

Chapter-IV Programme Implementation

4.1 Introduction

NRDWP is being implemented in the States through its six components comprising Coverage; Water Quality; Operation & Maintenance; Sustainability; Support and Water Quality Monitoring & Surveillance. In addition, funds are also being provided for water quality affected habitations, Desert Development Programme Areas, Natural Calamity and other sub-missions under the Programme. The component-wise fund availability and expenditure therefrom has been discussed in **Chapter-3**. This chapter contains audit findings relating to implementation of the various components of NRDWP during the period covered by this audit exercise.

4.2 Coverage

Under NRDWP schemes, piped water supply schemes¹, handpumps, tube wells, borewells, etc., were taken up to provide safe drinking water to rural habitations. Upto the 11th Plan period, habitations provided with a minimum of 40 lpcd of safe drinking water were considered as fully covered. In the 12th Plan, a minimum norm of provision of 55 lpcd has been adopted as an interim measure.

4.2.1 Status of coverage of habitations

Audit observed that despite the increase in norms of 55 lpcd for treating habitations as fully covered, the old norm of 40 lpcd was adopted for treating habitations as fully covered. Taking into account both the 40 and 55 lpcd norms, the overall status of coverage of habitations in terms of fully covered is detailed in **Table-4.1** below:

Table-4.1: Status of coverage of habitations

As on April	Total habitations	Fully covered habitations		Percentage of fully covered	
		40 lpcd	55 lpcd*	40 lpcd	55 lpcd*
2009	16,58,205	11,48,920	--	69.29	--
2010	16,60,940	11,66,448	--	70.23	--
2011	16,64,068	11,66,816	--	70.12	--
2012	16,65,957	12,31,393	6,57,693	73.92	--
2013	16,92,133	11,61,018	7,26,395	68.61	38.87
2014	16,96,546	12,49,695	7,42,121	73.66	42.82
2015	17,13,185	12,70,199	7,68,958	74.14	43.32

¹ single village piped water supply scheme (SVPWSS) and multi-village piped water supply scheme (MVPWSS)

As on April	Total habitations	Fully covered habitations		Percentage of fully covered	
		40 lpcd	55 lpcd*	40 lpcd	55 lpcd*
2016	17,14,438	12,97,431	7,65,833	75.68	44.85
2017	17,26,031	13,25,302	6,57,693	76.78	44.37

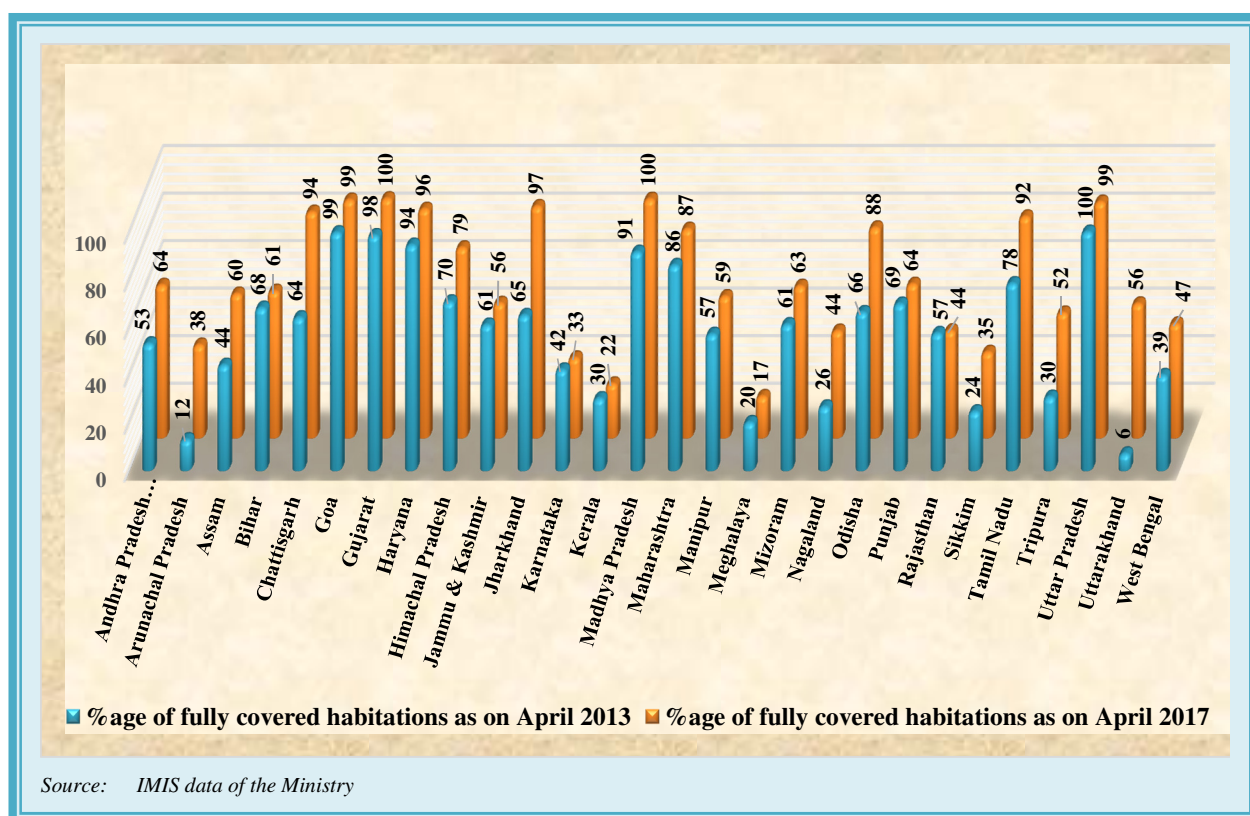
Source: IMIS data of the Ministry

* IMIS data on 55 lpcd available from April 2013

While the percentage of fully covered rural habitations to the total habitations with 40 lpcd increased from 69 (2013) to 77 per cent (2017), the coverage was increased from 39 per cent in April 2013² to 44 per cent in April 2017 based on the norms of 55 lpcd. Either way, the target of coverage of 100 per cent of rural habitations by 2017 remained unachieved. The percentage of coverage of rural habitations increased by only eight per cent at 40 lpcd and 5.5 per cent at 55 lpcd after incurring expenditure of ₹ 81,168 crore on the programme.

The State-wise percentage of fully covered habitations as on April 2017 in comparison to April 2013 based both on the norms of 40 lpcd and 55 lpcd is depicted in **Chart-4.1 and 4.2** respectively:

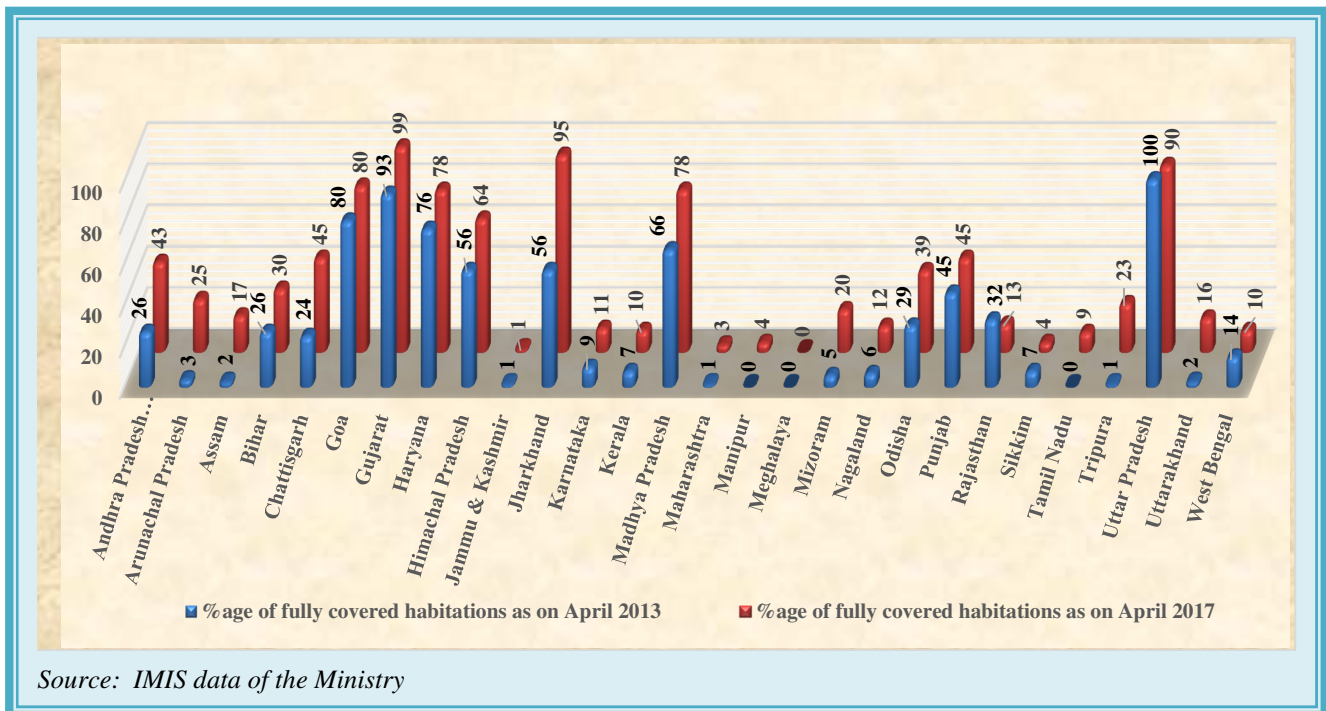
Chart-4.1: Fully covered habitations at 40 lpcd (in percentage)



Source: IMIS data of the Ministry

² Data for 55 lpcd was captured in IMIS from 2013-14 onwards.

Chart-4.2: Fully covered habitations at 55 lpcd (in percentage)



Source: IMIS data of the Ministry

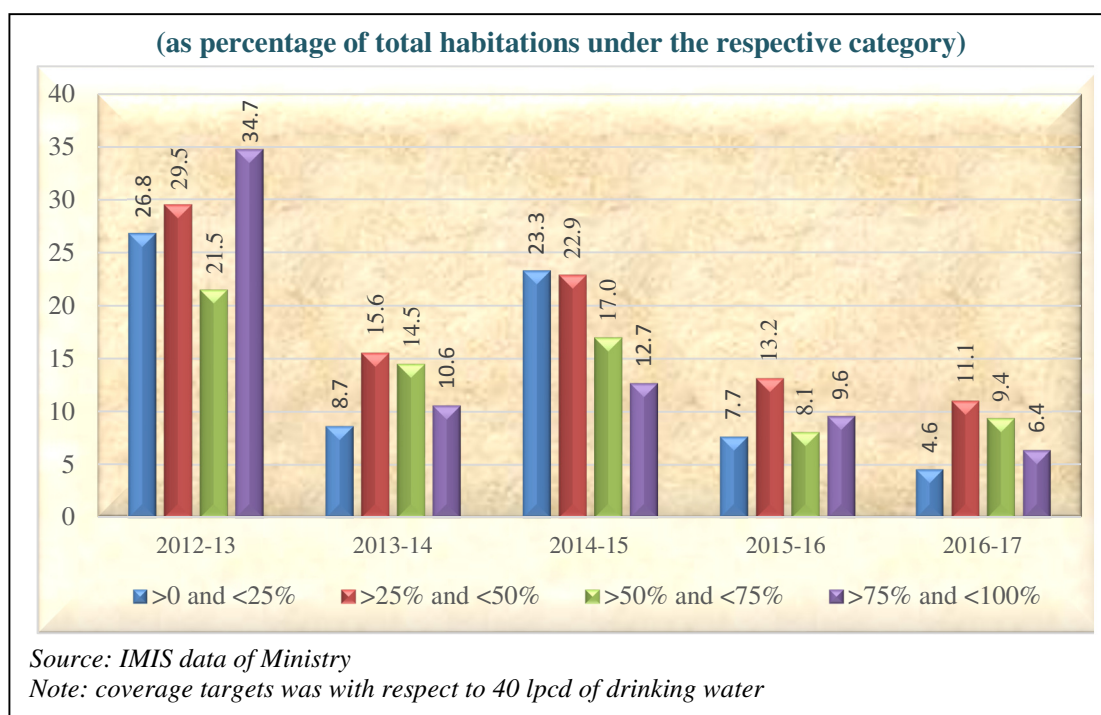
Based on the norm of 40 lpcd, the percentage of fully covered habitations decreased in April 2017 in eight States (**Bihar, Jammu & Kashmir, Karnataka, Kerala, Meghalaya, Punjab, Rajasthan** and **Uttar Pradesh**) as compared to April 2013. Based on the norm of 55 lpcd, the percentage of fully covered habitations decreased in four States (**Rajasthan, Sikkim, Uttar Pradesh** and **West Bengal**) in April 2017 when compared to status as of April 2013.

4.2.2 Non-prioritisation of habitations based on water availability and failure to meet targets

As per the Programme guidelines, priority was to be given to the habitations where less than 25 per cent and 25 to 50 per cent population have access to adequate safe drinking water.

Audit observed that in all the years except 2014-15, coverage of habitations falling in the category with less than 25 per cent population having access to adequate safe drinking water was lower as compared to coverage of habitations falling in categories with higher percentage of population having access to safe drinking water as shown in **Chart-4.3:**

Chart-4.3: Priority in coverage of partially covered habitations



Test check of records in States also brought out that priority in coverage was not given to habitations in 16 States i.e. **Andhra Pradesh, Assam, Bihar, Chhattisgarh³, Jammu & Kashmir, Karnataka, Maharashtra, Manipur, Mizoram, Nagaland, Rajasthan, Sikkim, Telangana, Tripura, Uttar Pradesh and Uttarakhand** where less than 50 per cent of the population had access to adequate quantity of safe drinking water.

Further, there was also a shortfall in achievement *vis a vis* targets for covering habitations in three categories of habitations i.e. up to 25 per cent, 25 to 50 per cent and 75 to 100 per cent. The percentage shortfall was higher in the habitations which should have been prioritised for coverage as detailed in **Table-4.2**

Table-4.2: Target and achievement of coverage of habitations

2012-17	> 0 and < 25%	> 25% and < 50%	>50% and < 75%	> 75 and < 100 %
Target habitations	51,918	79,653	73,352	72,176
Achievement	42,709	68,990	75,049	69,774
Shortfall	9,209 (17.7%)	10,663 (13.4%)	---	2,402 (3.3%)

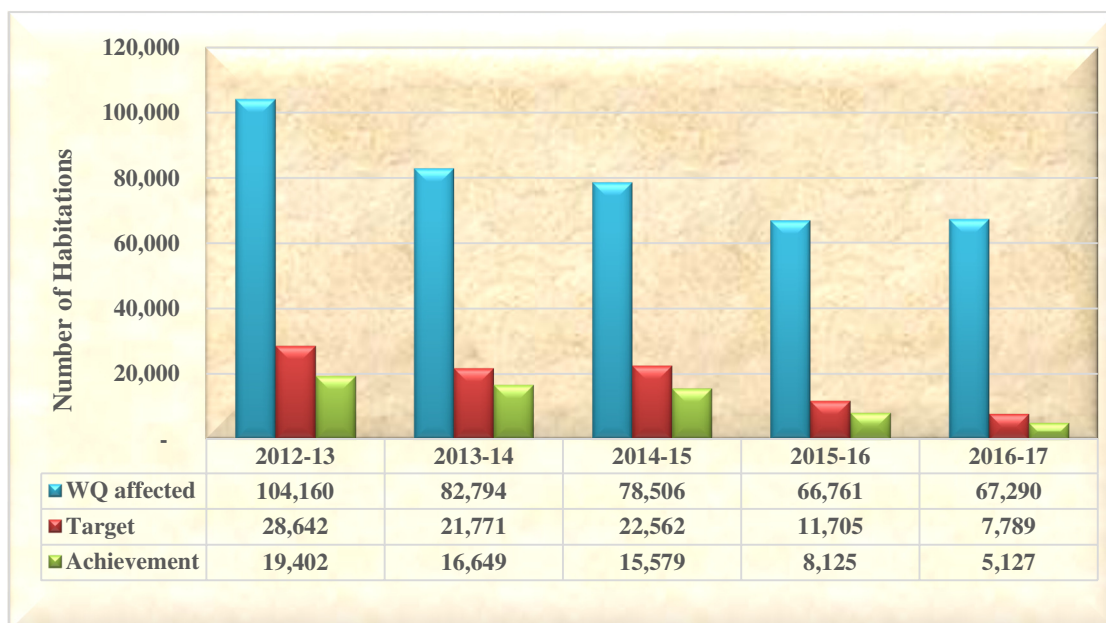
³ In three districts – Kawardha, Bastar and Surajpur

It was evident that the implementation plans were not being prepared as per the guidelines and resources were not being focussed on segments of the rural population where availability of safe drinking water was the lowest.

4.2.3 Shortfall in prioritisation and non-achievement of targets for quality affected habitations

The Programme guidelines stipulates that priority should be given to quality affected habitations while finalising the annual action plans. It was however noted that less than 30 per cent of quality affected habitations were targeted under the Programme during the period 2012-15. The targets with respect to this category of habitations were further reduced to less than 20 per cent during the last two financial years. There were also shortfalls in achievement ranging between 23 and 34 per cent against the targets for covering quality affected habitations as given in **Chart-4.4** below:

Chart-4.4: Target and achievement of water quality affected habitations



Source: IMIS data of Ministry

Lack of prioritisation, reduction in targets and shortfall in achievement were indicative of inadequate focus both in planning and implementation of schemes to address water quality issues.

Ministry stated (February 2018) that chemical contamination in drinking water sources was geo-genic in nature but did not explain the reduced/low coverage of quality affected habitations under the Programme and shortfalls with respect to targets.

4.2.4 Implementation of water supply schemes

Analysis of data in IMIS⁴ shows that 12,38,642 schemes⁵ including 3,89,295 piped water schemes were taken up for execution during 2012-17. Including 1,39,525 on-going schemes as on 1 April 2012, there were a total of 13,78,167 schemes which were being executed during the period. Against this, a total of 12,43,723 schemes comprising 4,13,430 piped water schemes and 8,30,293 schemes based on handpumps/borewells/tube wells, were completed during 2012-17 as given in **Table-4.3**:

Table-4.3: Number of water supply schemes

Year	PWS and Hand Pumps/Borewells Schemes				PWS				Percentage of PWS	
	On-going	Taken up	Completed	Pending/on-going	On-going	Taken up	Completed	Pending/on-going	Taken up	Completed
2012-13	139525	342908	329051	153382	81826	119000	104226	96600	34.70	31.67
2013-14	153382	341046	340975	153453	96600	120744	108271	109073	35.40	31.75
2014-15	153453	310618	309879	154192	109073	88732	97285	100520	28.57	31.39
2015-16	154192	157480	208256	103416	100520	43892	76553	67859	27.87	36.76
2016-17	103416	86590	55562	134444	67859	16927	27095	57691	19.55	48.77
Total		1238642	1243723			389295	413430		31.43	33.24

Source: IMIS Data of Ministry

Ministry, while communicating⁶ (January 2016) the revised funds sharing pattern between Centre and States, placed restrictions on taking up new projects except in fluoride and arsenic affected habitations and habitations under the *Sansad Adarsh Gram Yojana* in view of the outstanding liabilities relating to ongoing projects. This led to a sharp decline in the number of new schemes taken up during 2015-16 and 2016-17. The percentage of schemes completed as a percentage of schemes on hand⁷ reduced from 67-68 per cent during 2012-13 to 2015-16 to 29 per cent in 2016-17.

In the 12th Plan (2012-17), emphasis was placed on Piped Water Supply (PWS) Schemes. The percentage of PWS to the total schemes⁸ taken up during 2012-17 ranged between 19 and 35 per cent and had been declining year on year during the period. There was also a decline in the absolute numbers of PWS being taken up. It can therefore be concluded that the focus on PWS envisaged in the 12th Plan was not reflected in actual planning and implementation.

⁴ Format B-22 as on 26 February 2018

⁵ Piped water and Hand Pumps/Bore well schemes only

⁶ MoDWS's letter number W-11011/36/2015-water dated 1 January 2016.

⁷ Ongoing + taken up schemes

⁸ Piped water and hand pump/tube well schemes based on 40 lpcd

Another important target set out in the Strategic Plan and Programme guidelines was that at least 50 per cent of rural population⁹ will be provided with at least 55 lpcd of piped drinking water within their household premises¹⁰ by 2017. Audit observed that only 18.4 per cent of the rural population had been covered under PWS schemes with provision of 55 lpcd of drinking water as of December 2017 which was well below the projected target. The position with regard to percentage of population covered under PWS and population without PWS as on 31 December 2017 is given in **Table-4.4**:

Table-4.4: Population covered with PWS schemes (December 2017)

Total population		Covered with PWS			Without PWS
		Fully covered	Partially covered	Quality affected	
Population (in lakh)	9,199.0	1,688.7	3,167.9	322.0	4,020.4
Population (in percentage)	--	18.4	34.4	3.5	43.7

Source: IMIS data of Ministry

The Strategic Plan and Programme guidelines also envisaged that at least 35 per cent of rural households would have individual household drinking water connection by 2017. In terms of rural households, out of a total of 17.91 crore rural households, only 3.02 crore i.e. 16.85 per cent were covered by piped water connections as of December 2017. The position of coverage of rural households by piped water supply connections varied widely among different States as shown in **Table-4.5**:

Table-4.5: Status of households with piped water connections

Five top States with largest coverage of rural households by piped water connections.	Coverage (in per cent)	Five States with least coverage of rural households by piped water connections.	Coverage (in per cent)
Sikkim	99.32	Uttar Pradesh	0.53
Gujarat	72.82	West Bengal	0.67
Himachal Pradesh	56.62	Meghalaya	1.15
Haryana	47.68	Bihar	1.22
Punjab	47.56	Assam	2.05

Source: IMIS data of the Ministry

Further, the coverage of rural households by piped water connections was below the national average of 16.85 per cent in 17 States of **Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Jharkhand, Kerala, Madhya Pradesh, Manipur, Meghalaya,**

⁹ As per Strategic Plan, 55 per cent of rural households were to be covered with PWS.

¹⁰ or at a horizontal or vertical distance of not more than 100 meters from their household without barriers of social or financial discrimination.

Mizoram, Nagaland, Odisha, Rajasthan, Tripura, Uttar Pradesh, Uttarakhand and West Bengal.

Gujarat

945 villages in seven districts were covered under various schemes executed and completed between 2012 and 2017. Audit observed that 142 villages were not getting water due to technical problems such as low water pressure at tail end villages, non-availability of necessary infrastructure and lack of internal pipeline network in the village.

In three out of the ten selected districts, 17,47,075 thousand litres of water was supplied through tankers to four to 193 villages during 2012-13 to 2016-17 due to non-availability/insufficient availability of potable water. However, as per State records all the habitations were fully covered.

Findings of Audit Survey

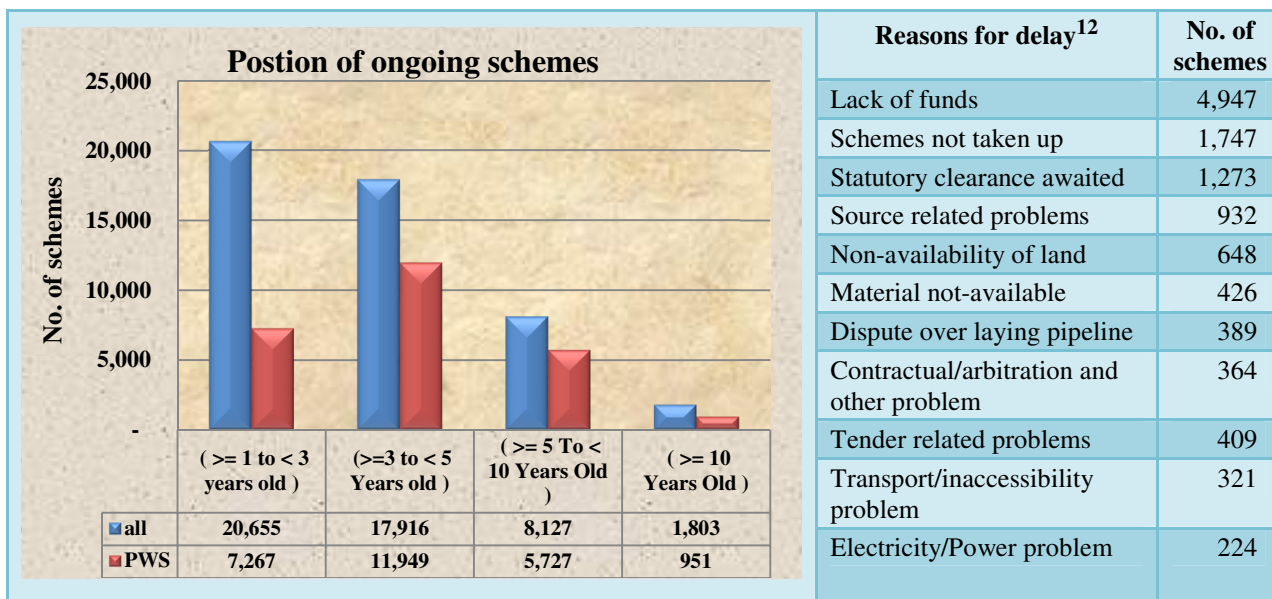
- 139 habitations out of a sample of 2,322 were categorised as fully covered though water supply availability was less than 40 lpcd.
- 3,422 out of 28,586 beneficiaries (12 *per cent*) reported that water supply schemes were non-functional. This included 572 beneficiaries drawing drinking water through household connections and 2,850 through community connection.
- In district Kaimur (Bhabua) of **Bihar**, the piped water supply scheme (Bhangwanpur PSW in Tori *Panchayat*) was closed in the summer season due to drying of river. Further, beneficiaries of the PWS stated that water pressure was very low and water supply was irregular.

4.2.5 Delay in completion of water supply schemes

As per IMIS¹¹, there had been no delay in case of 10,937 schemes out of 22,617 ongoing schemes whose status was updated on IMIS while the balance 11,680 schemes were delayed for reasons shown in **Chart-4.5**:

¹¹ As on 14 December 2017

Chart-4.5: Delay in completion of schemes



Thus, 57.31 per cent schemes were delayed due to administrative reasons, 19.78 per cent due to site related reasons, 11.63 per cent due to construction related issues, 6.62 per cent due to contract related issues and 4.67 per cent schemes were delayed due to infrastructure issues.

4.2.6 Incomplete works

Test check of records in selected divisions revealed that 437 works with estimated cost of ₹ 4,293.49 crore remained incomplete in **16 States** after incurring an expenditure of ₹ 1,667.46 crore¹³ (March 2017). These works remained incomplete due to pending tunnelling work, lack of permissions/clearances from concerned authorities, land disputes, non-execution of works by contractors, paucity of funds, change in source of water supply and non-availability of material as detailed in **Annexe-4.1**. This reflected non-adherence to codal provisions relating to execution of works such as requirement of ensuring encumbrance free site and timely obtaining of required statutory clearances before award of works, proper site surveys and investigations to ensure preparation of realistic designs and estimates to facilitate unhindered execution of works as well as administrative laxity and lack of concern for their timely completion. Some illustrative cases are discussed below:

Andhra Pradesh: J C Nagi Reddy Drinking Water Supply Project planned with Gandikota reservoir as source for water drawal was administratively approved in May 2006 at a cost of ₹ 508 crore. The scheme was taken up for execution in June 2007 with

¹² As per IMIS (A-8) 13 December 2017

¹³ In respect of 417 works

target date of completion as October 2009. However, the scheme remained incomplete due to non-completion of tunnelling work from Owk reservoir to Gandikota reservoir. State Government directed in November 2013 to have two water sources (Gandikota and Mid Pennar dam) for commissioning of the scheme. However, this did not materialise. Thus, the scheme taken up in June 2007 to provide water to 561 habitations was yet to be completed even after ten years and incurring expenditure of ₹ 365.88 crore.

Assam: Ten works in Haikandi (four schemes) and Jorhat (six schemes) divisions taken up for execution between March 2013 and June 2014 at an estimated cost of ₹ 136.24 crore with scheduled date of completion between November 2015 and February 2017 remained incomplete due to non-execution/slow progress of works by the contractors. Non-completion of schemes rendered unfruitful the expenditure of ₹ 70.33 crore incurred so far besides depriving 1,37,088 population of the intended benefit of safe and adequate drinking water.

Bihar: In Patna District, work for construction of 8.95 Million Litre per day (MLD) capacity surface water supply scheme for 45 arsenic affected habitations at Maner was taken up in June 2009 at a cost of ₹ 62 crore and was to be completed by June 2011. After laying of 75.28 kilometres of pipes upto March 2011, the source of water was changed to ground water due to non-availability of land required for construction of different structures. As per the revised agreement for the scheme executed in December 2016, the work was to be completed by August 2017 but due to slow progress, the agreement was rescinded in July 2017. An expenditure of ₹ 45.35 crore had been incurred on the work. Incomplete work deprived 1.70 lakh population in 45 arsenic affected habitations from getting potable water even after lapse of more than eight years.

Himachal Pradesh: Source level augmentation of 41 schemes to partially covered habitations in Sadar, Gumarwin and Jhanduta Blocks in district Bilaspur with water source from Kol Dam reservoir was technically sanctioned in July 2009 for ₹ 47.08 crore. The work was awarded to a contractor in June 2010 at a cost of ₹ 49.62 crore to be completed by July 2012. The work however remained incomplete after incurring expenditure of ₹ 38.99 crore for want of installation of pumping machinery as erection of electric transformer by State Electricity Board was held up due to site dispute with private land owner.

Jharkhand: In district Sahibganj, a mega water supply scheme for 58 villages in four blocks under quality affected component was taken up in July 2012 at a cost of ₹ 133.68 crore for completion by July 2014. The scheme remained incomplete after incurring

expenditure of ₹ 117.67 crore (June 2017) due to non-availability of required land and “No Objection Certificates” from other State Government departments. The cost of the scheme was increased to ₹ 147.93 crore with extended target date of completion as March 2017.

In district West Singhbhum, 253 PWS schemes (Chaibasa-181 and Chakradharpur-72) were taken for execution during 2012-14 to be completed within three months from the date of agreement. However, these schemes too remained incomplete (May 2017) after incurring expenditure of ₹ 27.40 crore. No final measurement and completion certificate was recorded in the Measurement Books. A district level committee consisting of Assistant Collector and Sub Divisional Officer examined 98 schemes (Chaibasa-64 and Chakradharpur-34) and Superintendent Engineer examined 32 schemes (Chaibasa) and reported damaged pipelines, electrical problems, damaged tank, sub-standard work, defective construction and using PVC rising pipes in place of GI rising pipes (March 2017).

Karnataka: In four districts (Bagalkot, Gadag, Yadgir and Chitradurga), six works to provide safe drinking water to 86 villages were taken up for execution at an estimated cost of ₹ 53.20 crore between 2007-08 and 2012-13 for completion between September 2009 and December 2016. These works remained incomplete for want of required land, necessary permission from railway authorities, National Highway Authority and Forest Department after incurring expenditure of ₹ 42.59 crore. Further, in three districts (Bagalkot, Gadag and Tumakuru), five¹⁴ water supply schemes to provide safe drinking water to 86 villages were taken up during 2007-08, 2011-12 and 2012-13 for execution at an agreed cost of ₹ 42.95 crore. These works also remained incomplete due to failure of the department to ensure definite and perennial source of water even after incurring expenditure of ₹ 39.56 crore.

Rajasthan: Work to provide safe drinking water to 1,698 villages of district Bhilwara under Chambal-Bhilwara Project Phase-II was sanctioned in March 2013 at ₹ 1,495.68 crore. The work was awarded in four packages at a cost ₹ 1,263.63 crore for completion by October 2016. All the four packages were stopped by the contractor between January 2015 and May 2016 and remained incomplete despite incurring an expenditure of ₹ 204.30 crore. In district Phulera, water supply scheme for 173 villages was awarded in July 2013 to a firm at a cost of ₹ 226.95 crore to be completed by January 2016. However, the work was lying incomplete since December 2016 after incurring

¹⁴ Metagud and seven other villages, Asuti and six other villages, Guler and 16 other villages, CS Pura and 34 other villages and Ariyur and 26 other villages

expenditure of ₹ 115.68 crore as supply of material for work was held up due to non-payment to supplier by the firm.

Telangana: Nine works in districts Mahabubnagar, Nalgonda and Khammam were taken up between April 2012 and April 2016 at a cost of ₹ 251.92 crore for completion between October 2013 and July 2016. These works remained incomplete (March 2017) after incurring expenditure of ₹ 152.51 crore due to reasons such as non-obtaining of clearances from Forest Department, defective designing, electric power connection, revision of estimates, handing over site to the contractor, delay in approval of design and drawing, non-obtaining permission for road cutting from Panchayat Raj Department and non-obtaining approval for blasting of rock portion in pipeline alignment.

In Nalgonda district, a CPWS scheme in Suryapet Constituency in Suryapet awarded (May 2014) at a cost of ₹ 71 crore was to be completed by May 2016. Though the work was stated to be completed, physical verification showed (June 2017) that construction of Rapid Sand Filters at head work was incomplete. The scheme was under trial run during which untreated water was being supplied to the habitations. Thus, the target of providing treated water to 231 habitations was not achieved even after 14 months from stipulated date of completion and after incurring expenditure of ₹ 60.17 crore.

4.2.7 Works completed but remained non-operational

Test check of executed works in different States brought out that 34 works completed at a cost of ₹ 61.91 crore were not operational for reasons such as lack of power connection, damaged pipelines due to road widening, leakages in pipelines and non-execution of work as per approved specifications. These were reflective of lack of coordination between different agencies to operationalise projects already completed. A few illustrative cases are discussed below:

Arunachal Pradesh: In Papumpare district, scheme for providing water supply through deep bore well at Taying Tarang completed in March 2015 at a cost of ₹ 0.24 crore was non-functional for want of electricity connection.

Assam: 23 PWSSs under Greater Titabor Water Supply Scheme completed in May 2013 at a cost of ₹ 7.04 crore were not operational due to inadequate and irregular power supply, shortage of boosting station, absence of alternate pump sets and leakage of water.

Jharkhand: Pratappur Rural Water Supply scheme was sanctioned in 2006 at a cost of ₹ 1.94 crore to provide safe water to fluoride affected habitations. Even after incurring an expenditure of ₹ 1.88 crore till March 2012, water supply from the scheme was partial due to choked rising mains and low power voltage. Water supply was not being made from the scheme to the targeted villages since July 2016 as pipelines supplying water from the river had been damaged.



Photograph showing idle generator and rusting pressure filters in non-functional MPWS Scheme in fluoride affected GP of Jharkhand

Karnataka

In district Bagalkot, two works (Water supply schemes for Katageri and other 13 villages and for Anawal and other 10 villages) awarded at a cost of ₹ 12.93 crore in August 2008 were to be completed by August 2009. As the contractor failed to adhere to the approved specifications, water could not be provided to intended villages during the trial run of the project. The schemes were not made functional even after incurring an expenditure of ₹ 14.38 crore. Though the SLSSC approved augmentation works for ₹ 1.50 crore to rectify the defect in September 2013, no progress (August 2017) could be made to address the problem.

Further, a multi village water supply scheme for Nagara and other five villages in Taluk Mudhol was administratively and technically approved (October 2006 and December 2007) at a cost of ₹ 7.90 crore but work was not awarded till January 2008 due to lack of response from bidders. Subsequently, estimates for the scheme was revised to ₹ 8.82 crore and work was awarded to a contractor for execution (March 2008) at a cost of ₹ 10 crore with stipulated completion by February 2009. The scheme was completed at a cost of ₹ 9.70 crore. Audit observed that water was not reaching the reservoir due to leakages which was evidence of sub-standard work executed by the contractor. Further, physical verification also showed that the source (Ghataprabha canal) identified for water supply had also dried up.

Meghalaya: Two works (Sakhain Moolimen Water Supply Scheme and Cham Cham Water Supply Scheme) sanctioned in 2008 had not been made functional (July 2017) even after incurring an expenditure of ₹ 1.30 crore due to lack of power connection.

Telangana

Three works (CPWS scheme to Nagar Kurnool Constituency; balance habitation Thimajipet scheme–Achampet Project in district Mahabubnagar and CPWS scheme Manuguru and Pinapaka scheme in district Khammam-Phase-I &II) were completed at a cost of ₹ 24.44 crore for supplying water to 76 habitations. These works were not commissioned (March 2017) due to removal of a stretch of ductile iron pipes and non-rectification of defects relating to Phase-I.

CPWS scheme to Bukkapur and other habitations was completed at a cost of ₹ 2.93 crore for water supply to six habitations. However, it was noticed that the scheme was not commissioned as water at the intake well had receded by more than 500 metres and the intake well was higher than the water level.

4.2.8 Works completed without coverage of targeted habitations and overlapping of habitations covered

Test check of records in selected divisions revealed that habitations in three States targeted to be covered under the scheme planned were either not covered despite completion of the scheme or same habitations were covered under two or more schemes as discussed in succeeding paragraphs:

Andhra Pradesh: Eight Comprehensive Protected Water Supply (CPWS)¹⁵ schemes commissioned at a cost of ₹ 79.93 crore covered only 344 habitations as against the target of 694 habitations. The shortfall in coverage was attributed *inter-alia* to insufficient funds and non-receipt of certain clearances.

Arunachal Pradesh: In the four selected districts (six divisions), 26 targeted habitations were not covered due to non-execution of work relating to laying of pipelines in 23 schemes completed during 2012-17 at a cost of ₹ 20 crore.

Assam: PHE division Hailakandi had taken up water supply works under three multi-village schemes¹⁶ between January 2013 and March 2013. As of May 2017, physical progress of 65 to 95 *per cent* was achieved with an expenditure of ₹ 31.57 crore. Five habitations which were covered under these multi-village schemes were again included for being coverage under five individual water supply schemes at an estimated cost of ₹ 5.80 crore by the same division during the period June 2013 and December 2013. Thus, sanction of five individual water supply schemes covering the same habitations as covered under the multi-village schemes was not justified and expenditure of ₹ 3.03 crore incurred on these individual schemes was irregular.

4.2.9 Abandoned works

Test check of records in selected divisions revealed that 1,367 works in **12 States** were abandoned after incurring an expenditure of ₹ 40.07 crore. These works were abandoned on account of reasons such as abandonment of works by contractors (16 works), land disputes (17 works), damaged pipe lines (5 works), contamination of water source (13 works), unsuccessful boring of tube wells (1,312 works) and schemes becoming non-functional (4 works) as given in **Annexe-4.2**. A few illustrative cases are discussed below:

Andhra Pradesh: Five¹⁷ water supply works with estimated cost of ₹ 10.94 crore were awarded to contractors between November 2011 and May 2015 for completion between May 2012 and October 2015. The contractors abandoned these works midway between April 2012 and December 2016. However, the department did not take any action to

¹⁵ Veldurthy Mandal; KV Palli, Kalikiri and Kalakanada Mandals in district Chittoor; Tallapudi (M), Lankalakoderu and others habitations, Unguturu, Veeravasaram and other habitations, Saripalli and other habitations, Madavaram and other habitations of district Godavari.

¹⁶ Rupacherra MV PWSS under State Plan and Greater Seralipur MV PWSS & Lala MV PWSS under NRDWP

¹⁷ CPWS to Chintalapudi and strengthening of bund and protection works in Prathikollalanka in district West Godavari; Single Village Water Scheme to Krishnayapalem (V) of Mangalagiri (M) and Kuragallu (v) of Mangalagiri (M); scheme of Neerukonda (v) of Mangalagiri (M) of district Guntur

complete the balance works and expenditure of ₹ 6.17 crore incurred on these works was rendered unfruitful.

Jharkhand: In district Palamu, two scheme¹⁸ with estimated cost of ₹ 12.19 crore were taken for execution in March 2008 and January 2010. These works were abandoned since October 2010 and April 2013 respectively due to non-availability of land, unwillingness of contractor to execute work at old rates and delay in supply of pipes thereby rendering the expenditure of ₹ 5.52 crore unfruitful.

Karnataka: In district Chitradurga, work of water supply scheme to Revalakunte and 26 other villages was awarded to a contractor at a cost of ₹ 10.25 crore for completion by May 2009. Audit observed that the work was not completed/commissioned due to heavy leakages in the pipelines during trial run and drying up of source. The project remained abandoned since January 2013 and the expenditure of ₹ 9.45 crore incurred was rendered unfruitful. In district Yadgir, work to supply drinking water to Gogi and 10 other villages was awarded in March 2002 at a cost of ₹ 2.58 crore. The source of water was identified as a tank in Gogi village. The work was completed at a cost of ₹ 2.96 crore and handed over to *Gram Panchayat* in April 2009. During physical verification, it was noticed that the identified water sources of scheme was getting contaminated from the outflow from a uranium plant that existed within the catchment area of the tank. Proposal to shift the source to another tank was not worked out as the canal supplying water to the tank was tailing off. Thus, failure of the department in identifying a proper water source rendered wasteful expenditure of ₹ 2.96 crore.

Odisha: Geo-hydrological test was not conducted and services of Source Finding Committee as well as Directorate of Ground Water Survey and Investigation was not obtained in the eight selected districts before sinking of tube wells. As a result, 1,310 tube wells became unsuccessful and expenditure of ₹ 3.76 crore incurred on these tube wells was rendered wasteful.

Rajasthan: In district Jaisalmer, water supply scheme (Sagarmal Gopa branch Ramgarh-Sonu-Mokan-Khuniyala) was taken up for execution in March 2013 at a cost of ₹ 2.30 crore for completion by December 2013. The contractor, after executing work valuing ₹ 1.79 crore (September 2014), did not execute the remaining work due to encountering of hard strata and the work was lying incomplete (June 2017). As of March 2017, the total cost incurred on the work was ₹ 1.87 crore.

¹⁸ Singra Rural Piped Water Supply scheme and Bishrampur Rural Piped Water Supply Scheme.

Uttar Pradesh: In Raebareli, Construction-I division executed Bardar Water Supply Scheme at a cost of ₹ 1.84 crore and handed over the work to the *Gram Panchayat* in August 2015. The scheme was designed to meet 30 years' requirement of water of Bardar and Bankat village covering 11 habitations. It was noticed that just after one month of handing over, the boring pump of the scheme failed (September 2015) due to excess discharge of sand and soil. The scheme was lying abandoned as of July 2017.

4.2.10 Payment without execution of work

Test check of records in selected divisions revealed that ₹ 1.45 crore was paid to contractors in 12 works in three States without the works being executed as detailed below:

Chhattisgarh: In Kanker division, ₹ 60 lakh was paid during 2012-15 in nine works comprising of percolation tanks, stop dams, RCC cistern, pump house and laying of pipelines without actual execution of work. The Department stated that an enquiry was being held and ₹ 26 lakh had been recovered from two contractors.

Manipur: PHE division Kangpokpi incurred ₹ 43 lakh for purchase of construction material for laying of pipelines for supply of drinking water to 227 schools and 108 *anganwadi* centres. The work was executed through Non-Government Organisations (NGOs) and contractors and claims for work done were not supported by vouchers. Thus, the genuineness of the payments made for the work was doubtful. Audit also observed that Houbal PHE division executed a work of providing drinking water to 100 *anganwadi* centres at a cost of ₹ 20 lakh in 2013. However, neither the work order nor the agreement mentioned the location of *anganwadi* centres. There were 72 *anganwadi* centres in the district and physical verification carried out in the 13 selected habitations revealed that none of the *anganwadi* centres at these habitations had been provided with drinking water facility.

Sikkim: In South Sikkim district, one of the items in the estimate of work for RWSS at Yangang and adjoining villages awarded in July 2013 was laying of 64,050 metres of pipeline by excavating soil at a cost of ₹ 22 lakh. During physical verification, Audit found that pipes were laid without excavating soil leading to irregular payment for this item of work besides exposing the pipes to risk of damage.

4.2.11 Discrepancies in tendering process and contract management

General Financial Rules provide that every authority delegated with the financial powers shall have the responsibility and accountability to ensure efficiency, economy, and transparency in matters relating to public procurement. Towards this end, the Rules as well as the Works Manuals along with instructions and guidelines issued by the

Central Vigilance Commission (CVC) from time to time contain specific provisions relating to the tendering process and management of contracts that are to be adhered to by the concerned departments. Test check of records relating to water supply schemes revealed several instances of deviation from the codal provisions which had a financial implication of ₹ 14.67 crore as discussed below:

Mizoram: As per guidelines of the Finance Department of the Government of Mizoram, prices approved by the State Purchase Advisory Board (SPAB) were valid for one year extendable by another six months. The SPAB approved purchase of GI Pipes from a firm in March 2010. However, PHED procured pipes for 302 rural water supply schemes costing ₹ 19.40 crore from the same firm at the same rates without inviting fresh tenders during 2012-13 to 2016-17 though the validity of the approval given by SPAB had expired. This deprived the department of the opportunity of ascertaining current market prices and assuring itself of the competitiveness and reasonableness of the expenditure incurred on the procurement.

Sikkim: In South Sikkim district, tenders were invited in February 2013 for civil work of a RWSS at an estimated cost of ₹ 3.28 crore. In response, five bids were received and the lowest bid of ₹ 2.26 crore which was 31.3 *per cent* below the estimated cost was recommended for acceptance. The bidder however subsequently withdrew its offer on “personal grounds.” Of the four remaining bidders, three of the bidders agreed to carry out the work at ₹ 2.79 crore which was 15 *per cent* below the estimated cost. The work was however awarded (July 2013) to the fourth bidders at the estimated tender cost of ₹ 3.28 crore. Audit observed that the CVC guidelines stipulate that in the event of the lowest bidder backing out the work, the work should be re-tendered in a transparent manner. In the instant case, not only was the CVC guidelines not adhered to, the work was awarded to the highest bidder which resulted in an avoidable expenditure of ₹ 0.49 crore.

Assam: In Jorhat PHE Division, work for Greater Titabor water supply scheme was divided in two zones *viz.* Zone-I and Zone-II. Audit observed that estimated cost of ductile iron special and fittings in Zone-I was taken at 25 *per cent* of the cost of ductile iron pipes whereas it was taken at 15 *per cent* in Zone-II. Adoption of higher rate of 25 *per cent* in Zone I for the same item of work lacked justification as the rate of 15 *per cent* had been adopted in Zone II as well as in other PHE divisions. Adoption of the higher rate in Zone I inflated the cost of scheme by ₹ 1.78 crore. Further, rates of un-plasticised polyvinyl chloride (UPVC) pipes taken in the approved estimates (October 2011) for the two zones were higher than the available approved rates for these pipes (July 2010). This further inflated the estimates by ₹ 0.86 crore. This resulted in excess expenditure of ₹ 2.64 crore on the works.

Kerala: Four works (CARWSS to Moorkanad and adjoining villages; WSS to East Eleri *Panchayat* Package 1; WSS to East Eleri *Panchayat* package 3 and ARWSS-augmentation and improvement Nilambur WSS) were terminated between February 2012 and December 2015 at the risk and cost of the contractors. However, liability of ₹ 3.75 crore on account of the risk and cost clause was yet to be recovered from the defaulting contractors. In another WSS covering Manimala and adjoining villages, the contract was terminated in July 2013 at the risk and cost of the contractor but the balance work was awarded to the same contractor in December 2013. The work was yet to be completed (July 2017).

Maharashtra: Since insurance charges are included in the schedule of rates for preparation of estimates, tender conditions required contractors to submit insurance policies prior to start of work failing which one *per cent* of tendered cost was recoverable from the contractors. In Buldhana and Raigad districts, contractors executing 379 schemes did not purchase insurance policies. However, no recoveries were made as per the tender conditions leading to non-recovery of ₹ 1.74 crore from the contractors. Audit also noted that the Building and Other Construction Workers Cess Act 1996 obligated the department to deduct cess from the bills of the contractors for deposit with the Building and Other Construction Workers Cess Board. However, the department failed to deduct labour cess amounting to ₹ 1.76 crore from the bills of these contractors which was not only violation of a statutory obligation but also exposed the department to the liability of paying the cess to the Board under the Act *ibid*.

Odisha: Five PWS works (Kesapali, Barab, Kholbilong, B Garposh and Amodi) in districts Sambalpur and Nuapada were awarded at a cost of ₹ 10.26 crore between April 2012 and March 2015. The contractors after executing work valuing ₹ 4.03 crore abandoned the works. However, the department failed to impose liquidated damages of ₹ 1.24 crore upon the defaulting contractors as per the terms of the contract.

The Government of Odisha issued orders for involving Non-Governmental Organisations in execution of drinking water supply projects. These orders stipulated that money for the works would be released on reimbursement basis on completion of the works. Further, the Odisha PWD Code prohibited payment of advances to contractors except in exigencies in which event 18 *per cent* interest would be levied. In violation of the above, the Rural Water Supply and Sanitation Department awarded piped water supply works at Bhanjanagar and Berhampur to an NGO and paid an advance of ₹ 2.77 crore¹⁹ during 2012-17 without any recorded reasons for the same. Out of this, ₹ 2.66 crore had been adjusted as of July 2017 leaving ₹ 0.11 crore

¹⁹ ₹ 2.10 crore by Bhanjanagar and ₹ 0.67 crore by Berhampur

unadjusted. Further, no interest was levied on the advance which led to a loss of ₹ 0.10 crore to the exchequer.

Rajasthan: In terms of Clause 2 of General Conditions of Contract/Agreement prescribed in the Public Works Financial and Accounts Rules of Rajasthan, compensation is to be recovered if the contractor does not complete the work within the period specified in the work order and the delay is attributable to the contractor. In contravention of the above codal provision, the department failed to recover compensation of ₹ 0.28 crore in district Ganganagar despite delays in execution of works that were attributable to the contractors.

4.2.12 World Bank Project for Low Income States

A project for rural water supply in four low income States viz. **Assam, Bihar, Jharkhand** and **Uttar Pradesh** was started by the Ministry in December 2013 in collaboration with the World Bank. Under the project, a rural population of 78 lakh in 33 districts of four States²⁰ was to be covered with 2,012 piped water supply schemes by 2020 at an estimated cost of ₹ 6,147 crore (equivalent to USD 1 billion²¹). As per the agreement between Government of India and the World Bank, the latter would provide 50 per cent of the project cost (USD 500 million) over a period of seven years (2013-14 to 2019-20). The remaining 50 per cent of the project cost was to be financed through contributions from Government of India, State Governments and beneficiaries. As per the agreement, 726 out of the 2,012 schemes were to be completed by March 2017. The actual status of completion of these schemes is given in **Table 4.6** :

Table 4.6: Status of Schemes under World Bank Project as on March 2017

Schemes	Assam	Bihar	Jharkhand	Uttar Pradesh	Total
Planned	7	330	751	924	2,012
To be completed	3	156	335	232	726
Started	7	137	201	233	578
Completed	0	0	103	26	129
Ongoing	3	129	78	204	414
Yet to be started	4	8	20	3	35

Source: Records of the Ministry

The schemes under the World Bank Project were lagging behind and only 129 out of the 726 schemes planned for completion by March 2017 i.e. 17.8 per cent had been completed. As per the agreement, World Bank funds of ₹ 1,506.02 crore was available for disbursement up to March 2017. However, due to slow progress in commencement

²⁰ Assam-seven districts, Bihar-10 districts, Jharkhand-six districts and Uttar Pradesh-10 districts with estimated population coverage of 14 lakh, 24 lakh, 12 lakh and 28 lakh respectively.

²¹ 1 US \$ = ₹ 61.47

and execution of the schemes by the States the Ministry disbursed only ₹ 584.90 crore by March 2017 against which expenditure incurred was only ₹ 380.04 crore (25.2 per cent).

The Ministry attributed (September 2017) the slow progress of works to inadequate financial capability of vendors, lack of knowledge/skill of vendors, inexperience in implementing turnkey projects and lack of capacity available with the State Government machinery.

The slow physical and financial progress recorded against the World Bank project that was especially focussed on implementing piped drinking water supply schemes in 33 districts of four low income States deprived the target population in these States from the benefits from the project.

4.2.13 Slow progress of Solar Energy Based Water Supply Schemes

Two separate projects for setting up of Solar Energy Based Dual Pump Piped Water Supply scheme were initiated by the Ministry with the financial assistance of the National Clean Energy Fund (NCEF), Ministry of Finance (March 2013) and Ministry of New and Renewable Energy (MNRE) (October 2014). The objective of the project was to cover remote areas in all States where electricity supply was not available. Audit observed the following:

- a) Installation of Dual-Pumps in 11,068 rural habitations of 10 States was taken up with 40 per cent financial assistance from NCEF while the balance 60 per cent was to be equally shared between the Centre and States. NCEF contributions amounting to ₹ 110.65 crore (March 2013) and ₹ 110.64 crore (March 2015) were released for installation of dual-pumps in 11,068 habitations. In the case of 5,424 habitations, the project was scheduled to be completed in 18 months i.e. by September 2014 and by August 2015 in the case of remaining 5,644 habitations. It was noted that a total of 8,802²² habitations (79.5 per cent) had been covered under the project as of September 2017. Analysis of State-wise performance showed that achievement ranged between 55 per cent and 94 per cent in **Chhattisgarh, Jharkhand, Madhya Pradesh, Telangana and Uttar Pradesh.**

²² Achievement of **Andhra Pradesh, Bihar, Maharashtra and Uttar Pradesh** were not available with the Ministry.

b) Installation of 15,400 dual-pumps in 17 States at an estimated cost of ₹ 1.80 lakh each was taken up in July 2016 with the financial assistance of ₹ 0.40 lakh per pump from Ministry of MNRE leaving a balance cost of ₹ 1.40 lakh per pump. This balance cost along with storage, distribution and installation cost amounting to ₹ 4.50 lakh was to be shared between the Centre and States. The work was to be completed by March 2017. Audit observed that against the target of 15,400 pumps, only 7,100 dual-pumps (46.1 *per cent*) had been installed by September 2017. State-wise performance showed that **Assam, Haryana, Punjab** and **West Bengal** had not installed any dual pump against their target of 1,000. Further, in **Bihar, Gujarat, Rajasthan** and **Tamil Nadu**, only 14 dual pumps had been installed against the targeted installation of 3,000 dual pump as on September 2017. In **Chhattisgarh, Karnataka, Telangana** and **Uttar Pradesh**, the percentage achievement ranged between 18 and 57 *per cent*.

Odisha

Solar energy based dual pump piped water supply scheme for IAP district was launched in 2013-14 through Odisha Renewable Energy Development Agency (OREDA) for which seven *per cent* service charge was paid to the agency. All works were covered with five years Comprehensive Maintenance Contract (CMC) from the date of installation. During 2013-14 to 2016-17, 6,291 solar dual pumps were installed in the State incurring an expenditure of ₹ 161.02 crore. As of August 2017, 428 solar dual pumps installed incurring an expenditure of ₹ 19.41 crore were non-functional for a period ranging between three and 25 months. OREDA had intimated the vendors to rectify the defects within 15 days. Due to non-restoration of these pumps, targeted populations of 428 habitations were not getting the desired benefit.

The Ministry stated (September 2017) that implementation of the scheme was lagging behind as the States were not able to focus on the schemes due to pre-occupation with other mainstream programmes. It intimated that the progress was being closely watched and the schemes would be completed soon. The fact remained that the delay in completing the scheme would affect the objective of extending coverage of water supply schemes to remote areas in all States where electricity supply was not available.

4.2.14 Coverage of Schools and Anganwadis

Programme guidelines envisage that all States should compile data of rural government schools and *anganwadis* in existence and the number of them having drinking water facilities. Further, as per the Strategic Plan (2011-22), all schools and *anganwadis* in rural India are to be provided with access to adequate quantity of safe drinking water by 2017.

Audit observed that out of 10.45 lakh schools (government, aided, local body and private) and *anganwadis*, 1.50 lakh schools and *anganwadis* i.e. 14.35 per cent were without drinking water facilities as of November 2017. The shortfall in provision of drinking water facilities to schools and *anganwadis* was higher in the North-Eastern States of **Arunachal Pradesh** (56 per cent), **Assam** (29 per cent), **Meghalaya** (48 per cent), **Nagaland** (54 per cent) and **Sikkim** (36 per cent) as compared to States in the other regions. State specific observations on the status of provision of drinking water facilities to schools and *anganwadis* are given below.

Arunachal Pradesh: In West Kameng district, 21 out of 40 test checked water supply schemes to schools (53 per cent) remained incomplete for more than four years (August 2017) due to non-construction of items like sedimentation tanks, non-provision of storage tanks and Public Stand Posts (PSPs). In Lower Subansiri district, 15 schemes were non-functional since April 2006 due to quantity and quality problems. Out of eight test checked schools, in one school the water supply scheme which was completed (March 2014) at a cost of ₹ Six lakh remained non-functional as a storage tank and PSPs had not been constructed as of March 2017.

Madhya Pradesh: In 44 selected GPs, drinking water facility was not available in 33 out of 226 schools. Similarly, drinking water facility was not available in 27 out of 125 *anganwadis*.

Rajasthan: In 10 selected districts, drinking water facility was available in only 1,049 out of 2,903 schools as on April 2012 leaving 1,854 schools uncovered as of March 2017. It was also observed that no school was covered during 2015-17 in four districts²³ despite 866 schools²⁴ not having drinking water facilities as of April 2015.

Tripura: The department informed audit that only three schools remained without access to adequate drinking water facilities. However, scrutiny of records at the district level in the test checked districts revealed that in Dhalai district alone, 34 schools and 51 *anganwadis* were yet to be covered at the end of 2016-17. Moreover, cross check of updated (June 2017) records of United District Information System for Education revealed that 991 schools were without potable drinking water facilities in contrast to the State's claim that only three schools remained without access to adequate drinking water facilities.

It is evident that the Ministry had fallen short of achieving the Programme objective of providing safe drinking water to all schools and *anganwadis* in rural areas by March 2017 with the shortfall being sharpest in the North Eastern States.

²³ Bhiwara, Dungarpur, Jaipur, and Jhalwar

²⁴ Bhiwara-290, Dungarpur-61, Jaipur-333, and Jhalwar-182

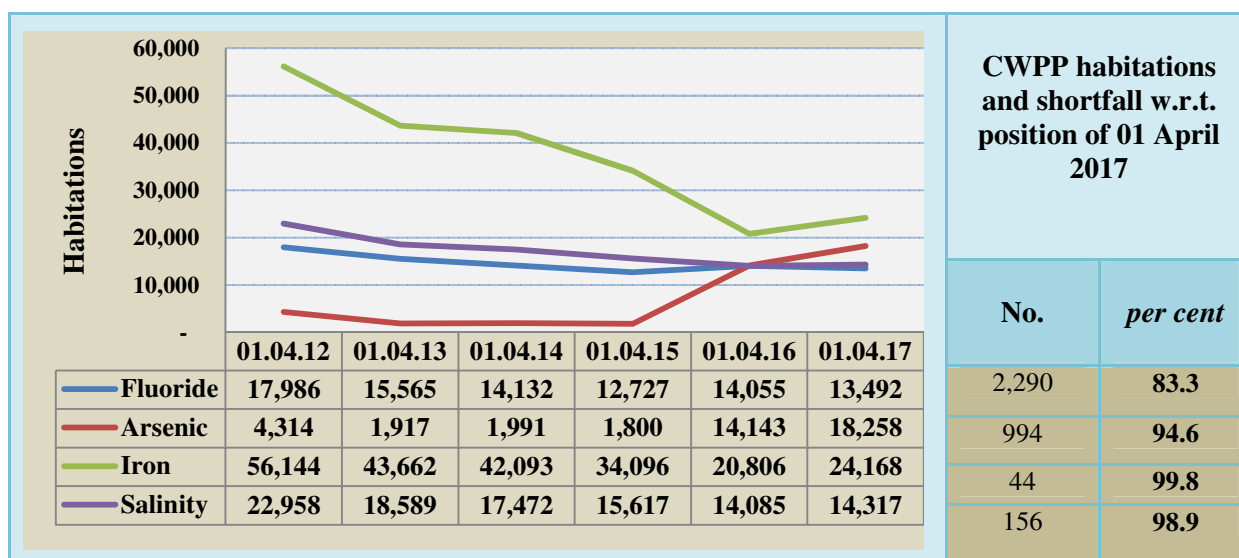
4.3 Quality

Chemical contamination of drinking water especially due to arsenic, fluoride, iron and heavy metals along with bacteriological contamination are major concerns in supply of safe drinking water in rural areas. A large number of rural habitations are quality affected and ensuring availability of safe drinking water by addressing quality concerns remains a challenge. Consequently, NRDWP emphasises coverage of water quality affected habitations by earmarking funds for schemes in such areas as detailed in para 3.1 of this report. In addition, special schemes were also launched to mitigate the water quality in habitations, schools and *anganwadis*.

4.3.1 Status of quality affected habitations

Audit observed that 1,04,160 rural habitations (1 April 2012) were affected with chemical contamination which reduced to 67,290 habitations as of April 2016 but increased to 74,724 habitations (11 *per cent*) as of April 2017. The position with regard to major sources of chemical contamination of drinking water, availability of community water purification plants (CWPPs) and related issues are given in **Box-4.1**:

Box-4.1: Habitations affected with chemical contamination



Fluoride: According to IMIS data, 13,492 habitations having 1.08 crore of rural population in 17 States were at risk due to fluoride in drinking water sources as on 1 April 2017. However, 83.3 *per cent* of such habitations were not provided with CWPPs.

Arsenic: Arsenic affected habitations were significant in **Assam** and **West Bengal**. According to IMIS data, 18,258 habitations with a rural population of 1.70 crore were affected with arsenic contaminated drinking water as on 1 April 2017. CWPPs were however for provided only in 994 habitations (5.4 *per cent*). CWPPs were not provided in any of the affected habitations of **Chhattisgarh, Jharkhand, Karnataka and Uttar Pradesh**.

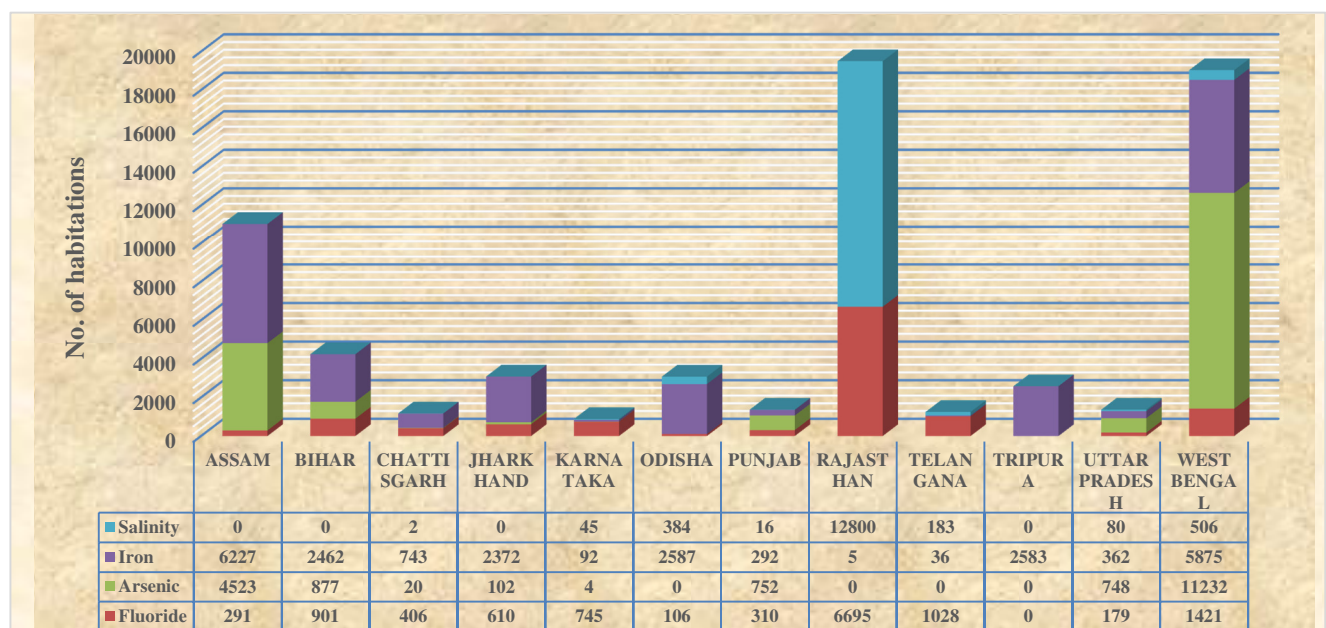
Iron: Despite a declining trend (2012-16), drinking water in 24,168 habitations covering a rural population of 1.48 crore in 22 States were still contaminated with iron as of 1 April 2017. Against this, only 44 habitations (0.2 per cent) in five States including 35 in **Karnataka** and five in **West Bengal** were provided with CWPPs.

Salinity: Salinity is predominant in **Rajasthan**. According to IMIS data, out of 14,317 habitations covering 44 lakh rural population where water was affected by salinity as on 1 April 2017, 12,800 habitations covering 30 lakh rural population were in **Rajasthan**. CWPPs had been however provided only in 156 habitations (one per cent) including 131 habitations in **Rajasthan**.

Source: IMIS data of the Ministry

Thus, out of 74,724 quality affected rural habitations as on April 2017, 70,235 rural habitations i.e. 94 per cent were affected with major chemical contamination of arsenic, fluoride, iron and salinity. **Assam, Bihar, Jharkhand, Rajasthan, Odisha** and **West Bengal** are the prominent States affected with the water contamination. The position of States largely affected with arsenic, fluoride, iron and salinity as of April 2017 is detailed in **Chart-4.6** :

Chart-4.6: Contamination-wise status of habitations in States as on April 2017



As on April 2017, only five per cent of the quality affected rural habitations had been provided with CWPPs leaving the problem of contaminated water unaddressed in the remaining habitations. In 12 States viz. **Arunachal Pradesh, Haryana, Jammu & Kashmir, Kerala, Meghalaya, Nagaland, Odisha, Tamil Nadu, Telangana, Tripura, Uttar Pradesh** and **Uttarakhand**, CWPPs were not installed in any of the quality affected habitations to provide safe drinking water. In nine other States i.e. **Assam, Bihar, Chhattisgarh, Jharkhand, Madhya Pradesh, Maharashtra, Punjab, Rajasthan** and **West Bengal**, the percentage of habitations provided with CWPPs

ranged from one to seven *per cent*. In **Andhra Pradesh** and **Karnataka**, the percentage of habitations provided with CWPPs was 35 and 49 *per cent* respectively.

Ministry stated (February 2018) that 10,689 CWPPs had been installed in quality affected habitations to provide safe drinking water. However, the fact remains that 95 *per cent* quality affected habitations were still without access to safe drinking water.

State specific comments based on test check of records with regard to quality affected habitations and provision of mitigating measures are given below:

Assam: In Golaghat PHE division, water from eight PWS Schemes completed between May 2011 and March 2013 at an expenditure of ₹ 4.75 crore was tested by a DLL (June 2017) and found to be contaminated with arsenic. Similarly, in Hojai and Nagaon PHE divisions, quality testing of water from 11 PWS Schemes completed between November 2010 and December 2014 at an expenditure of ₹ 4.98 crore revealed that water from all the schemes were contaminated with fluoride beyond the permissible limit. The concerned Divisional Officers stated that steps would be taken to provide safe drinking water to the beneficiaries covered by these schemes from alternate source. Thus, safe drinking water could not be made available to the habitants in these districts despite incurring an expenditure of ₹ 9.73 crore on 19 PWS schemes.

Odisha: Sixteen out of 40 tube wells in seven villages of two blocks in district Nabarangpur were contaminated by fluoride during 2015-17 but neither was any alternate source for safe drinking water provided to the villagers nor remedial measures such as installation of fluoride removal devices taken by the Department to mitigate the problem. As a result, the population of seven villages continued to use unsafe water.

Rajasthan: As per data made available by the State level laboratory, Jaipur, the State had not shown any habitation as being contaminated with heavy metals. However, as per the Central Ground Water Board, heavy metal contamination (lead, cadmium, chromium, nickle and copper) was present in Jhunnjhunu, Alwar, Jaipur and Jodhpur districts.

Tripura: As of 1 April 2017, 741 deep tube wells were not attached to Iron Removal Plants to tackle iron contamination. Consequently, all the habitations supplied with drinking water from these deep tube wells remained quality affected.

It was also observed that 15,493 habitations in 20 States were affected with heavy metals such as manganese, aluminium, uranium, lead, cadmium and selenium as of March 2017. The prominent States so affected were **Assam** (1,582 habitations), **Punjab** (2,038 habitations) and **West Bengal** (11,486 habitations).

4.3.2 Unproductive expenditure on removal of chemical contamination

Test check of records in six States brought out that Reverse Osmosis (RO) Plants, Iron Removal Plants, Ultra-Filtration Pot Filters, Mobile Water Treatment Plants and de-fluoridation units procured during 2012-17 valuing ₹ 87.15 crore were either lying idle or non-functional as discussed below:

Assam

(a) PHED procured 33,600 arsenic filters valued at ₹ 83.84 crore to provide fluoride and arsenic free water to schools and *anganwadis* during 2013-17. Of these, 33,580 filters were issued to the PHE divisions during 2013-14 to 2016-17 leaving 20 filters costing ₹ 0.05 crore in stock. Out of the issued filters, 18,575 were received by 13 selected divisions of which 7,214 (39 per cent) were issued to the schools and *anganwadis* leaving 11,361 filters costing ₹ 28.35 crore in selected divisional stores since 2013. Audit observed that Silchar-I Division issued 1,350 filters costing ₹ 3.37 crore to schools and *anganwadis* without any requisition as water was not chemically contaminated.



Thus, incorrect planning and procurement of filters without assessment of requirement resulted in 12,731 filters costing ₹ 31.77 crore remaining unused or issued to schools and *anganwadis* without any requirement (March 2017).

(b) Audit also noted that out of 68²⁵ Solar Operated Reverse Osmosis (RO) Plants worth ₹ 22.61 crore procured during 2014-16, 22 plants were issued to six²⁶ divisions leaving 46 plants in stock as of July 2017. However, 10 out of these 22 plants issued in three selected divisions²⁷ were yet to be installed.

²⁵ NRDP (40 Plants) and State Plan Fund (28 Plants)

²⁶ (i) Guwahati PHE Division No.1 (5 Plants) (ii) Hojai PHE Division (7 plants) (iii) Jorhat PHE Division (2 Plants) (iv) Dhubri PHE Division (4 plants) (v) Barpeta PHE Division (2 Plants) and (vi) Nalbari PHE Division (2 plants)

²⁷ Hojai Division: 7 plants; Jorhat Division: 1 plant and Dhubri Division: 2 plants.



Department stated that 46 plants were not issued due to non-receipt of division-wise locations for installation from the higher authorities as well as non-receipt of information regarding completion of PWSS works where the plants were to be installed. Thus, 56 Solar Operated Reverse Osmosis plants procured during 2014-16 at a cost of worth ₹ 18.62 crore were lying idle.

(c) PHED procured 10,485 “Iron Removal Plants (IRPs)” costing ₹ 73.19 crore to provide iron free water during 2012-17. Out of 11,174 IRPs (including 689 IRPs lying in stock since April 2012), 10,882 IRPs were issued to the PHE Divisions for installation leaving 292 IRPs valued at ₹ 2.04 crore in stock. Out of the 10,882 IRPs issued, 2,733 IRPs were received by 13 selected divisions. Of these, 1,924 IRPs (70 per cent) were utilised/installed by the divisions leaving 809 IRPs in stock. Thus, 1,101 IRPs valued at ₹ 7.68 crore were yet to be utilised as of March 2017.

Further, out of the 937 IRPs installed in PHE divisions Silchar-II, Dhubri and Hojai, during 2012-17 only 47 IRPs were functional as of May 2017 and the remaining 790 IRPs²⁸ valuing ₹ 5.51 crore were non-functional due to lack of maintenance.



²⁸ Pin point location of 100 IRPs were not furnished to audit.

(d) PHED procured 22,715 “Senco make ultra-filtration pot filters” costing ₹ 25.95 crore for installation in schools during 2012-17. Out of this, 4,150 filters valued at ₹ 4.74 crore and 2,321 filters (including 325 filter lying since April 2012) valuing ₹ 2.65 crore were lying in stock with Sanitation and Water Division, Guwahati and with 13 selected divisions as of March 2017.

Chhattisgarh: Out of 647 installed (2012-16) IRPs in the various iron affected habitations of Bastar, Rajnandgaon, and Jashpur, 77 were non-functional (March 2017) resulting in unfruitful expenditure of ₹ 0.42 crore.

Gujarat: In the selected districts, audit collected water sample test results (2012-17) of 73 habitations from 20 Talukas from water testing District and *Taluka* laboratories and found that 146 out of 700 samples taken were contaminated due to presence of excess fluoride and nitrates. However, neither were GPs informed about these test results nor was any remedial action taken.

Jharkhand: In Sahibganj and Palamu, Mobile Water Treatment Plants procured (August 2012) at a cost of ₹ 0.53 crore, were lying idle since April-May 2013.

Madhya Pradesh and Rajasthan

In **Madhya Pradesh**, in sub-divisions Chhindwara, Parasia and Jamai, 96 de-fluoridation units were installed at a cost of ₹ 1.64 crore in 2014-15. Terms of conditions of agreement with the executive agency included regular maintenance of the installed plants for five years. It was observed that 92 units were maintained by the agency for only four months from the date of installation. As the agency did not maintain these units, the contract was rescinded in February 2016. All 96 units were not functional (March 2017) and fluoride contaminated water was being supplied to the habitants.

In **Rajasthan**, in five selected districts (Bhilwara, Jaisalmer, Jhalawar, Kota and Tonk), work orders for installation of 669 de-fluoridation units at a cost of ₹ 5.80 crore were issued to an agency in January/May 2011. The agency was paid ₹ 0.79 crore for 374 de-fluoridation units installed in 2011-12. These units became non-functional for want of maintenance despite the fact the terms of contract included their operation and maintenance for five years.

Further, 57 Reverse Osmosis plants installed in district Jaisalmer and Barmer at a cost of ₹ 7 crore became non-functional for want of maintenance though the terms of contract included maintenance for seven years.

Findings of Audit Survey in Bihar

- As per IMIS data, Nagel habitation in district Banka was shown as covered with PWSS. But no PWSS was found to exist in the habitation during survey.
- As per IMIS data, three selected habitations (Seoka gola, Khasia and Houda tola) of Teliya Kumri *Panchayat* were shown as having fluoride removal attachment units. But no attachment units were found in two habitations and the unit in the remaining habitation was not functional.
- As per IMIS data, all four selected habitations of West Katskra *Panchayat* in district Banka were shown as being provided with attachment units. But these were not found during the audit survey.

4.3.3 Status of special schemes

Ministry launched special schemes to provide safe drinking water in schools and *anganwadis* in water quality affected areas and to provide financial support to affected States to mitigate water quality problem as a short term measure.

4.3.3.1 Unproductive expenditure under *Jalmani* Scheme

The Jalmani Scheme was started in November 2008 with the objective of providing children studying in water quality affected rural schools with safe and clean drinking water by installation of one lakh standalone water purification systems in schools.

Test check of records showed that out of the 3,302 water purification systems in schools of six States, 2,439 systems valued at ₹ 4.24 crore²⁹ were either not installed or not functional. The State-wise position with regard to installation of water purification systems is given in **Table-4.7**:

Table-4.7 : Status regarding installation of water purification systems

State	Number of water purification systems			Value of Not installed/Non-functional WPS (₹ in crore)
	Installed	Not installed	Non-functional	
1	2	3	4	6
Andhra Pradesh	782	66	91	0.31
Assam	174	203	-	0.41
Chhattisgarh	362	-	262	0.34
Madhya Pradesh	770	-	733	1.28
Mizoram	983	-	949	1.90
Telangana	231	-	135	NA
Total	3,302	269	2170	4.24

²⁹ In respect of 2,403 stand-alone Water Purification System

Thus, the expenditure of ₹ 4.24 crore, incurred on their procurement was rendered unfruitful.

4.3.3.2 Short utilisation of Central assistance provided by NITI Aayog

Due to the long gestation period³⁰ for water supply schemes and to avoid consumption of unsafe drinking water, NITI Aayog recommended in February 2016 release of one-time assistance for installation of CWPPs. Accordingly, ₹ 1,000 crore was released to 19 States³¹ with the objective of providing at least 8-10 lpcd of drinking water in 1,327 arsenic affected and 12,013 fluoride affected habitations during 2015-16.

As of September 2017, 359 (27 per cent) arsenic affected and 2,596 (22 per cent) fluoride affected habitations were covered at a cost of ₹ 574.68 crore (57.46 per cent of total fund). NITI Aayog, while reviewing the progress (September 2017), instructed the States to complete installation of CWPP before 31 December 2017.

Audit observed that ₹ 319.89 crore released as one-time financial assistance remained unutilised in four States {**Andhra Pradesh** (₹ 8.19 crore), **Kerala** (₹ 19.73 crore), **Rajasthan** (₹ 197.39 crore) and **Telangana** (₹ 94.58 crore)}.

In **Karnataka**, the Ministry released (March 2016) ₹ 59.90 crore on the recommendations of NITI Aayog. In turn, the State Government released (August 2016) this amount to 18 districts (including seven selected districts). Though three of the selected districts (Bagalkot, Chitradurga and Mandya) furnished details of financial progress, details of works executed were not provided.

In **Maharashtra**, in 54 selected GPs, seven out of 177 habitations had no CWPPs. Further, in five village *Panchayats* having six schools and 16 *anganwadis*, two CWPPs were installed. However, ₹ 24.08 crore released during 2015-16 under “NITI Aayog” initiative remained unutilised.

Thus, non-utilisation of funds and slow progress of work defeated the very purpose of this short term measure to provide drinking water facility in quality affected habitations.

4.4 Sustainability

Sustainability of drinking water sources and schemes ensures safe drinking water even during distress periods through conjunctive use of groundwater, surface water and roof-water harvesting. The main aim of schemes for sustainability of drinking water is to ensure that water supply schemes do not slip back throughout their design period. This is achieved through construction of sustainability structures such as water harvesting

³⁰ It takes four to five years to complete piped water supply schemes

³¹ In respect of installation of community water purification plants (₹ 800 crore) and to take up surface water projects where funds were required for last mile connectivity (₹ 200 crore).

systems, water recharging systems and surface water impounding systems aimed at improving rural drinking water supply.

4.4.1 Non-preparation/implementation of sustainability plan

The Strategic Plan (2011-22) envisaged preparation of Sustainability plans to ensure that recharge and water harvesting structures are taken up in a scientific manner. The Programme guidelines also stipulated that Annual Action Plans should indicate sustainability structures being taken up during the year.

However, sustainability plans were either not prepared or were not being included in AAP in 14 States (**Andhra Pradesh, Arunachal Pradesh, Assam, Himachal Pradesh, Karnataka, Kerala, Madhya Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Rajasthan, Sikkim and Telangana**). In the absence of sustainability plans, there was no assurance that sustainability structures were being taken up in a scientific manner so as to avoid expenditure incurred becoming infructuous.

4.4.2 Low expenditure on sustainability component

To ensure that water supply schemes do not slip back from fully covered to partially covered during the designed lifetime of the schemes, the Programme guidelines stipulate allocation of 10 *per cent* of the programme fund for sustainability³² to be used exclusively to achieve drinking water security. Analysis of data on utilisation³³ of funds for sustainability component showed that only five States *viz.* **Chhattisgarh, Himachal Pradesh, Meghalaya, Mizoram and Odisha**, achieved this level of expenditure and the expenditure in 16 States³⁴ ranged between five and ten *per cent* and it was less than five *per cent* in eight States of **Andhra Pradesh, Arunachal Pradesh, Bihar, Goa, Kerala, Telangana, Tripura and West Bengal**.

Expenditure on the sustainability component by 24 States at lower than envisaged levels indicated low prioritisation for construction of sustainability structures. Audit noted that States which spent less than ten *per cent* of funds on sustainability component were among those that had a high number of slipped back habitations.

³² Till 2014-15 it was 100 *per cent* Centre share, thereafter from 2014-15 sharing pattern changed to 60:40 as Centre:State share.

³³ In respect of Central allocation only

³⁴ **Assam, Gujarat, Haryana, Jammu & Kashmir, Jharkhand, Karnataka, Maharashtra, Madhya Pradesh, Manipur, Nagaland, Punjab, Rajasthan, Sikkim, Tamil Nadu, Uttar Pradesh and Uttarakhand**

4.4.3 Construction of sustainability structures

Test check of records in States relating to provision of sustainability structures revealed the following:

Arunachal Pradesh: Only 245 out of the targeted 1,729 sustainability structures were completed after incurring ₹ 24.86 crore. This left a shortfall of 1,484 structures which was attributed to short allocation of funds.

Assam: Out of 2,220 Rain Water Harvesting Systems constructed during 2010-17 in primary schools and institutional buildings, 1,839 systems costing ₹ 37.81 crore were not functional (March 2017) due to lack of maintenance. In some of the cases, the bibcock of the reservoirs tank was broken and gutter pipes were either blocked or broken.

Bihar: State Government sanctioned four schemes for construction of 70,095 hand pumps as point source recharging systems during 2012-17. Out of this, 58,183 hand pumps were constructed at a cost of ₹ 288.57 crore without making provision of point source re-charging system. Evidently, hand pumps were constructed mainly for coverage of habitations and the objective of sustainability remained unachieved.

Karnataka: Nine check dams constructed between December 2012 and March 2016 at a cost of ₹ 0.50 crore did not serve its purpose as they were constructed on sites where water was not flowing in the stream for many years. Another three check dams constructed during the same period at a cost of ₹ 0.15 crore were either not used due to improper planning or abandoned. This evidenced the lack of planning in taking up sustainability works. Further, 11 check dams completed between January 2013 and March 2016 at a cost of ₹ 1.32 crore were found damaged or encroached and water could not be stored in these dams.

Rajasthan: Codal provisions stipulate ensuring encumbrance-free site before award of works. PHED circle Bhilwara awarded (February 2015) water security work at *gram panchaya* Khemana consisting of one overhead service reservoir, one open well, recharge shafts and recharge pits to a contractor at cost of ₹ 0.77 crore to be completed by August 2015. However, the work remained incomplete for over two years as of August 2017 due to existence of a land dispute though an expenditure of ₹ 0.64 crore had been incurred.

4.4.4 Non-convergence with other programmes

The Strategic Plan (2011-22) envisaged that works related to sustainability structures included in the sustainability plans should be taken up and financed in convergence with other related programmes such as Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS) and Watershed Development Programmes. This was

intended to ensure that labour cost recharging and surface water impounding systems is met from the other programmes.

Audit found that construction of sustainability structures was not being undertaken in convergence with other related programmes in 23 States (**Arunachal Pradesh, Assam, Bihar, Chhattisgarh, Goa, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Odisha, Punjab, Rajasthan, Sikkim, Tamil Nadu, Telangana, Tripura and Uttar Pradesh**). Non-convergence of works relating to sustainability with other programmes led to avoidable demand on funds allocated for the component.

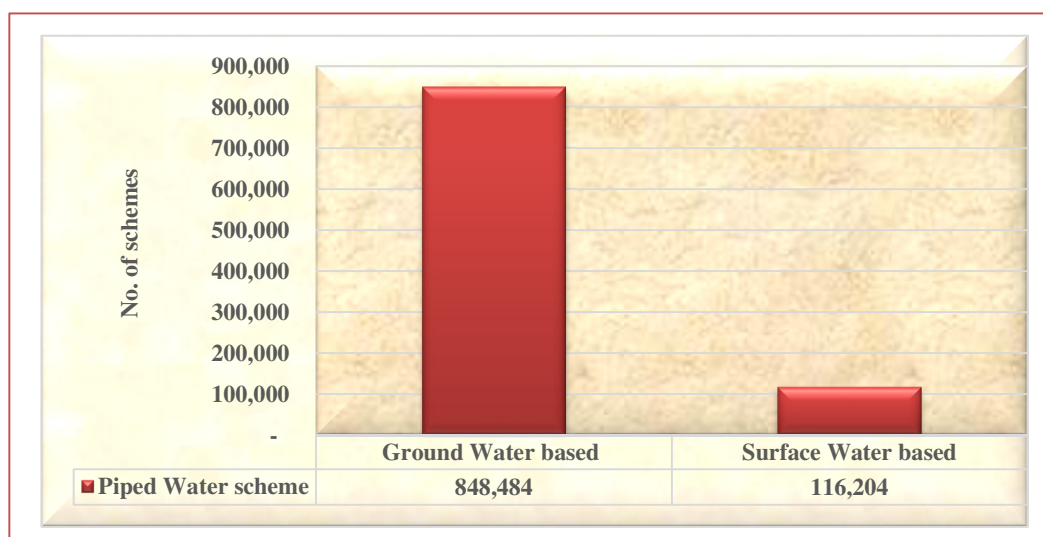
Chhattisgarh and Uttar Pradesh

As per guidelines for implementation of Sustainability Component labour cost of any recharging system/surface water impounding structures was to be met from MGNREGS/IWMP funds. However, in **Chhattisgarh**, test check of records of PHE Electrical & Mechanical Division, Bastar & Raipur revealed that labour component amounting to ₹ 0.43 crore of 3,365 hydro-fracturing works executed during 2012-17 was paid from Sustainability Component rather than from MGNREGS/IWMP.

In **Uttar Pradesh**, in the Minor Irrigation Division of Raebareli, labour component of ₹ 0.89 crore for constructing 17 ponds during 2014 was not met from MGNREGS.

4.4.5 Dependence on Ground Water

NRDWP guidelines identified reduction in dependence on ground water and shift to surface water sources and conjunctive use of water from different sources as a critical issue to be addressed during the 12th plan period. The aim was to reduce pressure on ground water extraction and ensure sustained availability of safe drinking water even during distress periods. However, 88 *per cent* of piped water schemes continued to be based on ground water sources at the end of the 12th Plan period. The share of piped rural water supply schemes based on surface and ground water resources is shown in the **Chart-4.7**:

Chart-4.7: Piped water schemes covered under different water sources

Source: IMIS data of the Ministry

The percentage of piped water schemes on ground water sources was above the national average of 88 *per cent* in the States of **Andhra Pradesh, Bihar, Chhattisgarh, Jharkhand, Karnataka, Madhya Pradesh, Odisha, Punjab, Tamil Nadu, Telangana, Tripura and Uttar Pradesh.**

The high level of dependence on ground water adversely affected the objective of ensuring availability of safe drinking water in the long term and also contributed to the incidence of slipping back of habitations.

4.5 Operation & Maintenance

Operation & Maintenance (O&M) is crucial for provision of drinking water supply in required quantity on a continued basis and also for ensuring that completed schemes do not slip back and valuable investment is protected. The Programme guidelines therefore provide for preparation of O&M Plans, provision of adequate and sustainable sources of funding for O&M activities; management of schemes in GPs by PRIs and devolution/transfer of funds to the PRIs for O & M of schemes managed by them.

4.5.1 Non-preparation of Operation and Maintenance Plan

NRDWP guidelines provide³⁵ for use of the Ministry's O&M Manual by the States or preparation of a State specific O&M Manual. The Ministry's Manual of O&M envisages preparation of a O&M plan containing procedures for routine tasks, checks and inspection at set intervals for every major unit and for each scheme as a whole. Audit observed that scheme-wise O&M Plans for routine tasks, checks and inspections were not prepared in 20 States (**Andhra Pradesh, Arunachal Pradesh, Assam,**

³⁵ Paragraph 9.7

Bihar³⁶, **Chhattisgarh**, **Himachal Pradesh**, **Jammu & Kashmir**, **Karnataka**, **Madhya Pradesh**, **Manipur**, **Meghalaya**, **Mizoram**, **Nagaland**, **Punjab**, **Rajasthan**³⁷, **Sikkim**, **Tamil Nadu**, **Tripura**, **Uttar Pradesh** and **Uttarakhand**). In the absence of O&M plans, there was no assurance that the required checks and inspections of schemes were being conducted to identify maintenance requirements and operational problems.

4.5.2 Allocation and utilisation of funds under O&M Component

As per the Programme guidelines, up to 15 *per cent* of NRDWP fund can be utilised by States for O&M and States will make matching contribution which along with funds provided under the Finance Commission's recommendations as grants to PRIs will be used to meet the O&M expenditure on drinking water supply schemes. States should devolve the required O & M fund to the PRIs for O & M of schemes managed by them. Analysis of expenditure on O&M component³⁸ brought out that expenditure on O&M was less than 10 *per cent* of the programme fund in seven States *viz.* **Bihar**, **Goa**, **Himachal Pradesh**, **Jharkhand**, **Karnataka**, **Sikkim** and **Telangana**. In another seven States *viz.* **Arunachal Pradesh**, **Chhattisgarh**, **Maharashtra**, **Odisha**, **Rajasthan**, **Tamil Nadu** and **Uttarakhand**, it ranged between 10 and 15 *per cent*.

This lack of emphasis on running and maintenance of schemes contributed to non-functioning of schemes as discussed in paragraph 4.5.4.

4.5.3 Lack of involvement of PRIs in O&M

Audit observed that completed water supply schemes were only partly handed over to PRIs in nine States *viz.* **Arunachal Pradesh**, **Himachal Pradesh**, **Karnataka**, **Kerala**, **Madhya Pradesh**, **Maharashtra**, **Manipur**, **Mizoram** and **Nagaland**. In four other States of **Assam**, **Bihar**, **Meghalaya** and **Tripura**, water supply schemes were not handed over to PRIs for effective O&M as stipulated in the Programme guidelines. In two States of Arunachal Pradesh and Nagaland, though O&M activities were transferred to PRIs, funds were not devolved to them. In **Nagaland**, the State claimed that O&M Funds shown transferred to the selected villages had been received by them but physical verification disclosed that funds had not been made available.

Thus, contrary to the Programme objectives and guidelines, the overall involvement of PRIs and local communities in management and maintenance of drinking water supply schemes was found to be low and uneven across States.

³⁶ Operation and Maintenance Plan was prepared for **Major Schemes** only.

³⁷ Department claimed to have such plan. However, supporting documents were not produced.

³⁸ Statement number D13 of IMIS.

Assam

Store and Workshop division, Guwahati, procured 37,471 sets of Slow Moving Spare Parts for Direct Action Hand Pump (DAHP) valued at ₹ 83.02 crore. Each set consisting of 25 items were supplied in two boxes (Box-I and II) during 2011-15. Out of 37,471 sets, 18,706 sets (Box-I) were issued to the executing PHE divisions for repairing of DAHPs leaving 18,765 sets in stock (July 2017). Out of 18,706 sets issued to divisions, 5,220 sets (Box-I) were received by the selected 13 divisions. Of these, 1,802 sets were utilised by the selected divisions leaving 3,418 sets in stock.

Divisional Officers stated that spare part sets were received without these being requisitioned. After installation, the DAHPs were handed over to the public/community and these were maintained by the community itself. Thus, the procurement of Slow Moving Spare Parts for DAHP was injudicious.

4.5.4 Non-functioning of schemes

Adequate and efficient O&M is essential for ensuring that water supply schemes remain functional. Test check of records in 17 States (**Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Meghalaya, Nagaland, Odisha, Rajasthan, Tamil Nadu, Tripura and Uttar Pradesh**) revealed that 1,03,486 water supply schemes had become non-functional due to reasons which included inadequate maintenance.

Though O&M is essential for ensuring uninterrupted water supply to habitations, non-utilisation of allotted funds and deficiencies in undertaking O&M activities coupled with inadequate involvement of PRIs in management of water supply schemes compromised its effectiveness and adequacy.

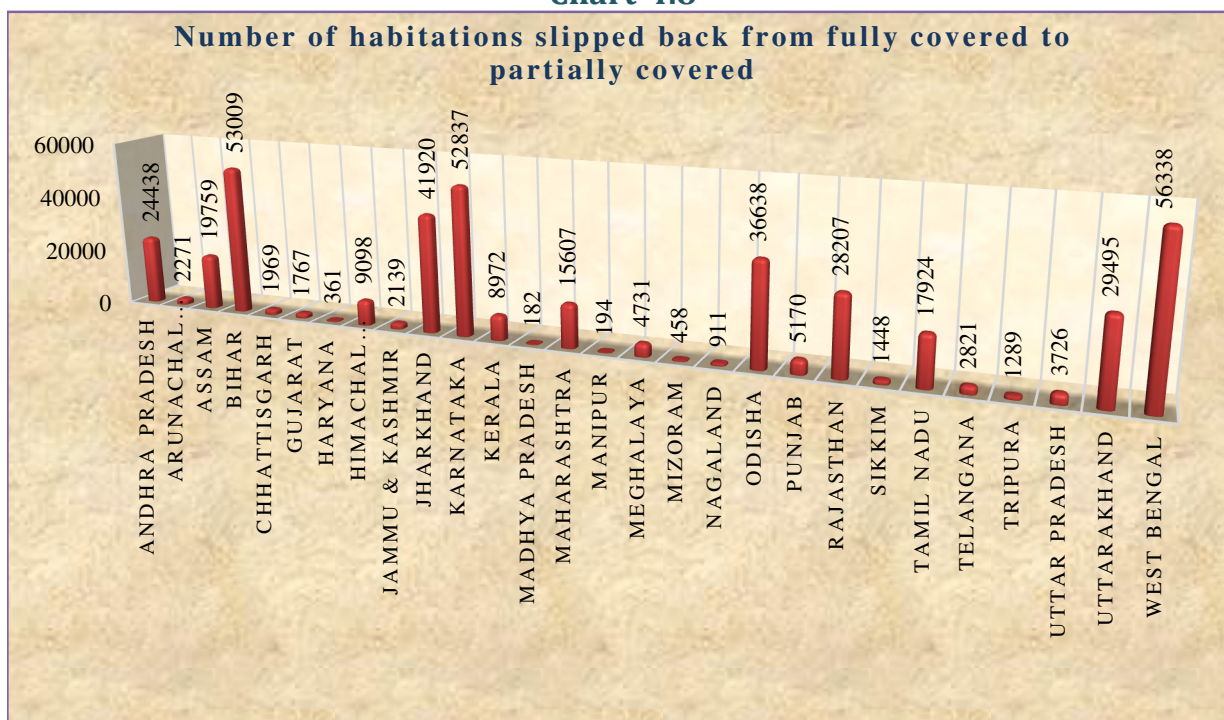
Ministry stated (February 2018) that the re-structuring of the Programme approved in November 2017 will address the problem of non-functional schemes as it links allocation of 25 per cent of funds with the percentage of completed piped water schemes found to be functional through third party surveys.

4.6 Persistence of slip-back habitations

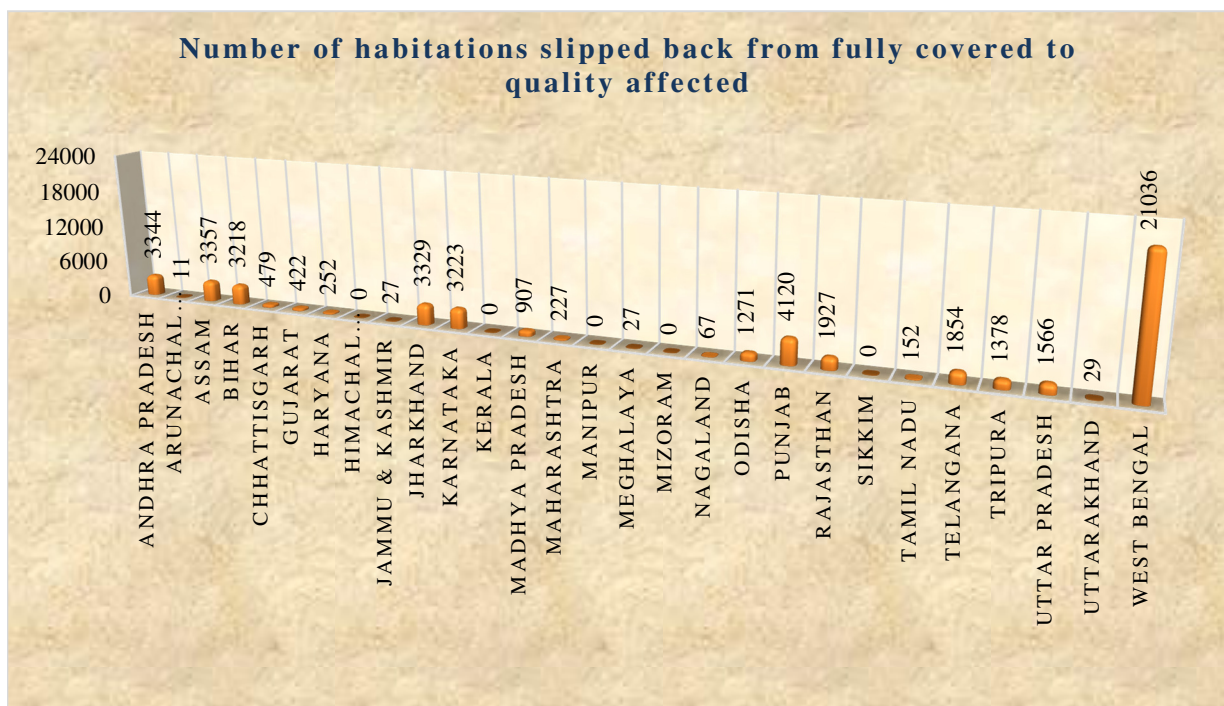
C&AG's Performance Audit Report (No.12 of 2008) on the Accelerated Rural Water Supply Programme had highlighted the problem of slip-back of habitations from fully covered to partially covered. The Ministry, while stating that slippage was unavoidable, had intimated that it had revised its strategy by focussing on sustainability so that the phenomenon of slippage is reduced. The PAC, in its Report No. 35 of 2011-12 had recommended that the Ministry should impress upon the States to ensure that habitations do not slip-back further. However, 4.76 lakh habitations had slipped back during the period 2012-2017. The State-wise slip-back habitation during this period is given in **Chart-4.8**:

Chart-4.8

Number of habitations slipped back from fully covered to partially covered



Number of habitations slipped back from fully covered to quality affected



Source: IMIS data of the Ministry

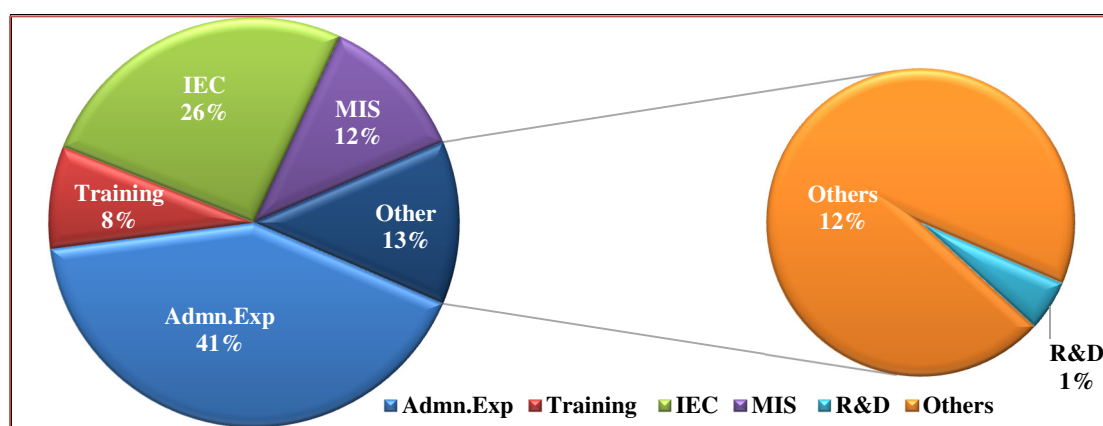
It is evident that the phenomenon of slip-back habitations had continued to persist. The number of slip-back habitations was markedly high in States such as **Andhra Pradesh, Bihar, Karnataka, Jharkhand, Odisha, Rajasthan, Uttarakhand** and **West Bengal**. The reasons for habitations slipping back from the category of fully covered to partially covered are excessive extraction of ground water, inadequacy of efforts to address

quality related aspects, lack of sustainability of water sources, and inadequate/non-maintenance of water supply schemes.

4.7 Support Activities

Support activities include (i) engagement of consultants by WSSO and DWSM, (ii) setting up and running of BRCs, (iii) supporting awareness creation and training activities, (iv) giving hardware and software support at district and sub-divisional level, (v) research and development activities relevant to the State and (vi) engagement of STA. The percentage expenditure under different heads under Support Activities during 2012-17 is given in **Chart-4.9** below:

Chart-4.9: Financial performance under Support Activities: 2012-17



Source: IMIS data of the Ministry

Thus, the expenditure on Support Activities was predominantly (41 per cent) on administration and establishment and functional aspects such as IEC, Training and R&D accounted for much smaller share of expenditure.

4.7.1 Non-preparation/implementation of Support Activity Plan

Action plan for Support Activities consisting of areas such as Information, Education and Communication (IEC), training and capacity building are to be need-based and should be approved by the SLSSC before or at the commencement of each financial year.

Audit observed that action plans for support activities were either not prepared or not included in AAP in **Andhra Pradesh, Sikkim and Telangana**. Audit also noted non-utilisation of funds meant for support activities, shortfalls in achievement of targets and failure to organise training programmes and absence of R & D Activities in 19 States (**Andhra Pradesh, Arunachal Pradesh, Assam, Bihar, Goa, Himachal Pradesh, Jammu & Kashmir, Kerala, Madhya Pradesh, Maharashtra, Manipur,**

Meghalaya, Mizoram, Nagaland, Punjab, Rajasthan, Sikkim, Telangana and Tripura) as given in **Annexe-4.3**.

NRDWP is a demand driven and community based programme where effective and creative communication plays a crucial role in its success. As a result of lack of IEC, training and capacity building activities, awareness and motivation in the rural community remained low which affected planning, implementation and monitoring of the schemes.

Findings of Audit survey

- Results of water quality testing along with specified parameters were not displayed in 666 out of 773 GPs (86 *per cent*) and alerts/results of contamination of water was not communicated to 564 (73 *per cent*) GPs.
- Information, education and communication, human resource development and other awareness activities were not carried out in 497 GPs.
- 21,112 (75 *per cent*) beneficiaries stated that no training or awareness generating IEC activities was ever provided to them.

4.8 Water Quality Monitoring and Surveillance

The National Rural Drinking Water Quality Monitoring and Surveillance Programme (WQM&SP) was launched in February 2006 and thereafter subsumed in the NRDWP with effect from April 2009. A Uniform Drinking Water Quality Monitoring Protocol (UDWQMP) was issued by the Ministry in February 2013. This protocol lays down specific requirements for monitoring drinking water quality by establishing water quality testing labs in States. The parameters for these labs are also specified in terms of infrastructure, manpower and water quality testing facilities.

Three *per cent* of programme funds is to be allocated for the WQM&S component of NRDWP. These funds are to be used for monitoring and surveillance of water quality in habitations at field level and for setting up and upgrading water quality testing laboratories at State, district and sub-district levels. Availability and utilisation of funds are given in Table-3.3 in **Chapter-III**.

4.8.1 Shortages of labs, infrastructure and equipment for water quality testing

The State level laboratory had not been established in seven States (**Chhattisgarh, Jammu & Kashmir, Karnataka, Maharashtra, Meghalaya, Sikkim and Uttarakhand**). In **20 States** where State level laboratories (SLLs) had been established, 15 had NABL accreditation. Further, out of the established 20 SLLs, only the SLL at **Odisha** had the capability of examining all 78 parameters as specified under UDWQMP. In nine³⁹ SLLs, the required technical manpower was not in place. Ten⁴⁰ SLLs were not adequately equipped in terms of infrastructure and testing facilities prescribed in the protocol referred above.

In addition to the above, shortfalls were observed in all the selected States with respect to availability of infrastructure for water quality testing such as laboratories at district and sub-divisional levels, accreditation of labs, compliance by labs with envisaged parameters and availability of manpower and equipment as detailed in **Annexe-4.4**.

Audit also observed the following:

In **Assam**, two mobile lab testing vans valuing ₹ 69.96 lakh were lying in a dilapidated condition with a PHE division since August 2015. In Vadodara and Junagadh districts of **Gujarat**, two mobile water testing laboratories procured (August 2014) at a cost of ₹ 0.52 crore were not put to use except for a short period of three months for want of drivers and chemists. In **Uttar Pradesh**, SLSSC approved (January 2015) 10 mobile water testing laboratories to ensure regular monitoring of the water sources. Funds amounting to ₹ 5 crore was released in July 2015 for the purpose but the mobile labs were still to be procured (July 2017).

In **Karnataka**, 100 block level water testing laboratories were set up at a cost of ₹ 92.10 crore during March 2014 and March 2015. However, due to the improper functioning of these laboratories, the concerned Department rescinded the contract with the agency that were running the Labs in April 2017. The block level laboratories in the State have remained completely non-functional since May 2017, in the absence of any alternative arrangement for water testing.

In **Rajasthan**, contract for 165 block level laboratories expired in March 2016. The tendering process for a new contract for running these was yet to be finalized (March 2017). Thus, the facility of water testing at the block levels has not been available since March 2016.

³⁹ Andhra Pradesh, Bihar, Goa, Gujarat, Himachal Pradesh, Karnataka, Odisha, Rajasthan and Uttar Pradesh

⁴⁰ Arunachal Pradesh, Assam, Gujarat, Madhya Pradesh, Manipur, Mizoram, Nagaland, Punjab, Tamil Nadu and Uttar Pradesh.

Such gaps in provision of labs, infrastructure and equipment for water quality testing contributed to extensive shortfalls in conduct of prescribed water quality testing as discussed in para 4.8.2 below.

4.8.2 Shortfall in water quality testing

According to the Programme guidelines, 100 *per cent* sources were to be tested at sub-divisional laboratories level both for bacteriological and chemical contamination. Testing for chemical and physical parameters was required to be carried out once in a year and twice a year during pre and post monsoon months for bacteriological parameters. District level labs were required to check 10 *per cent* of samples including positively tested samples from sub-divisional laboratories. The State lab was to carry out routine cross-verification of water samples. Programme guidelines also laid down that all *Gram Panchayats* and water quality testing laboratories would use Field Testing Kits (FTKs) for primary investigation.

Test check disclosed shortfalls in all the selected States with respect to conduct of three prescribed tests⁴¹ on all the water sources during a year. In addition, there were shortfalls with respect to performance of envisaged tests against parameters and on samples. The shortfalls were attributed by States to factors such as non-functioning of labs, and lack of equipment, manpower and funds. Details are given in **Annexe-4.5**.

Further, FTKs were neither procured in the required numbers nor were those acquired fully utilised to carry out the prescribed tests. In five States (**Andhra Pradesh, Assam, Jharkhand, Odisha and Uttar Pradesh**), 13.25 lakh FTKs/refills valued at ₹ 6.50 crore had not been used and their shelf life had expired making the expenditure on kits/refills infructuous.

Test check in the selected States brought out the following:

Andhra Pradesh: During physical verification of water sample test reports of habitations of selected districts, audit observed that concerned laboratories reported safe/potable water even though the acceptable permissible limits as per Bureau of Indian Standards (BIS) were exceeded and department continued to provide unsafe water to the population.

Further, State Government identified the presence of uranium contamination in Nagarjuna Sagar and Kadapa areas of **Andhra Pradesh** and informed the same to the Ministry (March 2014). Ministry suggested (March 2014) that help of Bhabha Atomic Research Centre (BARC) may be taken for testing uranium. However, no action was

⁴¹ Two bacteriological (Pre and Post Monsoon) and one chemical test

initiated for creating facilities for testing Uranium contamination in drinking water (July 2017).

Odisha: As per Central Ground Water Board data, ground water in 28 out of 30 districts was contaminated with nitrates. But laboratories were not testing the mandatory parameters such as nitrate, arsenic, alkalinity (January 2017).

Karnataka

During physical verification, it was observed that 15 block level laboratories in the selected districts were either not adequately staffed or staff were not adequately trained. As a result, the labs did not conduct envisaged tests and equipment were either not being used or not functional. It was observed that test results were being uploaded on IMIS without authentication by the concerned Departmental authorities and without conducting tests on water samples for all the parameters. None of the samples reported to be contaminated by these laboratories were forwarded to District laboratories for cross-verification. The Departmental authorities also did not insist on cross-verification before considering a habitation as contaminated and taking up works in such habitations. As a result, the entire process of water quality testing and consequent declaration of habitations as quality affected was flawed.

Department rescinded the contract with the agency (April 2017) on abovementioned irregularities. Consequently, block level laboratories in the State remained completely non-functional since May 2017 without any alternate arrangement for water testing.

Shortfalls in prescribed testing of water sources increased the risks of supply of contaminated water to habitations and households and undermined the Programme objective of ensuring supply of safe drinking water.

4.8.3 Non-review of water quality testing

As per the Uniform Drinking Water Quality Monitoring Protocol, State level labs were required to be headed by a Chief Chemist reporting directly to the Engineer in Chief of the implementing Department. The Chief Chemists were to undertake an annual review of the water quality test reports to enable framing of a policy for water quality monitoring. However, no such annual review of water quality test reports of the different level laboratories was carried out by the Chief Chemists in 20 States (**Andhra**

Pradesh, Arunachal Pradesh, Assam, Chhattisgarh, Gujarat, Himachal Pradesh, Jammu & Kashmir, Jharkhand, Karnataka, Kerala, Maharashtra, Manipur, Meghalaya, Mizoram, Nagaland, Punjab, Sikkim, Tamil Nadu, Tripura and Uttar Pradesh).

4.9 Audit summation

Lack of necessary focus and prioritisation keeping in view the deliverables that were to be achieved by 2017 resulted in their non-achievement. Only 44 *per cent* of rural habitations and 85 *per cent* of government schools and *anganwadis* could be provided safe drinking water against the target of covering all rural habitations, government school and *anganwadis* by December 2017. Further, against the Programme deliverables of providing 50 *per cent* of rural households/population with potable drinking water (55 lpcd) by piped water supply and at least 35 *per cent* of rural households with household connections by April 2017, the actual achievement as of December 2017 was only 18.4 *per cent* and 16.8 *per cent* respectively. Non-adherence to codal provisions relating to implementation of works, especially those mandating proper site investigations to ensure unimpeded execution of works once awarded resulted in different works remaining incomplete, abandoned or non-operational. The financial implication of such deficiencies together with unproductive expenditure on equipment and gaps in contract management worked out to ₹ 2,212.44 crore.

The implementing authorities also failed to pay adequate attention to the need to ensure water quality and there were significant shortfalls in provision of mitigating measures such as Community Water Purification Plants. In the case of the sustainability component, plans were not prepared and adequate funds were not allocated for the purpose in several States. O&M which is important for ensuring uninterrupted water supply to habitations was inadequate and not being managed by the PRIs. As a result of inadequate efforts with regard to quality, sustainability and maintenance of water supply schemes, the incidence of slip-back of habitations continued to be high.

Thus, despite large outlays and an elaborate delivery mechanism, gaps remained in the implementation of the Programme which affected attainment of Programme objectives and goals in terms of provision of adequate and safe drinking water on a sustainable basis.