

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

State report

Meghalaya



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

Report prepared by:
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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 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 Meghalaya the survey was conducted in 1316 households from 109 villages in 11 districts.

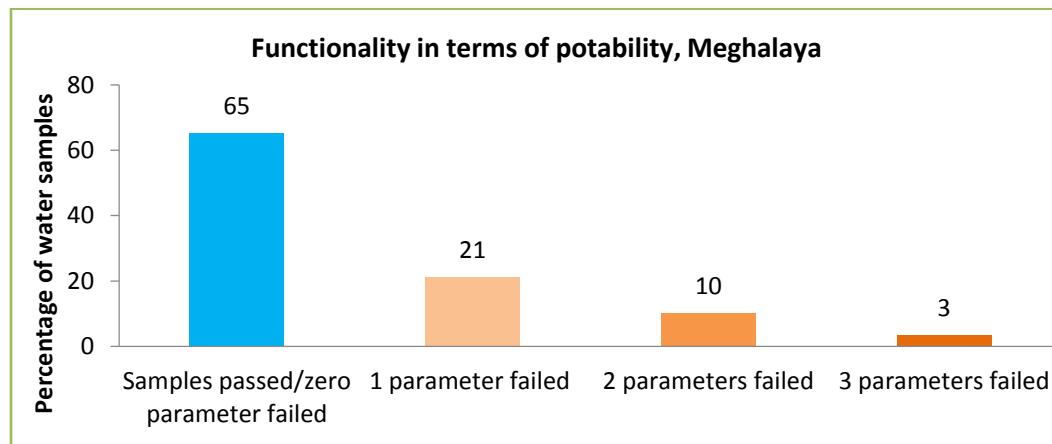
4. Key Findings

| SL. | INDICATOR | Meghalaya | India |
|------------------------|---|-----------|-------|
| Household level | | | |
| 1 | Average household size | 6.0 | 5.6 |
| 2 | Percent of households using FHTC for drinking purpose | 96.2 | 88.9 |
| 3 | Percentage of households reported working tap connections (supply at least one day in last 7 days) | 91.1 | 93.6 |
| 4 | Number of water supply days in a usual week | | |
| 4a | 1 – 2 days | 0.2 | 7.6 |
| 4b | 3 – 4 days | 1.4 | 10.4 |
| 4c | 5 – 6 days | 0.4 | 1.5 |
| 4d | 7 days | 98.1 | 80.5 |
| 5 | Number of water supply days in the last week | | |
| 5a | 0 days | 1.1 | 2.4 |
| 5b | 1 – 2 days | 1.5 | 9.7 |
| 5c | 3 – 4 days | 2.9 | 14.8 |
| 5d | 5 – 6 days | 4.7 | 4.9 |
| 5e | 7 days | 89.7 | 68.1 |
| 6 | Percentage of households reporting reliability of water supply days | 90.6 | 86.5 |
| 7 | Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months | 93.3 | 84.6 |
| 8 | Average number of times water is supplied on the days of supply | | |
| 8a | 1 time | 36.6 | 56.6 |
| 8b | 2 times | 32.1 | 28.2 |
| 8c | 3 times | 0.0 | 6.1 |
| 8d | 4 times/24 hours | 31.4 | 9.1 |
| 9 | Percentage of households reporting reliability of supply for different supply timings | 97.8 | 84.3 |
| 10 | Percentage of households reporting adequate water pressure for different supply timings | | |
| 10a | Morning | 88.3 | 80.1 |
| 10b | Afternoon | 96.5 | 84.6 |
| 10c | Evening | 98.0 | 84.8 |
| 11 | Percentage of households reported paying water tariff – separately or along with other taxes | 7.9 | 52.8 |
| 12 | Percentage of households reported receiving 55 lpcd or more | 96.9 | 83.5 |
| 13 | Percentage of households having potable water * | 65.2 | 61.3 |
| 14 | Percentage of households reporting regularity of supply | 92.3 | 87.2 |
| 15 | Percentage of households reporting functional tap connections | 65.2 | 47.8 |
| Village level | | | |
| 16 | Percentage villages having functional water and sanitation committees | 86.2 | 48.5 |
| 17 | Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days) | 80.2 | 86.0 |
| 18 | Percentage of in-village schemes having O&M undertaken by village water | 61.9 | 83.1 |

| SL. | INDICATOR | Meghalaya | India | |
|-----|---|-----------|-------|--|
| | and sanitation committee or by Panchayat | | | |
| 19 | Percentage of sample schemes reported having faced challenges in the last one year | | | |
| 19a | Inadequate infrastructure | 49.1 | 40.2 | |
| 19b | Poor water availability at the source | 45.3 | 33.0 | |
| 19c | Poor maintenance | 28.3 | 46.2 | |
| 19d | Natural calamity | 60.4 | 63.4 | |
| 20 | Percentage of schemes reporting measure to improve source sustainability | 60.0 | 59.9 | |
| 21 | Number of sample villages found with no scheme (defunct/under construction/not handed over/not constructed) | 19 | 751 | |

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

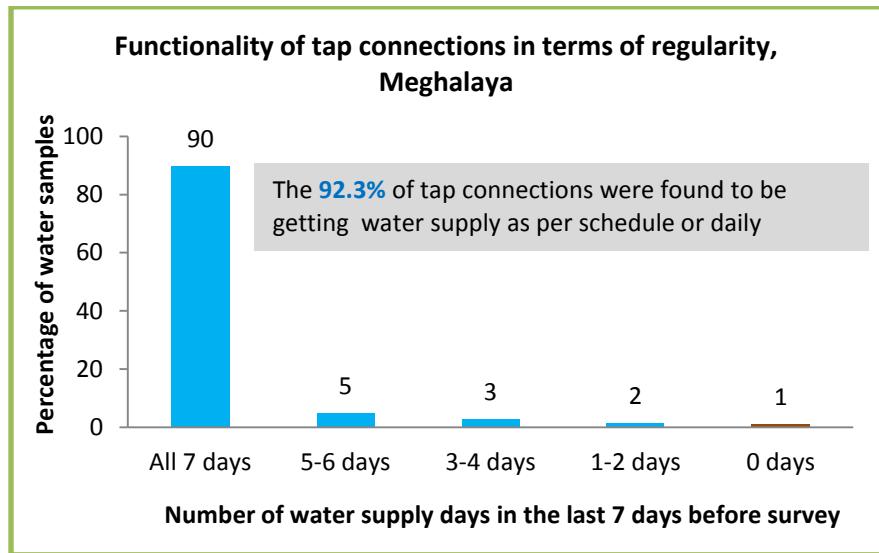
Fig 1: Functionality of the household tap connection in terms of potability - Meghalaya



Base: Households with water quality testing done, N: 89

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.

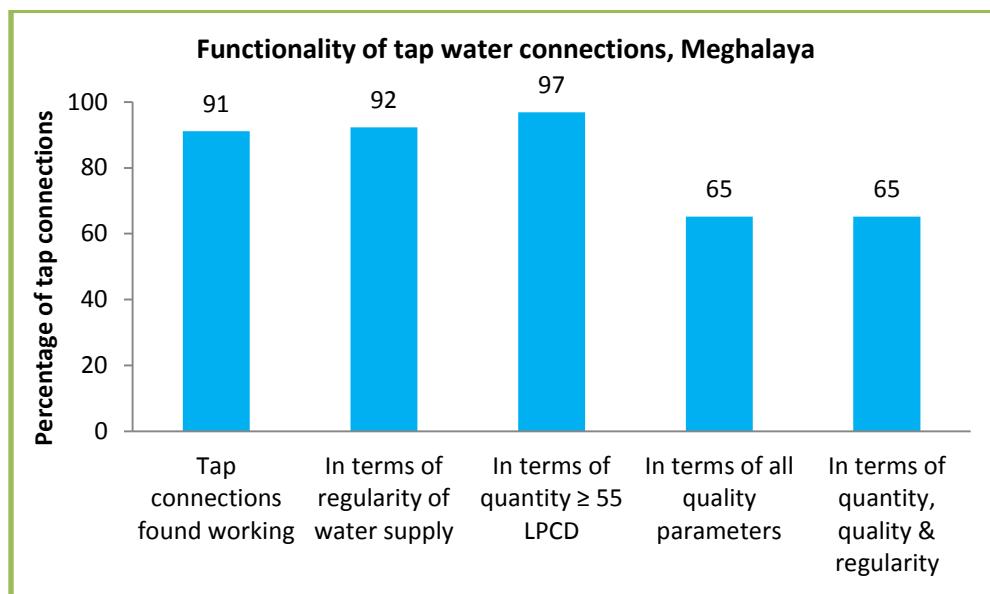
Fig 2: Functionality of the household tap connection in terms of regularity - Meghalaya



Base: Households with water quality testing done, N: 89

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 - Meghalaya



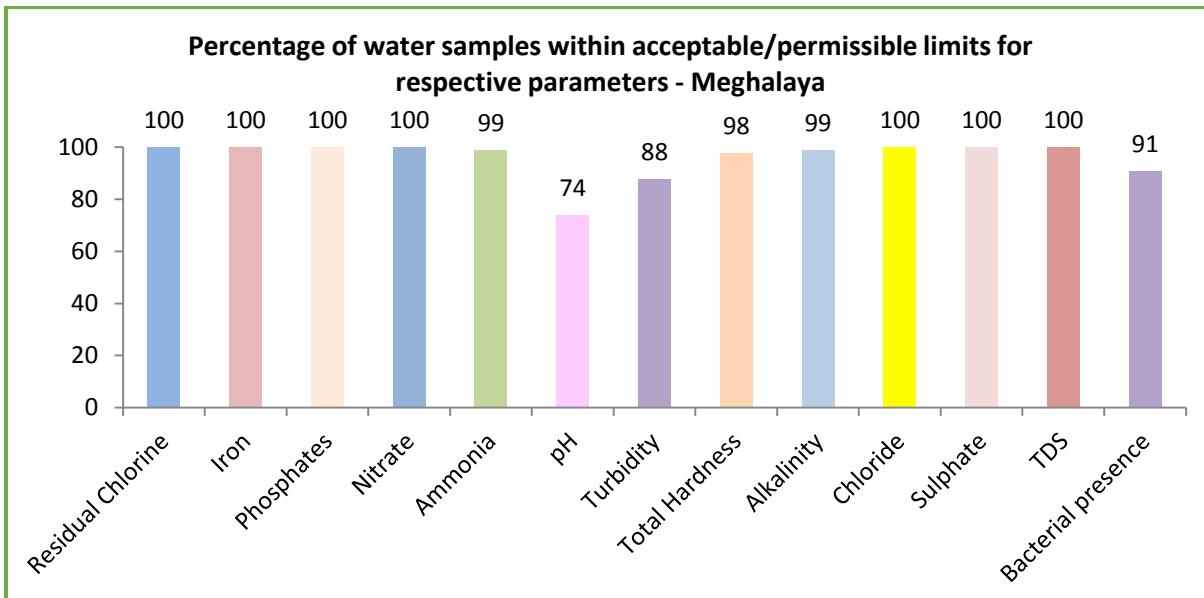
Base: Total count of tap connections considered for functionality assessment, N: 1301

Functionality Assessment Survey 2020-21- Meghalaya

A total of 89 water samples were tested as per BIS: 10,500 standards for all 15 parameters. 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% and above) had Residual Chlorine, Iron, Phosphates, Nitrate, Ammonia, Total Hardness, Alkalinity, Chloride, Sulphate, and TDS within acceptable/permissible limits. pH and Turbidity and Bacterial (total coliform presence were the main issues with the samples which were not found potable.

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



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



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



5. Conclusions

Meghalaya has performed well in the functionality assessment with almost 2 out of every 3 households with tap connections have been assessed to have a functional tap connection. A very high proportion (97%) of tap connections are estimated to supply more than 55 lpcd or more water and about 92 percent of tap connections were found to be supplying water daily or as per schedule. Meghalaya had higher proportion of functional tap connections (67%) as compared with the national average. 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 higher proportion of households had functional tap connections is mostly due to the higher proportion of households having a combination of quantity and regularity (58.6 percent households having adequate quantity and potable water; 55.2 percent households having potable water received on a regular basis; while 88.8 percent households had adequate quantity of water supply on a regular basis).

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

The proportion of households reporting currently working tap connections in Meghalaya is high (91%). On a usual basis, almost 98 percent of the households have reported receiving water supply on a daily basis. Slightly more than a third of the households (37%) reported being supplied water once a day, 32 twice a day and another 31 percent reported supply to be more than 4 times a day or 24 hours supply. Almost all 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, the fact only 8 percent of the households have reported paying water tariff is an area of concern. 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.

Eighty six percent of the villages have reported having water and sanitation committees –in about two-thirds of 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’, ‘poor water availability at source’ and ‘inadequate infrastructure’ was the main challenges faced by the schemes. Sixty percent 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.N o. | District Name | Block Name | Panchayat Name | Village Name | Name of Largest Scheme in the Village | Type | Status of the Scheme | Remarks |
|-----------|--------------------------|---------------|-------------------------|-------------------------|--|------|-------------------------|--|
| 1. | East Khasi Hills | 12- Shnong | Warbah | Warbah | Warbah pres. LP school-Warbah | SVS | Scheme is defunct | No water supply |
| 2. | North Garo Hills | Bajengdoba | Chiragre | Chiragre | Reconstruction of Chirara WSS | MVS | Scheme is defunct | There is no functional scheme in the village |
| 3. | North Garo Hills | Bajengdoba | Dalmanggr e | Dalmanggr e | Dalmanggre WSS | SVS | Scheme is defunct | Scheme not functional |
| 4. | North Garo Hills | Bajengdoba | Mansinggr e | Mansinggr e | Mansinggre WSS | SVS | Scheme is defunct | Scheme not functional |
| 5. | North Garo Hills | Kharkutta | Upper Bolsaldam | Upper Bolsaldam | Greater Kharkutta WSS | MVS | Scheme is defunct | Scheme not functional |
| 6. | Ri Bhoi | Umsning | Kyrdemkulai 6th Mile | Kyrdemkulai 6th Mile | Improvement of Kyrdemkulai combined WSS | MVS | Scheme is defunct | Scheme is not functional since last 9 months |
| 7. | South Garo Hills | Baghmar a | Denggagre | Denggagre | Re-construction of Dikronggri WSS | MVS | Scheme is defunct | Scheme not functional |
| 8. | South Garo Hills | Baghmar a | Maraika Chiring | Maraika Chiring | Marakka Chiring WSS | MVS | Scheme is defunct | Scheme is not functional since last 14 months |
| 9. | South Garo Hills | Chokpot i | Kemranggir | Kemranggr e | Kemrangre WSS | SVS | Under construction | Under construction |
| 10. | South Garo Hills | Chokpot i | Papa Asakgre | Papa Asakgre | Near Papa Asakgiri village. | MVS | Scheme is defunct | Scheme not functional |
| 11. | South Garo Hills | Gasuapara | Bilkona | Bilkona | Dumnikura WSS | MVS | Scheme is defunct | Old water tank is damaged |
| 12. | South Garo Hills | Gasuapara | Dompaigre | Dompaigre | Construction of Dompaigre WSS | SVS | Under construction | Under construction |
| 13. | South Garo Hills | Rongara | Dulbeta | Dulbeta | On the hillock of the Mahadeo village. | MVS | Scheme is defunct | Scheme not functional |
| 14. | South West Garo Hills | Betasing | Sonamati | Sonamati | Balapara, Lewabari and Putimari WSS | MVS | Scheme is defunct | Scheme not functional |
| 15. | West Garo Hills | Dalu | Terimpara (Morop) | Terimpara (Morop) | Terimpara WSS | MVS | Scheme is defunct | Scheme not functional |
| 16. | West Garo | Rongr | Jendragre | Jendragre | Greater Asananggre WSS | MVS | Scheme is defunct | Scheme not functional |

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| S.N | District Name | Block Name | Panchayat Name | Village Name | Name of Largest Scheme in the Village | Type | Status of the Scheme | Remarks |
|-----|--------------------|------------|----------------|--------------|---------------------------------------|------|----------------------|--|
| | Hills | am | | | | | | |
| 17. | West Garo Hills | Selsella | Maulakand i | Maulakand i | Goladigli WSS | SVS | Scheme is defunct | Scheme not functional |
| 18. | West Garo Hills | Selsella | Salbilla I | Salbilla I | Ramjonggre WSS | MVS | Scheme is defunct | Scheme not functional |
| 19. | West Jaintia Hills | Laskei n | Barato | Barato | Barato Comb WSS | MVS | Scheme is defunct | Scheme is not functional since last 6 months due to pipeline damage which was caused by a flash flood. |

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

| S.No. | District name | Block name | Panchayat name | Village name | Name of largest scheme in the village | Type | Remarks |
|-------|-----------------|------------|----------------|---------------|---------------------------------------|------|--------------------------------|
| 1. | East Garo Hills | Samanda | Nengmandalgre | Nengmandalgre | Renovation of Bolkinggre WSS | MVS | Water supply through tap stand |

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 |
|-------|-----------------------|------------|---------------------|---------------------|---------------------------------------|------|
| 1. | East Garo Hills | Songsak | Dobu Bolsalgittim | Dobu Bolsalgittim | Retrofitting of Dobu Rimding WSS | MVS |
| 2. | North Garo Hills | Bajengdoba | Bolsong Sembalgre | Bolsong Sembalgre | Bolsong Sembalgre | SVS |
| 3. | North Garo Hills | Kharkutta | Ildek Reserve | Ildek Reserve | Ildek Reserve WSS | SVS |
| 4. | South West Garo Hills | Betasing | Ampatigre | Ampatigre | Implementation of Greater Ampati WSS | MVS |
| 5. | West Garo Hills | Selsella | Phulbari (Islampur) | Phulbari (Islampur) | Quality Imp. of Rongsaigiri WSS | MVS |

Annexure 4: Indicative proportion of functional tap connections by districts

| S.No. | District | Percentage Functional Taps |
|-------|------------------------|----------------------------|
| 1. | East Garo Hills | 24.4 |
| 2. | East Jaintia Hills | 100.0 |
| 3. | East Khasi Hills | 99.3 |
| 4. | North Garo Hills | 0.0 |
| 5. | Ri Bhoi | 86.7 |
| 6. | South Garo Hills* | 93.3 |
| 7. | South West Garo Hills | 0.0 |
| 8. | South West Khasi Hills | 90.0 |
| 9. | West Garo Hills | 0.0 |
| 10. | West Jaintia Hills | 77.5 |
| 11. | West Khasi Hills | 98.7 |

* 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 Turbidity test | | | | |
| 1. | East Garo Hills | Dambo Rongjeng | Rangberam | Rangberam |
| 2. | East Garo Hills | Samanda | Daribokgre | Daribokgre |
| 3. | East Garo Hills | Samanda | Nengmandalgre | Nengmandalgre |
| 4. | East Garo Hills | Songsak | Dobu Bolsalgittim | Dobu Bolsalgittim |
| 5. | East Garo Hills | Songsak | Dobu Rimding | Dobu Rimding |
| 6. | North Garo Hills | Bajengdoba | Dingrepa | Dingrepa |
| 7. | North Garo Hills | Kharkutta | Ildek Reserve | Ildek Reserve |
| 8. | North Garo Hills | Resubelpara | Dainadubi | Dainadubi |
| 9. | South West Garo Hills | Zikzak | Lokaichar | Lokaichar |
| 10. | South West Garo Hills | Zikzak | Nandichar -I | Nandichar -I |
| 11. | West Garo Hills | Rongram | Asananggre | Asananggre |
| Villages with failed water samples for pH test | | | | |
| 1. | East Garo Hills | Dambo Rongjeng | Rangberam | Rangberam |
| 2. | East Garo Hills | Samanda | Daribokgre | Daribokgre |
| 3. | East Garo Hills | Samanda | Rongsak Songgital | Rongsak Songgital |
| 4. | East Garo Hills | Songsak | Dobu Bolsalgittim | Dobu Bolsalgittim |
| 5. | East Garo Hills | Songsak | Dobu Rimding | Dobu Rimding |
| 6. | North Garo Hills | Bajengdoba | Bolsong Sembalgre | Bolsong Sembalgre |
| 7. | North Garo Hills | Bajengdoba | Dingrepa | Dingrepa |
| 8. | North Garo Hills | Bajengdoba | Jetdoba Langapara | Jetdoba Langapara |
| 9. | North Garo Hills | Kharkutta | Ildek Reserve | Ildek Reserve |
| 10. | South West Garo Hills | Betasing | Ampatigre | Ampatigre |
| 11. | South West Garo Hills | Betasing | Borolatri | Borolatri |
| 12. | South West Garo Hills | Betasing | Chondonpara | Chondonpara |

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| S.No. | District name | Block name | Gram panchayat name | Village name |
|---|------------------------|----------------|-----------------------|----------------------|
| 13. | South West Garo Hills | Betasing | Sulguri A | Sulguri |
| 14. | South West Garo Hills | Zikzak | Lokaichar | Lokaichar |
| 15. | South West Garo Hills | Zikzak | Mahendraganj Bazar | Mahendraganj Bazar |
| 16. | South West Garo Hills | Zikzak | Majhechar - li Barman | Majechar - li Barman |
| 17. | South West Garo Hills | Zikzak | Nandichar -I | Nandichar -I |
| 18. | South West Garo Hills | Zikzak | Tarapara | Tarapara |
| 19. | West Garo Hills | Rongram | Asananggre | Asananggre |
| 20. | West Garo Hills | Selsella | Chibinang | Chibinang |
| 21. | West Garo Hills | Selsella | Kasharipara | Kasharipara |
| 22. | West Garo Hills | Selsella | Phulbari (Islampur) | Phulbari (Islampur) |
| 23. | West Garo Hills | Tikrikilla | Paedaldoba (Garo) | Paedaldoba (Garo) |
| Villages with failed water samples for Total Hardness test | | | | |
| 1. | East Garo Hills | Dambo Rongjeng | Rongmil | Rongmil |
| 2. | West Garo Hills | Selsella | Kasharipara | Kasharipara |
| Villages with failed water samples for Total Alkalinity test | | | | |
| 1. | West Jaintia Hills | Thadlaskein | Demthring | Demthring |
| Villages with failed water samples for Ammonia test | | | | |
| 1. | North Garo Hills | Bajengdoba | Aruakgre | Aruakgre |
| Villages with failed water samples for Bacteriological present/ absence test using H2S vials | | | | |
| 1. | East Garo Hills | Samanda | Daribokgre | Daribokgre |
| 2. | North Garo Hills | Bajengdoba | Bolsong Sembalgre | Bolsong Sembalgre |
| 3. | North Garo Hills | Kharkutta | Ildek Reserve | Ildek Reserve |
| 4. | Ri Bhoi | Umling | Umsohma | Umsohma |
| 5. | South West Garo Hills | Betasing | Borolatri | Borolatri |
| 6. | South West Khasi Hills | Ranikor | Chikonbari-A | Chikonbari-A |
| 7. | West Garo Hills | Rongram | Asananggre | Asananggre |
| 8. | West Garo Hills | Selsella | Shyamding | Shyamding |