

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

State report

Arunachal Pradesh



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 Arunachal Pradesh the survey was conducted in 3948 households from 249 villages in 25 districts.

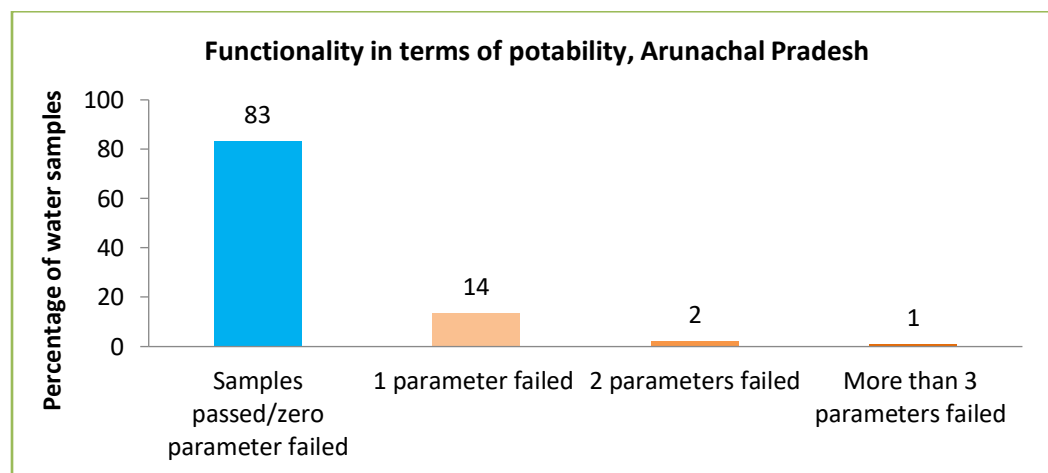
4. Key Findings

SL.	INDICATOR	Arunachal Pradesh	India
Household level			
1	Average household size	5.6	5.6
2	Percent of households using FHTC for drinking purpose	100.0	88.9
3	Percentage of households reported working tap connections (supply at least one day in last 7 days)	98.6	93.6
4	Number of water supply days in a usual week		
4a	1 – 2 days	0.3	7.6
4b	3 – 4 days	0.6	10.4
4c	5 – 6 days	2.5	1.5
4d	7 days	96.5	80.5
5	Number of water supply days in the last week		
5a	0 days	0.0	2.4
5b	1 – 2 days	0.9	9.7
5c	3 – 4 days	0.5	14.8
5d	5 – 6 days	7.2	4.9
5e	7 days	91.4	68.1
6	Percentage of households reporting reliability of water supply days	96.1	86.5
7	Percentage of households reporting tap connections functioning continuously for more than 15 days in a month for last 12 months	92.3	84.6
8	Average number of times water is supplied on the days of supply		
8a	1 time	4.0	56.6
8b	2 times	15.7	28.2
8c	3 times	5.5	6.1
8d	4 times/24 hours	74.9	9.1
9	Percentage of households reporting reliability of supply for different supply timings	96.0	84.3
10	Percentage of households reporting adequate water pressure for different supply timings		
10a	Morning	92.6	80.1
10b	Afternoon	97.5	84.6
10c	Evening	100.0	84.8
11	Percentage of households reported paying water tariff – separately or along with other taxes	9.8	52.8
12	Percentage of households reported receiving 55 lpcd or more	98.7	83.5
13	Percentage of households having potable water *	83.1	61.3
14	Percentage of households reporting regularity of supply	94.9	87.2
15	Percentage of households reporting functional tap connections	76.9	47.8
Village level			
16	Percentage villages having functional water and sanitation committees	65.5	48.5
17	Percentage of functional schemes in the sample villages considering all schemes (supplying water any day in the last 7 days)	90.3	86.0

SL.	INDICATOR	Arunachal Pradesh	India
18	Percentage of in-village schemes having O&M undertaken by village water and sanitation committee or by Panchayat	67.3	83.1
19	Percentage of sample schemes reported having faced challenges in the last one year		
19a	Inadequate infrastructure	31.7	40.2
19b	Poor water availability at the source	47.6	33.0
19c	Poor maintenance	65.0	46.2
19d	Natural calamity	49.2	63.4
20	Percentage of schemes reporting measure to improve source sustainability	22.6	59.9
21	Number of sample villages found with no scheme (defunct/under construction/not handed over/not constructed)	12	751

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

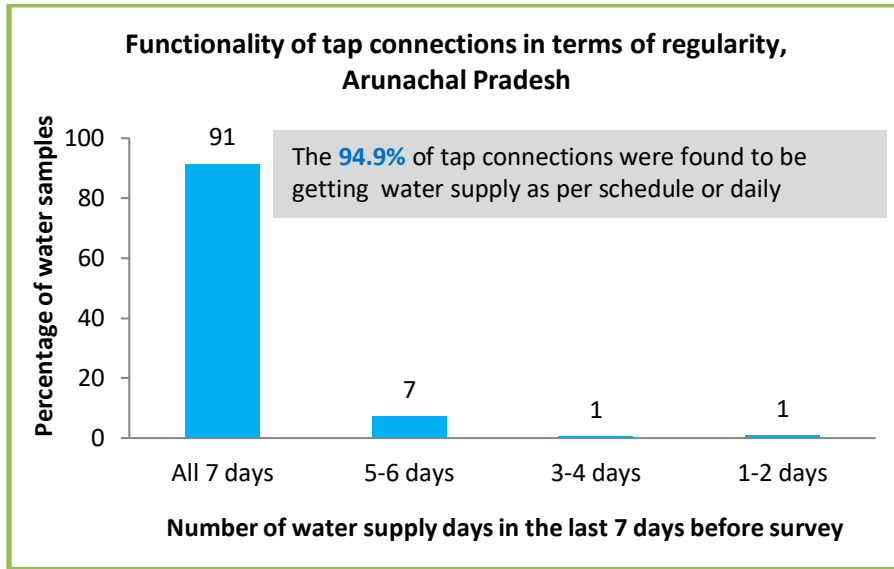
Fig 1: Functionality of the household tap connection in terms of potability - Arunachal Pradesh



Base: Households with water quality testing done, N: 237

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.

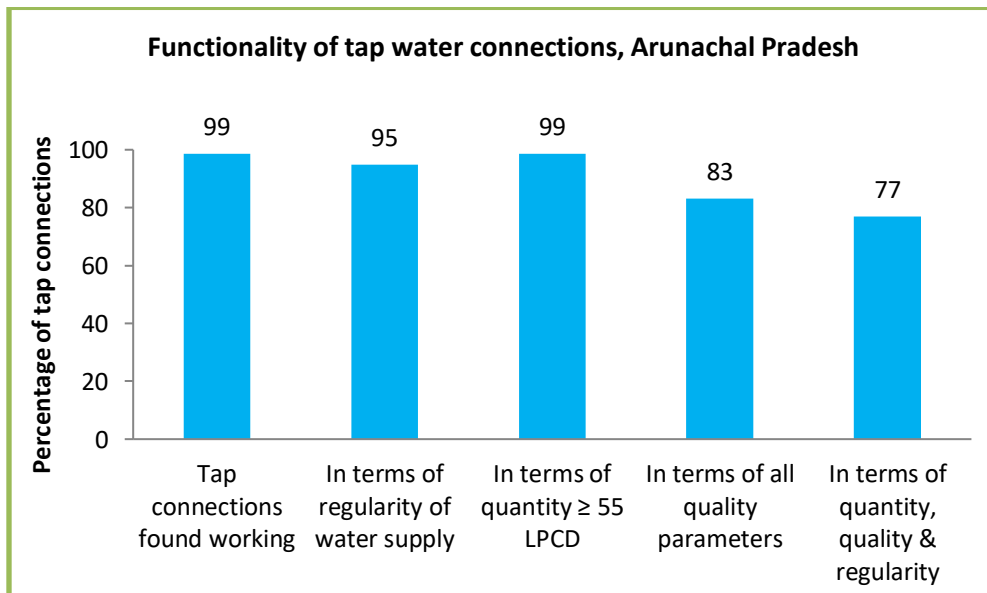
Fig 2: Functionality of the household tap connection in terms of regularity - Arunachal Pradesh



Base: All Households, N: 3498

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.

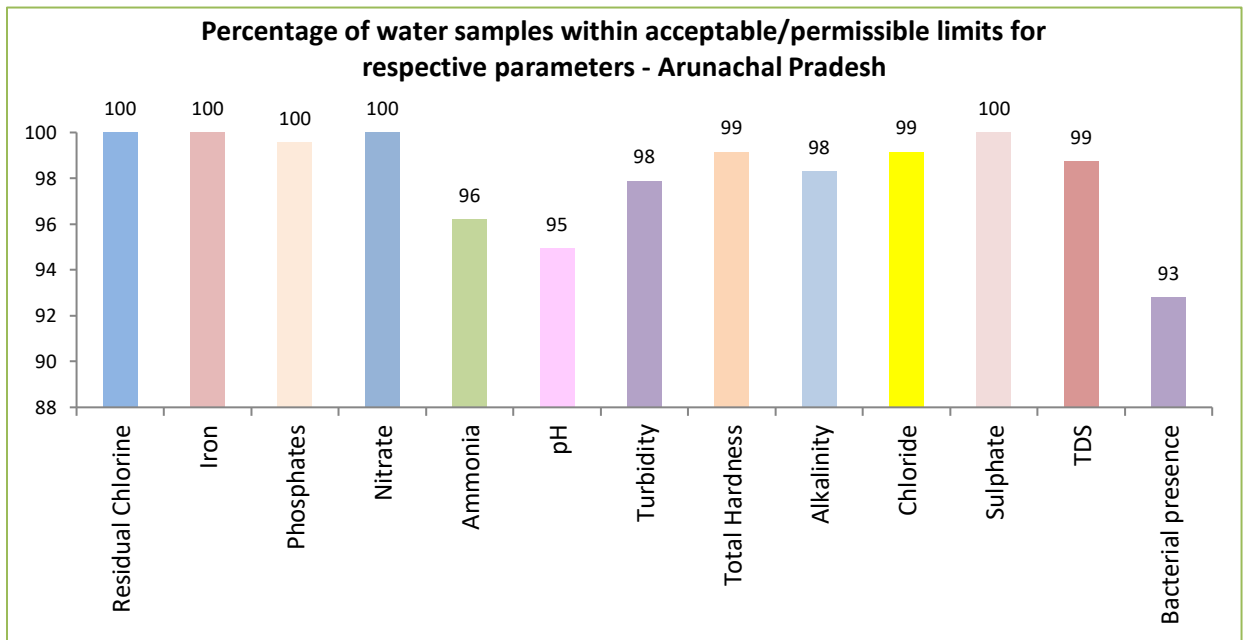
Fig 3: Overall functionality of the household tap connection - Arunachal Pradesh



Base: Total count of tap connections considered for functionality assessment, N: 3483

A total of 112 water samples were tested as per BIS: 10,500 standards from a randomly selected head end households of selected PWS schemes in the villages of Arunachal Pradesh. 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 had Residual Chlorine, Iron, Phosphates, Nitrate, Total Hardness, Alkalinity, Chloride, Sulphate and TDS within acceptable/permissible limits. Presence of Ammonia, pH and Bacteriological contamination beyond the acceptable/ permissible limits was the main issue with the samples which were not found potable.

Fig 4: Percentage of water samples within acceptable/permissible limits for respective parameters – Arunachal Pradesh



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



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



5. Conclusions

Arunachal Pradesh has performed well in the functionality assessment, with almost 4 out of every 5 households with tap connections have been assessed to have a functional tap connection. Almost all households have reported regular water supply and being supplied 55 lpcd or more of water, and 83 percent having potable water supply. Presence of Ammonia, pH and Bacteriological contamination beyond the acceptable/ permissible limits was the main issue with the samples which were not found potable.

However, despite good quality water supply service delivery, the fact that less than 10 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.

Almost two thirds of the villages (65.5%) have reported having water and sanitation committees – of these villages, in slightly more than two-thirds, the water and sanitation committees were actually taking responsibility for operation and maintenance activities of the PWS schemes. As reported by the communities 'poor maintenance' was the main challenge faced by the schemes. Only a fifth 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

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- 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.	Changlang	Bordumsa	Bordumsa	Bordumsa Village BI-I-II	Pvdg Terafilter at Bordumusa Vill	SVS	Scheme is defunct	Scheme is not functional since last 10 years
2.	Changlang	Bordumsa	Kherem Bisa	Kheram Bisa BI-I-III	Kheram Bisa Village	SVS	Scheme is defunct	Scheme not functional
3.	Changlang	Bordumsa	No Panchayat	Bijoypur-I (BI I-III)	Within Bijoypur-I Village	SVS	Scheme is defunct	Scheme not functional
4.	Longding	Kanubari	Russa	Russa	Water Supply at Russa	SVS	Scheme is defunct	Scheme not functional
5.	Lower Dibang Valley	Dumbuk-Paglam	Anpum-A	Anpum-II	W/S at Lower Anpum	SVS	Scheme is defunct	Scheme not functional
6.	Lower Dibang Valley	Dumbuk-Paglam	Anpum-B	Anpum-III	Pws At Anpum Iii	SVS	Scheme is defunct	Scheme not functional
7.	Lower Dibang Valley	Dumbuk-Paglam	Loklung-Kaling	Loklung	Lift Water Supply at Loklung li	SVS	Scheme is defunct	Scheme not functional
8.	Siang	Kaying-Payum	Gasheng	Gasheng	At Gasheng Village	SVS	No Scheme	No water supply scheme has been executed or proposed during last 10 years.
9.	Siang	Kaying-Payum	Sampong /Tuying/ Sirum	Sirum	Ext and Impr Of W/S At Sampong	SVS	Scheme is defunct	Scheme is not functional since last 10 years
10.	Upper Siang	Geku-Katan	Sumsing	Sumsing	Restoration of Flood Damaged Work at Sumsing	SVS	Scheme is defunct	Repairing pipe and sump

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S.No.	District Name	Block Name	Panchayat Name	Village Name	Name Of Largest Scheme In The Village	Type	Status Of The Scheme	Remarks
11.	Upper Siang	Tuting	Ningging	Ningging	Restoration of Flood Damaged Work at Tuting	MVS	Scheme is defunct	Scheme not functional
12.	Upper Siang	Tuting	Old Tuting - Purung-Ongong	Tuting	W/S at Rising Pry School Tuting	MVS	Scheme is defunct	Scheme not functional

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

S.No.	District name	Block name	Panchayat name	Village name	Name of largest scheme in the village	Type	Remarks
1.	Upper Subansiri	Dumpor ijo	Tator Tani - VI	Bulo	Anganwadi Centre at Bulo-I-Bulo	SVS	Scheme is functional and supplying water 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
1.	Kamle	Puchi Geko	Chikom - V	Sika Babla	Extn of delivery point from PSP to HH at Sika Babla	SVS
2.	Kamle	Tamen Raga	Kamliko	Kicho	PWS at Govt. Pry School at Kicho	SVS
3.	Shi Yomi	Mechukha	Gapo/ Puning/ Hiri/ Padusa	Gapo	Extension and Improvement of W/S at Gapo villiage	SVS
4.	Upper Subansiri	Chetam	Sippi - VI	Dasi	Govt. Primary school at Dasi-DASI	SVS
5.	Upper Subansiri	Dumpor ijo	Topo Heche - V	Yudik	W/S at Yudik Primary School	SVS
6.	West Siang	Along West	Lipu Bagra-I	Lipu Bagra	A and I of W/S at Lipu Bagra	SVS

Annexure 4: Indicative proportion of functional tap connections by districts

S.No.	Districts	Percentage Functional Taps
1.	Anjaw	100.0
2.	Changlang	100.0
3.	Dibang Valley	80.0
4.	East Kameng	0.0
5.	East Siang	74.5
6.	Kamle	98.5
7.	Kra Daadi	37.9
8.	Kurung Kumey	89.3
9.	Lemmi	94.7
10.	Lepa Rada	94.7
11.	Lohit	97.3
12.	Longding	53.3
13.	Lower Dibang Valley	100.0
14.	Lower Siang	100.0
15.	Lower Subansiri	80.0
16.	Namsai	20.0
17.	Papum Pare	37.3
18.	Shi Yomi	76.9
19.	Siang	79.1
20.	Tawang	100.0
21.	Tirap	60.0
22.	Upper Siang	95.2
23.	Upper Subansiri	100.0
24.	West Kameng	98.7
25.	West Siang	71.2

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 Kameng	Bana	Pipokoro	Pipokoro
2.	East Kameng	Chayangtajo	Chayangtajo Hq	Chayangtajo H.Q.
3.	East Kameng	Pipu	Kapu Dada	Kapudada
4.	Namsai	Lekang	Dharampur	Dharampur
5.	Tirap	Khonsa	Borduria	Borduria
Villages with failed water samples for pH test				
1.	Dibang Valley	Anelih-Arzo	Anelih	Anelih
2.	Dibang Valley	Anini-Alinye	Anini - I	Anini Hq
3.	East Kameng	Bameng West	Lower Liyak	Lower Leyak
4.	East Kameng	Bameng West	Rojo I Wakke	Kojo
5.	East Kameng	Bana	Tallamsima	Richukrong Co(Hq)
6.	East Kameng	Chayangtajo	Laching Bagang	Laching Bagang
7.	East Kameng	Pipu	Pipu Town	Pipu Hq
8.	East Kameng	Seppa	Pampoli	Pampoli
9.	Tirap	Khonsa	Borduria	Borduria
10.	Tirap	Lazu	Longliang	Lochan
11.	Tirap	Namsang	Dongrong- Barak	Dongrong
12.	Tirap	Namsang	Mopaya	Narottamnagar
Villages with failed water samples for Total Hardness test				
1.	East Kameng	Bana	Pipokoro	Pipokoro
2.	East Kameng	Pipu	Kapu Dada	Kapudada
Villages with failed water samples for Total Alkalinity test				
1.	East Kameng	Bameng West	Rojo I Wakke	Kojo
2.	East Kameng	Bana	Pipokoro	Pipokoro
3.	East Kameng	Pipu	Kapu Dada	Kapudada
4.	Papum Pare	Doimukh	Karsingsa	Kharsingsa-li
Villages with failed water samples for Chloride test				
1.	East Kameng	Bana	Pipokoro	Pipokoro
2.	East Kameng	Pipu	Kapu Dada	Kapudada
Villages with failed water samples for Ammonia test				
1.	Namsai	Chongkham	Momong	Momong
2.	Namsai	Lekang	Kumari Khampti	Kumari Khampti
3.	Namsai	Lekang	Eraloni	Lekang Hq
4.	Namsai	Lekang	Mahaloni	Mohaloni
5.	Namsai	Namsai	Enten	Manna-li
6.	Papum Pare	Balijan	Kokila	Chakma I
7.	Tirap	Khonsa	Borduria	Borduria
8.	Tirap	Lazu	Longliang	Lochan
9.	Tirap	Namsang	Dongrong- Barak	Dongrong

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S.No.	District name	Block name	Gram panchayat name	Village name
Villages with failed water samples for Phosphate test				
1.	Namsai	Namsai	Lathao-li	Lathao
Villages with failed water samples for Total Dissolved Solids test				
1.	East Kameng	Bana	Pipokoro	Pipokoro
2.	East Kameng	Bana	Tallamsima	Richukrong Co(Hq)
3.	East Kameng	Pipu	Kapu Dada	Kapudada
Villages with failed water samples for Bacteriological present/ absence test using H2S vials				
1.	East Kameng	Chayangtajo	Chayangtajo Hq	Chayangtajo H.Q.
2.	Kra Daadi	Chambang Cd Block	Patey	Pate
3.	Kra Daadi	Chambang Cd Block	Tud Bath-Palap	Palap
4.	Kra Daadi	Palin	Langdang	Paka
5.	Kra Daadi	Palin	Pania	Hachi
6.	Kra Daadi	Palin	Yaglung	Yaglung
7.	Kra Daadi	Tali Cd Block	Guchi	Guchi
8.	Kurung Kumey	Sangram	Niop	Regba
9.	Longding	Kanubari	Naitong- Longkhajan	Longkhojan
10.	Longding	Pangchau	Pongchau	Lower Pangchau
11.	Lower Subansiri	Ziro-li Cd Block	Yachuli	Yachuli-Hq
12.	Lower Subansiri	Ziro-li Cd Block	Talo	Lower Talo
13.	Namsai	Namsai	Kaba	Kaba Village
14.	Papum Pare	Balijan	Hollongi	Hollongi Charali
15.	Papum Pare	Balijan	Chessa-Sonajuli	Sonajuli (Nyishi)
16.	Papum Pare	Balijan	Chessa-Sonajuli	Chakma Viii
17.	Papum Pare	Borum	Model Village	Naharlagun Model Vill