



CHAPTER-II
PERFORMANCE AUDIT ON IMPLEMENTATION
OF RURAL DRINKING WATER PROGRAMMES



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Ensuring water security for rural areas of Sikkim was one of the thrust areas of the Government. The National Rural Drinking Water Programme (NRDWP) is one of the flagship programmes, financed by GOI and the State Government, in the ratio of 90:10 in the water sector for providing potable water to all rural households. The scheme envisaged ensuring availability of 40 litres per capita per day (lpcd) through 'one stand post'⁸ for every 250 persons.

Performance Audit of NRDWP disclosed that the State had put in commendable efforts which substantially reduced the number of 'partially covered' habitations during the period 2008-13 and was largely successful in making available the required quantity of potable water to rural households. The areas of concern, however, included absence of adequate and comprehensive planning, robust monitoring mechanism and effective programme implementation, as highlighted in the succeeding paragraphs:

Highlights

Out of total 2,498 habitations (Fully Covered-1,608 and Partially Covered-890), the State Government upgraded 262 PCs to FCs through execution of 608 projects out of 1,668 sanctioned projects.

Paragraph- 2.8 and 2.12

Comprehensive planning for rural water supply was not ensured by formulating State Specific Policy Framework, Annual Comprehensive Water Security Action Plan and Village Water Security Plan.

Paragraph- 2.10

There was short release of funds of ₹ 65.82 crore by GOI and belated release of funds of ₹ 27.30 crore to implementing agencies by the State Government. This short and belated release of funds affected programme implementation.

Paragraph- 2.11.2 and 2.11.3

The VWSC incurred an avoidable expenditure of ₹ 10.25 lakh towards construction of sedimentation tanks.

Paragraph- 2.12.2

Absence of adequate and timely maintenance of existing water supply projects led to damage of existing pipelines, tanks, and drying up of water sources resulting in 'slip back' of habitations from 'Fully Covered' to 'Partially Covered'.

Paragraph- 2.13

Quality control of water was not accorded due importance as the target for testing by the water laboratories was not fixed, field testing kits were not kept in functional condition, water samples were found 'unfit' for human consumption in many cases.

Paragraph- 2.15

⁸ 'One Stand Post' has been referred to in the NRDWP guidelines to denote one tap stand.

Monitoring of executing agencies was inadequate in absence of establishment of Special monitoring cell and quality assurance team was not constituted to ensure proper quality of work. Information Education and Communication (IEC) activities were neglected, as a result of which consumers were not well aware about management of water supply systems leading to drying up of sources, *en-route* tapping, etc.

Paragraph- 2.16

2.1 Introduction

Sikkim is known for its substantial water resources as the State is endowed with waterfalls, springs, rivers and lakes. Rainfall is the principal mode of recharge of surface water. Despite these positives, water crisis is increasing day by day due to rapid growth in population, industrial development and surface run-off of rain water into streams, springs and *kholas*⁹ due to mountainous slopes. Thus, ensuring availability of drinking water both in terms of adequacy and quality, on a sustainable basis, is a major challenge.

The State has been implementing a number of schemes to ensure provisioning of potable water to rural households. Some important ones are Accelerated Rural Water Supply Programme (ARWSP) and the National Rural Drinking Water Programme (NRDWP). During the period (2008-13) under PA, Rural Drinking Water Programme was catered to by ARWSP for first year (2008-09) and by NRDWP for subsequent four years (2009-13).

NRDWP was one of the flagship programmes of the Government of India (GOI) for providing safe and sufficient drinking water to rural areas. The programme was financed by the GOI and the State Government in the ratio 90:10. GOI prescribed (April 2009) norms of 40 litres per capita per day (lpcd) and one stand post for every 250 persons for providing potable drinking water in rural areas. According to GOI norms, rural habitations were categorised as Not Covered (NC), Partially Covered (PC) and Fully Covered (FC) habitations. The NC were those habitations where a drinking water source was not available within 100 meter elevation in hilly areas, or where the habitations had a water source affected by quality problems; PC were those habitations which had a safe drinking water source, but the capacity of the system ranged between 10 to 40 lpcd. The remaining habitations were known as FC habitations.

2.2 Organisational set-up

The ARWSP was one of the important programmes to ensure safe drinking water to identified villages. The PRIs were involved in implementation of this scheme, especially in selecting the location of the source (present and past sources, operation and maintenance, etc.). The scheme was applicable upto 2008-09.

Secretary, Rural Management & Development Department (RMDD); Chief Engineer, RMDD and Divisional Engineer posted at Zilla Panchayat formed part of the organisational set-up.

⁹ Small rivers

At the State level, State Water and Sanitation Mission (SWSM)¹⁰, a registered society functioned as an administrative body and acted as a facilitator. Similarly, at the District level, District Water and Sanitation Mission (DWSM)¹¹, a registered society, was constituted to function under the overall supervision, control and guidance of the Zilla Panchayats. DWSM was assigned with the responsibility for formulation and management of project implementation in the districts. At the village level, Village Water & Sanitation Committees (VWSC) were set up as standing committees in each Gram Panchayat for planning, monitoring, implementation and operation and maintenance of the Water Supply Schemes to ensure active participation of the villagers.

The detailed functions and responsibilities of various functionaries are given in *Appendix 2.1*.

2.3 Audit Objectives

The performance audit was taken up to assess:

- existence and adequacy of planning process for rural water supply schemes;
- efficacy of utilisation and accounting of scheme funds;
- execution of individual water supply projects with due regard to economy, efficiency and effectiveness; and
- adequacy and effectiveness of monitoring and evaluation mechanism.

2.4 Audit Criteria

Audit findings were benchmarked against the criteria sourced from the following documents:

- Scheme guidelines of Accelerated Rural Water Supply Programme, National Rural Drinking Water Programme;
- National Water Policy (April 2002);
- Sikkim Financial Rules;
- Sikkim Public Works Department (SPW) Code;
- SPW Manual; and
- Monitoring mechanism prescribed by GOI and the State Government.

¹⁰ Constitution of SWSM: (i) Nodal Secretary: Secretary, RMDD; (ii) Chairman: Additional Chief Secretary, RMDD; (iii) Member: Principal Secretary, Finance; (iv) Member: Principal Chief Engineer-cum-Secretary, PHED; (v) Member: Secretary, Health & Family Welfare; (vi) Member: Secretary, Human Resource & Development Department; and (vii) Member: Secretary, Information & Public Relation.

¹¹ Constitution of DWSM: (i) Chairperson: District Collector; (ii) Member: Divisional Engineer, Zilla Panchayat; (iii) Member: Chief Medical Officer; and (iv) Member: Child Development Project Officer.

2.5 Scope of Audit

Performance Audit was carried out between August- September 2013 covering the implementation of Rural Water Supply Scheme (NRWDP and ARWSP) during 2008-13. Out of four districts, two districts (East and South) were selected for scrutiny. A total of ₹ 8.44 crore (out of a total expenditure of ₹ 41.35 crore) was test checked representing 20 *per cent* of the total expenditure. Correspondingly, 80 out of 223 works were selected for audit based on two stage stratified sampling through Simple Random Sampling without Replacement.

2.6 Audit Methodology

The field audit process began with entry conference (August 2013) with the SWSM, DWSM, VWSC and panchayat functionaries wherein audit objectives, scope, criteria and methodology were discussed. Audit methodology involved test-check of records in the SWSM and sampled units in DWSM, VWSC, etc. Besides, records of the offices of the Additional District Collectors (Development), ZPs, Block offices and GPs of the selected units were test checked during audit. Some of the works were also jointly physically verified alongwith panchayat functionaries involved with the execution of the projects.

Audit findings were discussed with the SWSM officials in an exit conference (November 2013). However, the replies of the findings were not received (April 2014) even after several persuasions.

2.7 Acknowledgement

Audit acknowledges the co-operation and support extended by the SWSM, DWSM, VWSC and PRI functionaries in conducting this audit.

2.8 Physical Performance

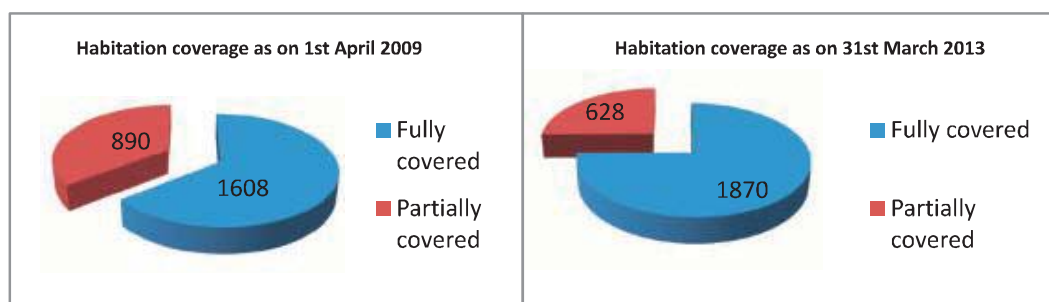
As per the data furnished by the SWSM, the change in status of habitations in the State between April 2009 and March 2013 was as follows:

Table 2.1

Category	Status as on 1 April 2009	Status as on 31 March 2013	Change
FC	1,608	1,870	(+) 262
PC	890	628	(-) 262
NC	-	-	-
Total	2,498	2,498	-

Source: SWSM records

The position relating to status of habitations is reflected in the following pie-chart :



From the above data, it would be seen that the State had put in commendable efforts to enhance the number of FC habitations by upgrading the PC habitations through implementation of projects during the period 2008-13. No validation by any agency or through survey, of the base data, which is updated dynamically in the ‘Watersoft’ database of the State Government, was made available to audit.

It was also observed that all the 628 PC habitations (100 per cent) were ‘slipped back’ habitations i.e., those which had come ‘down’ from FC to PC status. SWSM attributed (March 2013) the ‘slipped back’ status to increased depletion of ground water and unavailability of safe drinking water. However, the ‘slipped back’ status was due to inadequate measures taken by the State Government towards sustainability aspects as mentioned in paragraph- 2.14.

2.9 Year wise Target and Achievement

Target vis-à-vis achievement of PC habitations during 2008-13 is given in table 2.2:

Table 2.2

Year	Target			Achievement	Shortfall
	Spillover	New	Total		
2008-09	NA	NA	300	247	53 (18)
2009-10	53	197	250	110	140 (56)
2010-11	140	35	175	100	75 (43)
2011-12	75	125	200	50	150 (75)
2012-13	150	120	270	100	170 (63)

Source: SWSM records. NA: Not Available.

Figures in bracket indicate percentage.

It was noticed that the shortfall ranged between 18 to 75 per cent despite availability of funds during 2008-13. The reasons for shortfall and the consequent affects are given in succeeding paragraphs 2.12 and 2.14.

Audit findings

The Audit findings are brought out in the succeeding paragraphs.

2.10 Planning

National Rural Drinking Water Programme (NRDWP) guidelines (Para-15.1) envisaged preparation of State specific Sector Policy framework through the involvement of VWSC to capture the requirements of the lowest level (village), preparation of water budgeting, etc.

Scrutiny of records of State Water and Sanitation Mission (SWSM) and interaction with the officers concerned revealed (September 2013) that State specific Sector Policy framework was not prepared due to lack of initiative on the part of VWSC, absence of proper training to the stakeholders, inadequate survey, etc. As a result, State level planning for taking up water supply schemes could not be prepared on the basis of State Policy framework, which was in violation of the programme guidelines.

2.10.1 Village and District Water Security Plan (VWSP)

NRDWP guidelines (Para- 13) envisaged that the Village Water and Sanitation Committee (VWSC) would have the responsibility of planning, implementation, management, operation and maintenance of rural water supply systems in their respective areas. Village level planning *inter- alia* included water budgeting so as to ensure optimum utilisation of water. Appropriate institutional support, required to facilitate the process of preparation of Village Water Security Plan (VWSP), was to be rendered by the village community with the help of NGOs.

Audit observed that the VWSP *inter-alia* including the demographic, physical features, water sources, other details of the village, available drinking water infrastructure and gaps, proposed work to augment the existing infrastructure and water sources, funding by dovetailing various funds available at village level and requirement of funds for rural water supply programmes was not formulated during 2008-13. The VWSCs were not even aware of VWSP and water budgeting.

Similarly, water safety plan, performance improvement plan while augmenting existing infrastructure and an operational plan for operating the scheme which was a part of the VWSP was also not prepared. As a result, District Water Security Plans which were to be based on the VWSPs of the district could not be prepared.

2.10.2 Comprehensive Water Security Action Plan (CWSAP)

NRDWP guidelines (Para-14) required the SWSM to prepare the Annual Comprehensive Water Security Action Plan (ACWSAP) duly incorporating thrust areas and tangible targets proposed to be achieved within the financial year. The main objective of ACWSAP was to provide a definite direction to the programme and also to ensure regular monitoring of the progress of the State towards the goal of achieving drinking water security for every rural household.

Audit observed that that the ACWSAP was not prepared during the period 2008-13 and thus the benefits of the ACWSAP were not forthcoming as mentioned in the succeeding paragraphs:

- In the absence of ACWSAP, thrust areas and tangible targets proposed to be achieved in the financial year were not well planned and documented. It also affected providing a definite direction to the programme and to ensure regular monitoring of the progress of the State towards achieving the overall goal of providing drinking water security to every rural household.
- Although all works relating to water supply were executed under the overall control of SWSM, absence of adequate co-ordination among various wings involved with execution of schemes was noticed. Coverage of habitation through National Rural Drinking Water Programme (NRDWP), National Agricultural Bank for Rural Development (NABARD), Non Lapsable Central Pool Resources (NLCPR) and National Disaster Relief Fund (NDRF) were never reconciled to provide consolidated data on habitation coverage.
- Strength, Weakness, Opportunity and Threat (SWOT) analysis and the progress chart indicating target for the year for coverage of habitations, ongoing and new habitations, etc. as required under the guidelines (Para-14) were not attempted by the SWSM for most of the projects executed by them. As a result, data was compiled afresh each time, without any reference to previous year's statistics, for submission to various agencies.
- The completion of the works was not accorded due priority although envisaged in the guidelines in absence of ACWSAP. Similarly, adequate action was not initiated to ensure that the works taken up were completed as per schedule to avail the benefits envisaged.
- Instead of giving higher priority to coverage of habitations with 0 per cent population covered, followed by 0-25 per cent population covered, SC, ST and minority dominated habitations in planning; the planning for coverage was on *ad-hoc* basis without any reference to the above stipulation and rationale.
- Planning for Water quality monitoring, training, sample testing, etc. also suffered in absence of ACWSAP.

2.11 Financial Management

Details of funds released by GOI and the State Government for implementation of water supply schemes during 2008-13 along with the expenditure incurred are given in table 2.3:

Table 2.3

(₹ in lakh)

Year	Opening Balance	Receipt			Total	Expenditure	Closing Balance
		GOI	State	Interest			
2008-09	673.29	3,045.00	1,450.00	-	5,168.29	4,135.06	1,033.23
2009-10	1,033.23	1,960.00	1,303.00	-	4,296.23	3,988.06	308.17
2010-11	308.17	2,254.10	541.00	26.66	3,129.93	2,242.59	887.34
2011-12	887.34	2,687.00	616.62	23.32	4,214.28	2,985.27	1,229.01
2012-13	1,229.01	3,218.73	470.00	177.54	5,095.28	2,584.15	2,511.13
Total		13,164.83	4,380.62	227.52	21,904.01	15,935.13	

Source: Information furnished by SWSM

As would be seen from above, the State funds (₹ 43.81 crore) and GOI funds (₹ 131.65 crore) released were not fully utilised indicating idling of about 27 per cent of the funds received during 2008-13.

2.11.1 Flow of fund

NRDWP Guidelines (Para- 16.1) envisaged upon the SWSM to open savings bank account in any public sector bank having internet connectivity at the State Headquarters for maintaining two accounts viz., Programme fund and Support activities under National Rural Drinking Water Programme.

The SWSM opened (December 2009) accounts in Gangtok branch of the State Bank of India and the funds were deposited in two different accounts viz., programme (account-30981031063) and support (account-30981018688) funds.

2.11.2 Release of GOI funds for implementing agencies

As per the NRDWP guidelines (Para- 16.5), the cost is to be shared between the GOI and the State Government in the ratio of 90:10. The funds so provided were to be released within 15 days of the receipt of the funds to the implementing agencies.

It was however noticed that the funds were not released to the implementing agencies within the stipulated time of 15 days. The delay ranged from 2 to 40 months during 2008-13 involving a sum of ₹ 27.30 crore as shown in table 2.4:

Table 2.4

(₹ in lakh)

Year	Fund sanctioned and released by GOI to State Government			Funds released by State Government		
	Sanction	Release	Receipt	I.A.	Release	Delay
2008-09	3,045.00	223.71	01.04.2008	677.12	October 2010 to August 2012	18 to 40 months
		648.29	26.06.2008			
		401.01	16.02.2009			
		471.99	17.03.2009			
		1,300.00	30.09.2009			
2009-10	1,960.00	657.00	21.04.2009	131.31	June to November 2012	26 to 31 months
		323.00	29.09.2009			
		980.00	26.03.2010			
2010-11	2,254.10	733.88	21.06.2010	950.35	May 2011 to December 2012	2 to 20 months
		512.34	16.12.2010			
		1,007.58	28.03.2011			
2011-12	2,687.00	612.00	26.08.2011	925.21	June 2012 to December 2012	3 to 9 months
		306.03	08.02.2012			
		1,161.00	28.02.2012			
		607.97	29.03.2012			
2012-13	3,218.73	822.37	30.07.2012	46.37	October 2013	8 months
		932.87	27.02.2013			
		1,464.49	28.03.2013			
Total				2,730.36		

Source: SWSM Cash book

I.A.: Implementing Agency

Failure on the part of State Government to release funds of ₹ 27.30 crore to the IA within the stipulated time of 15 days affected programme implementation.

2.11.3 Release of funds

According to NRDWP guidelines (Para- 17), the first installment of programme fund equivalent to 50 per cent of the allocation would be released once the allocation under the programme is decided by the GOI.

Similarly, second installment under programme fund to cover the balance of the annual allocation would be released on fulfillment of the conditions, such as receipt of a specific proposal under programme fund from the State in the prescribed proforma with progress reports; utilisation of 60 per cent of the available resources under programme fund; etc.

Audit observed that against the requirement to release ₹ 65.83 crore (50% of ₹ 131.65 crore), ₹ 36.97 crore were released by GOI towards first installment during 2008-13 indicating a shortfall of ₹ 28.86 crore (44 per cent). Similarly, second installments were also not released in full by GOI to cover the sanctioned funds. The details are shown in table 2.5:

Table 2.5

(₹ in lakh)

Year	Total Sanction	1 st Installment		2 nd Installment Released	Total release	Shortfall
		50 per cent	Released			
2008-09	3,045	1,523	872	651	1,523	1,522
2009-10	1,960	980	657	323	980	980
2010-11	2,254	1,127	734	393	1,127	1,127
2011-12	2,687	1,344	612	732	1,344	1,343
2012-13	3,219	1,609	822	787	1,609	1,610
Total	13,165	6,583	3,697	2,886	6,583	6,582

Source: Copy of Utilisation certificates

Audit observed that on an average 50 per cent of the funds sanctioned in each financial year was released by GOI during the period 2008-13, which aggregated to ₹ 65.83 crore (56 per cent). The short release of funds was due to delay in submission of utilisation certificates (UCs) by SWSM to GOI. The UCs were submitted belatedly, ranging between five and 12 months. Non-obtaining of full funds affected programme implementation, as pointed out in paragraph 2.12.

2.11.4 Diversion of fund

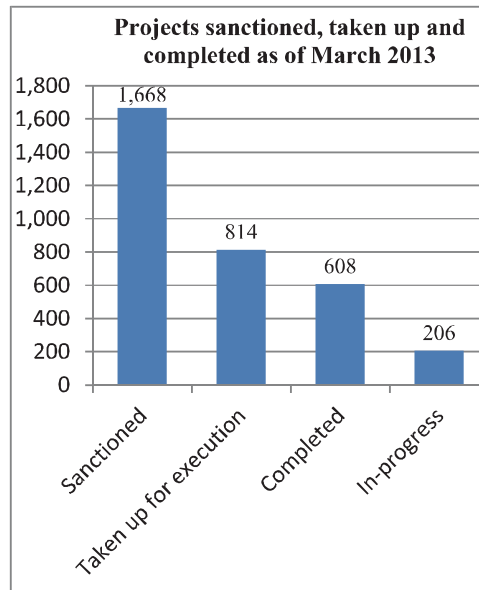
NRDWP guideline (Para-17) does not permit utilisation of funds for component of works other than what was sanctioned by GOI. It was, however, noticed that SWSM incurred ₹ 63.14 crore against the sanction of ₹ 58.65 crore towards 'coverage' components through a diversion of ₹ 4.48 crore from sustainability components.

2.12 Programme Implementation

A total of 1,668 projects were sanctioned by GOI between 2008-13, of which 814 (49 per cent) projects were taken up for execution. Remaining 854 (51 per cent) had not been taken up for execution as of March 2013 owing to non-availability of land at the project sites, disinclination on the part of landowners to part with the land required for the projects and laying of pipe lines, forest clearance, etc. Out of 814 projects (49 per cent) taken up for execution, 608 projects were completed as of March 2013 and 206 were in progress as can be seen from the status depicted alongside.

It is observed that the completed projects accounted for only 36 per cent of the sanctioned projects while 206 projects indicating (12 per cent) were in progress as of March 2013.

A total of 80 projects pertaining to water supply projects (30) and Rain Water Harvesting Structures (50) were taken up for scrutiny in audit. The results of scrutiny are given in the succeeding paragraphs:



2.12.1 Proper Survey not conducted before execution of work

Sikkim Public Works Department Manual, 2009 (Para- 3.10 read with para 4.14) lays down preparation of a properly detailed estimate *inter-alia* indicating essential drawings and preliminary structural and service designs based on proper survey and investigation for individual work.

Audit observed that records indicating carrying out of proper survey were not available with the SWSM. Absence of detailed survey led to change of project site (from the source to the distribution tanks), change in design and dimensions in 20 out of 30 works test checked in Audit. Drawings of masonry and concrete works in most of the 20 works test checked in Audit were defective leading to shifting of position of tank, etc. This also led to delayed execution of work. Report indicating demographic compositions and the present arrangement for water supply in the area was not incorporated in the estimate and the proposed hydraulic gradients/self-cleansing velocity was also not prepared. 'Discharge of source' determination was done in a casual manner by applying 'bucket method'¹² in 10 (out of 30) cases. In 20 projects, discharge data of the source was not incorporated in the estimate indicating that discharge was not measured before preparation of Detailed Project Report (DPR).

¹² Bucket method is the method used for determining source discharge, i.e. a bucket is kept at the discharge point and time taken to fill up the bucket is noted to determine source discharge of water at source point.

2.12.2 Avoidable expenditure on construction of Sedimentation tank

In water supply scheme in hilly areas water is tapped from natural streams in two ways - one by construction of 'D' type trap and the other by constructing 'N' type trap. 'D' type trap is used for conveying water from source to sedimentation tank by constructing 'V' shaped channel and 'N' type trap is utilised to convey the water to sedimentation tank and also to cleanse the silt carried by water. Thus, in case of 'N' type trap, additional sedimentation tank was not required. This was further confirmed during joint physical verification conducted in East District, alongwith panchayat functionaries, where it



Sedimentation tank

was seen that additional sedimentation tanks were not constructed in five out of 10 projects. The water was consumed by the villagers and no untoward incident was reported. It was, however, noticed that in 25 cases, additional sedimentation tanks involving expenditure of ₹ 10.25 lakh were constructed in case of 'N' type of trap which was avoidable.

2.12.3 Poor workmanship resulted in head loss

According to basic fundamentals¹³, velocity of water is reduced whenever there is a change of dimension of pipes. Accordingly, the technically sanctioned estimate and the design stipulated use of fittings such as tee, bend, etc. for changing the direction of water flow without affecting the velocity of water and also without deforming the shape of the pipes.

Physical verification of projects by Audit team conducted in East District revealed that in 20 out of 30 cases, instead of using fittings such as tee, bend etc. pipes were bent as shown in the photographs.



Pipe bent instead of using tee, bend, etc.

The bending of pipes without using tee, bend, etc.; affected the velocity of water supply downstream, besides enhancing the chances of water leakages as shown in the photograph.

2.12.4 Poor quality of fitting and fixing



Leakage of water

Physical verification also revealed that the quality of fittings procured by the SWSM, for ₹ 15.26 lakh, was not upto the mark. The fittings, as would be seen in the photograph, had developed rust, leakages, etc. within one year of installation



Rusted fitting

¹³ Handbook of Engineering for Water Supply by P.Venkatesware Rao.

leading to chances of contamination of water, reduction of availability of water to the ultimate consumers and increased maintenance cost. Thus, fittings purchased involving ₹ 15.26 lakh had not yielded value for money.

2.13 Maintenance of Water Supply Projects

Funds from various sources {10 per cent of NRDWP, Operation & Maintenance (O&M) funds released under Central Finance Commission's grants towards drinking water supply, etc.} are to be deposited in a corpus fund of the project to be operated by the GPs.

Audit noticed that neither procedure for O&M of drinking water supply projects were formulated nor requisite fund as envisaged in the respective guidelines (NRDWP, FCs, etc.) was released towards maintenance of water supply projects as detailed in the following points:

- Against the requirement to transfer ₹ 15.94 crore (against the sanction of ₹ 159.35 crore) towards O&M for meeting maintenance cost of the water supply projects, no funds were transferred to VWSC during 2008-13.
- Absence of timely repair and maintenance led to reconstruction of water supply projects involving considerable funds. Although O&M includes only replacement of fitting, fixing and repair of tank, etc., entire set of pipelines were changed and new tanks were constructed indicating that new work was executed in the guise of repair and maintenance of existing water supply projects. Thus, expenditure meant for O&M was diverted towards construction of new projects.
- Non-maintenance of existing water supply projects led to damage of existing pipeline, tank, etc. and drying up of water sources, resulting in 'slip back' of habitations from FC to PC.

2.14 Sustainability of Water Supply Projects

NRDWP Guidelines (Para- 6) envisaged ensuring of a lifeline i.e. drinking water security under all circumstances and at all times. This was to be ensured through an alternate sub District, District, State level water supply system, in the form of a grid, supplying metered bulk water to GPs/ villages.

Audit observed that works ensuring long term sustainability for drinking water were not adequately ensured except through Rain Roof Water Harvesting structures. The funds (₹ 4.48 crore) sanctioned for 'sustainability' were diverted towards 'coverage' as indicated in para 2.11.4. The grid system, as suggested in the guidelines, to ensure water security under all circumstances and at all times through alternate sub District, District, State level water supply system had not been initiated as of March 2013.

A total of 223 Structures for Roof Water Harvesting involving an amount of ₹ 2.59 crore were planned during 2008-13. Out of 223 structures, 150 were completed upto March 2013. Some of the deficiencies observed are as under:

2.14.1 Inferior work of Rain roof water harvesting

According to the agreement (clause 14), if the work executed by the contractor was imperfect, inferior, or not in accordance with the contract, the contractor would be liable to reconstruct the work so specified or alternatively bear the cost of rectification, besides paying compensation at the rate of one *per cent* per day not exceeding ten days, on the estimated cost of the defective items.

Scrutiny of records relating to construction of 'Roof Water Harvesting Tank' revealed that as against the requirement to use steel of 130 kg per cum for RCC work, the contractors had used steel ranging from 90 to 110 kg per cum in 28 out of 50 cases. The details are shown in **Appendix 2.2**. This was not only in violation of the technically sanctioned estimate which cannot be altered without obtaining the approval of sanctioning authority (Para-36.2 of SPWD Manual), but also led to execution of inferior quality of work. The SWSM and VWSC, however, had not got the necessary rectification done by the contractor as envisaged in the agreement.



Inferior work of Rain Roof Harvesting

2.15 Quality of Water

The NRDWP guidelines lay great emphasis on water quality and accordingly 20 *per cent* fund were allocated towards ensuring quality of water by setting up of Water quality laboratories at the State level, intermediary level like district laboratories and grass-root level units. The guidelines prescribed (Para-5) testing of drinking water sources at least twice a year for bacteriological contamination and once in a year for chemical contamination; district laboratories were to test at least 30 *per cent* of water samples tested at GP Level and all cases where possibility of contamination was reported by the community, capacity building of Panchayats, etc. The position in this respect is given as follows:

➤ Water Quality Laboratories

Two¹⁴ laboratories were established in the State at District level as of March 2013. Though the target for water testing by these laboratories was not fixed, the laboratories carried out a number of tests during 2008-13. However, figures and test reports were made available only for 2012-13.

In the absence of any target, shortfall etc., the tests could not be analysed in audit. The test results made available to audit for the period 2012-13 revealed that water was found to be 'unfit' for human consumption in 39 out of 46 cases (85 *per cent*). This indicated an alarming situation with regard to the quality of water. No corrective action in this regard however, had been initiated by SWSM and the VWSC as of March 2013.

¹⁴ Karfactor and Tadong

➤ **Field Testing Kits (FTKs)**

The FTKs are simple testing kits to obtain a preliminary report on quality of water with basic chemical and bacteriological parameters, subject to confirmation through subsequent testing in the established laboratories. These kits can be utilised by anyone at any place by following its instructions or with simple training. As per the National Rural Drinking Water Quality Monitoring & Surveillance Programme, O&M of FTKs, including their refilling cost, cost of disinfection, remedial expenses and honorarium to GP Level co-ordinators were to be met from community contribution of ₹ 1 per family per month.

It was, however, noticed that ₹ 1.46 crore was incurred during 2012-13 towards purchase of 126 FTKs (₹ 60 lakh), purchase of 156 bacteriological vials (₹ 30 lakh) and imparting training programmes (₹ 56 lakh) to PRI functionaries and VWSC members. The training was imparted by State Institute of Rural Development, Karfector for bringing awareness on water quality and use of filter tool out of the funds allocated by GOI under NRDWP, instead of meeting the same from community contribution.

Further, these FTKs were utilised by the GPs till the vials lasted. Thereafter, these remained idle for want of refilling of chemicals. Thus, not only the expenditure on procurement of FTKs was irregularly incurred by the SWSM, non-maintenance and absence of refilling of consumables also rendered the expenditure of ₹ 60 lakh incurred on procurement of these units largely unfruitful, defeating the objective of procurement of FTKs.

➤ **Unauthorised en-route tapping of water**

According to DPRs, the water would be conveyed to the end user's points through pipelines propelled through gravitational force to the downstream. Thus, the design of water supply projects are made in such a way that water reaches to the lowest end of consumers without any interruption. The households avail the water through the hydrant installed at various locations within the village.

It was, however, noticed that households in many cases had indulged into *en-route* tapping of water from the main line as shown in the photograph. The tapping reduced the possibility of reaching water supply to the lowest end of households. The VWSC had not initiated adequate steps to check the unauthorised tapping of water. Not only was this practice irregular and unauthorised, but was also fraught with the risk of contamination of water, insufficient volume of water reaching to consumers downstream, loss of revenue and increased wear and tear leading to additional burden of maintenance cost.



tapping Unauthorised *en-route*

2.16 Monitoring and evaluation

NRDWP guidelines (Para-10.5) lays emphasis on monitoring and evaluation, to ensure providing adequate and good quality potable water to all households in the most economical and efficient manner. The position in this respect is given as follows:

➤ *Special monitoring cell*

Guidelines (Para-19.2) prescribed for setting up of a special monitoring cell and investigation unit at the State headquarters headed by a well-qualified and senior officer with necessary supporting staff. The Monitoring unit shall be responsible for collecting information from the executing agencies through prescribed reports and returns, maintenance of the data and timely online submission of the prescribed data to the Central Government by due dates.

Special monitoring cell and investigation unit, as envisaged, was not set up as of March 2013. As a result, timely online submission of prescribed consolidated data to the Central Government was not done. Moreover, aspects of quality of water, adequacy of service and other related qualitative aspects of the programme at the field level could not be ensured.

➤ *Quality assurance team*

Quality Assurance Team headed by the Superintending Engineer, as prescribed in SPWD Manual (Para- 36) for ensuring proper quality of work as per approved specifications for achieving designed life of the works was not constituted by the SWSM. Periodical review and monitoring of the Quality Control System as required under the Manual, had also not been initiated adequately for the projects test checked in audit. This affected the quality of works as pointed out in para-2.12.3.

➤ *State Water Sanitation Mission*

SWSM was required to carry out inspection of ongoing works of rural water supply and submit reports on progress of works to the State Level Scheme Sanctioning Committee (SLSSC). It was, however, noticed that inspection reports were not available in test checked projects/offices. In absence of details, the effectiveness of the monitoring mechanism in implementation of the projects could not be evaluated in audit.

➤ *Information, Education and Communication (IEC) activities not accorded due importance*

The NRDWP guidelines (Para-3 of Annexure-IVA) aimed at empowered, well aware and skilled stakeholders capable of proper planning, implementation, operation, maintenance and management of water supply and water resources at all levels. For this, a multi-pronged approach with well-planned IEC campaign was necessary. It was, however, noticed during audit that IEC activities were not accorded due importance as a result of which consumers were not well aware about the management of water supply systems leading to drying up of sources, reconstruction of existing projects within limited time period, *en-route* tapping, etc.

2.17 Conclusion

Although the State was successful in reducing the number of 'partially covered' habitations during 2008-13 and could largely make available required quantity of water to rural households, the implementation aspects had weaknesses in planning, execution of works and monitoring. The comprehensive planning for rural water supply projects were not accorded due priority, release of full funds by GOI was not ensured, funds to the implementing authorities were not released within the specified time frame of 15 days, UCs were submitted belatedly to GOI, quality of water was not ensured in some cases and sustainability was not accorded adequate importance. Absence of timely initiation and proper monitoring led to taking up of only 814 projects (out of total sanctioned 1,668 projects) and completion of only 608 projects between 2008-13, besides incurring avoidable additional expenditure.

2.18 Recommendations

It is recommended that :-

- adequate emphasis should be placed on coverage of all habitations into FC through expedient execution of all projects sanctioned;
- planning mechanism should be strengthened by formulation of State Specific Sector Policy Framework;
- the two plans of ACWSAP and VWSP should be expeditiously prepared;
- adequate and timely release of funds by GOI and State Government should be ensured;
- programme implementation should be strengthened to avoid additional expenditure, ensure timely completion of projects and qualitative execution of works;
- adequate quality control mechanism should be developed to ensure provision of potable water to all households; and
- monitoring mechanism should be strengthened.