

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

**State report**

**Puducherry**



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

**Report prepared by:**  
**NIELSEN (INDIA) PRIVATE LIMITED**

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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 Puducherry the survey was conducted in 300 households from 20 villages in 2 districts.

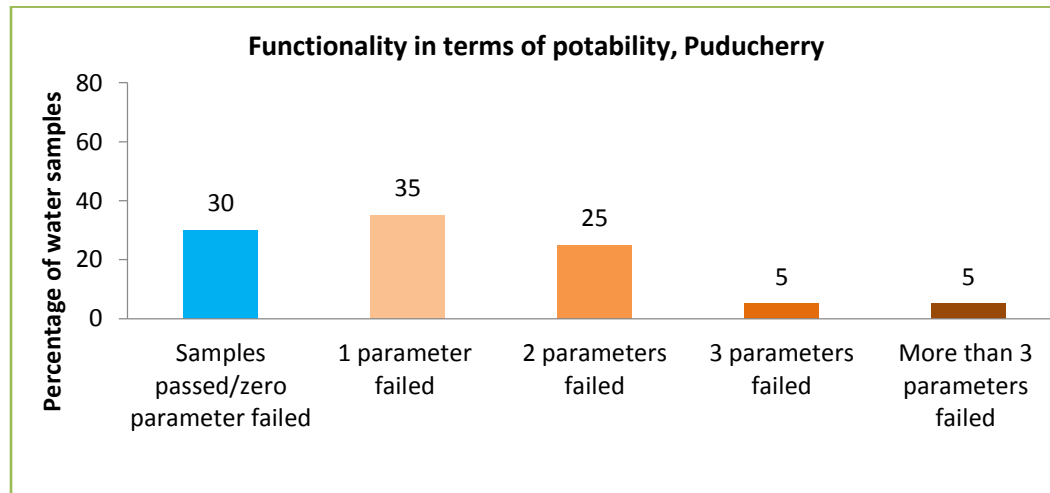
#### 4. Key Findings

SL.	INDICATOR	Puducherry	India
<b>Household level</b>			
1	Average household size	4.3	5.6
2	Percent of households using FHTC for drinking purpose	99.0	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	99.3	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	0.3	7.6
4b	3 – 4 days	0.0	10.4
4c	5 – 6 days	0.3	1.5
4d	7 days	99.3	80.5
5	Number of water supply days in the last week		
5a	0 days	0.0	2.4
5b	1 – 2 days	1.3	9.7
5c	3 – 4 days	0.0	14.8
5d	5 – 6 days	0.3	4.9
5e	7 days	98.3	68.1
6	Percentage of households reporting reliability of water supply days	99.3	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	0.3	56.6
8b	2 times	59.0	28.2
8c	3 times	40.7	6.1
8d	4 times/24 hours	0.0	9.1
9	Percentage of households reporting reliability of supply for different supply timings	100.0	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	99.3	80.1
10b	Afternoon	98.9	84.6
10c	Evening	100.0	84.8
11	Percentage of households reported paying water tariff – separately or along with other taxes	83.7	52.8
12	Percentage of households reported receiving 55 lpcd or more	99.7	83.5
13	Percentage of households having potable water *	30.0	61.3
14	Percentage of households reporting regularity of supply	99.0	87.2
15	Percentage of households reporting functional tap connections	28.8	47.8
<b>Village level</b>			
16	Percentage villages having functional water and sanitation committees	15.0	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	92.6	86.0
18	Percentage of in-village schemes having O&M undertaken by village water	100.0	83.1

SL.	INDICATOR	Puducherry	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	0.0	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	100.0	63.4
<b>20</b>	Percentage of schemes reporting measure to improve source sustainability	75.0	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 Puducherry. 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.

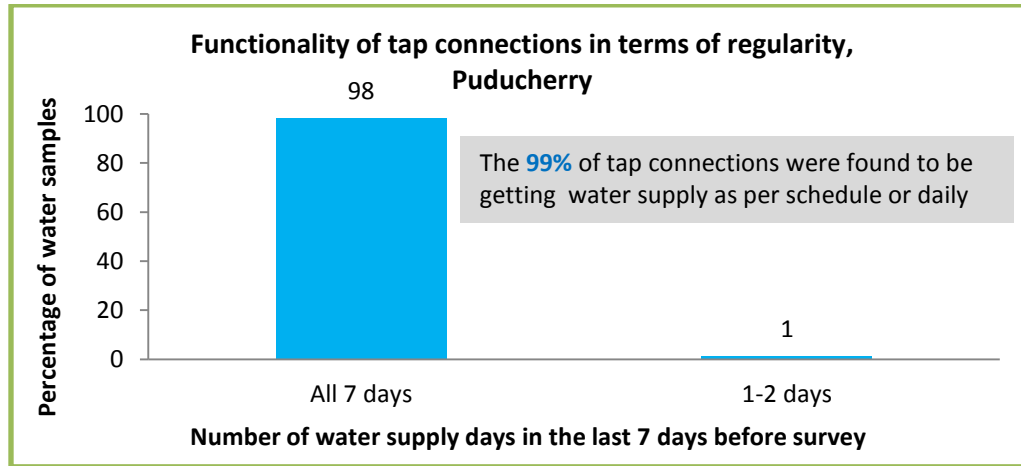
**Fig 1: Functionality of the household tap connection in terms of potability - Puducherry**



**Base: Households with water quality testing done, N: 20**

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.

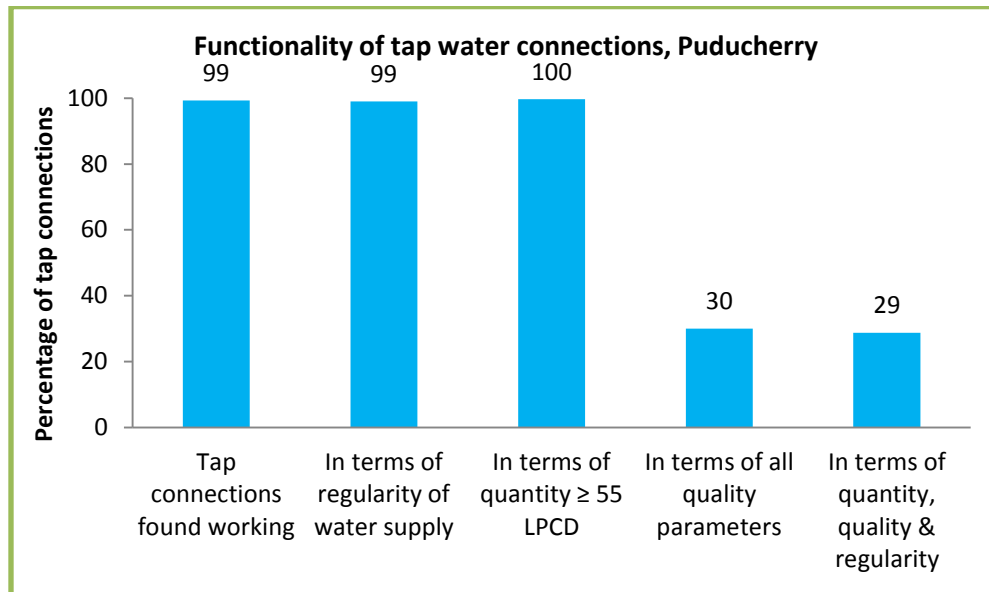
**Fig 2: Functionality of the household tap connection in terms of regularity - Puducherry**



**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 - Puducherry**



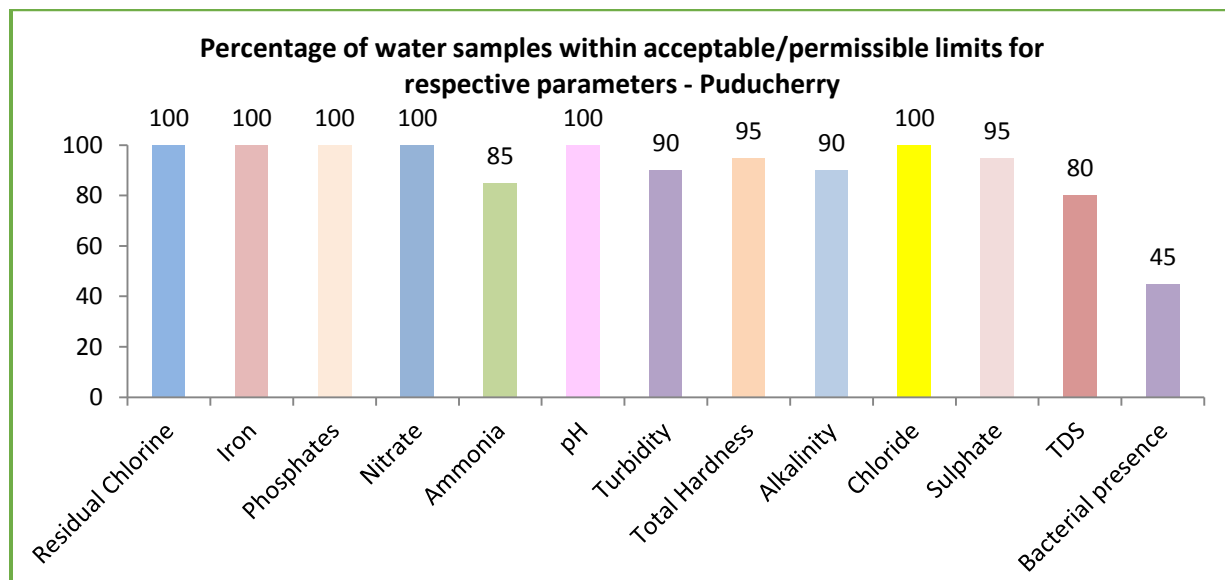
**Base: Total count of tap connections considered for functionality assessment, N: 295**

## Functionality Assessment Survey 2020-21- Puducherry

A total of 20 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 Puducherry – 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 (95% or more) had Residual Chlorine, Iron, Phosphate, Nitrate, pH, Total Hardness, Chloride and Sulphate within acceptable/permissible limits. Ammonia, Turbidity, Alkalinity, TDS and Bacterial presence (Total Coliform) were the key issues.

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



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



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



## 5. Conclusions

Puducherry had very less functional tap connections (28.8%) as compared with the national average. Almost all (99.7%) of the households were estimated to be supplied 55 lpcd or more water quantity and 99 percent of tap connections were found to be supplying water daily or as per schedule. However, the proportion of households receiving potable water is less - about 30 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 (28.8% households having adequate quantity and potable water; 28.8% households having potable water received on a regular basis; while 96.8% households had adequate quantity of water supply on a regular basis).

The main issues with the samples which were not found potable were Ammonia, Turbidity, Alkalinity TDS and Bacterial presence (Total Coliform) 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. Almost all those reporting an usual daily water supply schedule (99.3%), has reported receiving water supply on a daily basis in the last 7 days (98.3%). Almost three fifth of the households have reported being supplied water once a day, and the rest twice a day. Almost all 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 84 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.



Only 15 percent villages have reported having water and sanitation committees and in all these villages 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' was the main challenges faced by the schemes. Three fourth 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 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 where 15 FHTCs were not found.

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

S.No	Districts	Percentage Functional Taps
1	Karaikal	58.6
2	Pondicherry	0.0

**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 Turbidity test</b>				
1.	Pondicherry	Ariyankuppam	Dr. Radhakrishnan Nagar	Ariyankuppam Part2
2.	Pondicherry	Villianur	Thondamanatham	Thuthipet
<b>Villages with failed water samples for Total Hardness test</b>				
1.	Pondicherry	Villianur	Sivaranthagam	Sivaranthagam
<b>Villages with failed water samples for Total Alkalinity test</b>				
1.	Pondicherry	Ariyankuppam	Manapet	Manapattu
2.	Pondicherry	Ariyankuppam	Pillaiyarkuppam	Kandanpet
<b>Villages with failed water samples for Ammonia test</b>				
1.	Pondicherry	Ariyankuppam	Kirumampakkam	Kirumampakkam
2.	Pondicherry	Villianur	Odiampet West	Odiampet
3.	Pondicherry	Villianur	Sivaranthagam	Sivaranthagam
<b>Villages with failed water samples for Sulphate test</b>				
1.	Pondicherry	Villianur	Sivaranthagam	Sivaranthagam
<b>Villages with failed water samples for Total Dissolved Solids test</b>				
1.	Karaikal	Karaikal	Sethur	Pandaravadai
2.	Karaikal	Karaikal	T.R.Pattinam Central	Melaiyurpet
3.	Pondicherry	Villianur	Poraiyur Agaram	Poraiyur
4.	Pondicherry	Villianur	Thondamanatham	Thuthipet
<b>Villages with failed water samples for Bacteriological present/ absence test using H2S vials</b>				

Functionality Assessment Survey 2020-21- Puducherry

S.No.	District name	Block name	Gram panchayat name	Village name
1.	Karaikal	Karaikal	Kottucherry South	Kottucherry South
2.	Karaikal	Karaikal	Neravy (South)	Neravy (South)
3.	Pondicherry	Ariyankuppam	Dr. Radhakrishnan Nagar	Ariyankuppam Part2
4.	Pondicherry	Ariyankuppam	Kirumampakkam	Kirumampakkam
5.	Pondicherry	Ariyankuppam	Manapet	Manapattu
6.	Pondicherry	Ariyankuppam	Pillaiyarkuppam	Kandanpet
7.	Pondicherry	Ariyankuppam	Thimmanayakkanpalayam	Thimmanaikenpalayam
8.	Pondicherry	Villianur	Kunichampet	Kunichempet
9.	Pondicherry	Villianur	Odiampet West	Odiampet
10.	Pondicherry	Villianur	Sivaranthagam	Sivaranthagam
11.	Pondicherry	Villianur	Thondamanatham	Thuthipet