa	Ponda	Panchawadi	Ponchavadi
7.	North Goa	Satari	Birondem	Ansolem
<b>Villages with failed water samples for Total Alkalinity test</b>				
1.	North Goa	Bardez	Assagao	Assagao
2.	North Goa	Bicholim	Cudnem	Cudnem
3.	North Goa	Ponda	Panchawadi	Ponchavadi
4.	North Goa	Satari	Birondem	Ansolem
<b>Villages with failed water samples for Total Dissolved Solids test</b>				
1.	North Goa	Bicholim	Cudnem	Cudnem
2.	North Goa	Satari	Birondem	Ansolem