

Chapter 2

Performance Audit

PANCHAYATI RAJ AND DRINKING WATER DEPARTMENT

2.1 Implementation of Jal Jeevan Mission in Odisha

EXECUTIVE SUMMARY

Government of India launched (August 2019) the flagship scheme, 'Jal Jeevan Mission (JJM)' to provide piped water supply to each of the rural households of the country through Functional Household Tap Connections (FHTCs) by 2024. The goal of the Mission was to assist, empower and facilitate the States in planning participatory rural water supply strategy for ensuring potable drinking water security on long-term basis to every rural household and public institutions.

The Performance Audit of the scheme highlighted that:

- ❖ The State failed to provide FHTCs to all households by 2024 and 31 *per cent* households in the State remained uncovered. Out of the five test-checked districts, coverage of households was maximum in Kandhamal district (69.65 *per cent*) and minimum in Malkangiri district (11.20 *per cent*).
- ❖ Government of Odisha had taken up 207 Mega water supply projects across the State during 2019-24, out of which 133 projects were being executed under JJM. Only two of these Mega water supply projects were completed in all respects, as of June 2024.
- ❖ Audit observed delays in preparation of Village Action Plans (VAPs). In 24 out of 39 villages, where VAPs were prepared, Gram Sabha was not held for their approval, which was a requirement under the guidelines.
- ❖ District Action Plans (DAPs) were not prepared in any of the districts except Kandhamal. As such, the State Action Plan which was to be derived from DAP was also not prepared, thereby compromising the bottoms-up planning approach.
- ❖ Village Water Supply Committees (VWSCs) were not involved in implementation and Operation and Maintenance (O&M) of water supply schemes under JJM, in violation of the guidelines. As a result, community participation in decision making at the planning, implementation and management stages was not achieved. This adversely affected completion of projects and post-operation sustainability.
- ❖ The expenditure on Support activities and Water Quality Management and Surveillance (WQM&S) was insignificant with 2.20 *per cent* and 0.38 *per cent* of the allotted funds, against the permissible limit of 5 *per cent* and 2 *per cent*, respectively. Such minimal expenditure on Support activities and WQM&S indicated that the performance of the scheme had remained sub-optimal, in regard to execution of activities planned under these components.

- ❖ Contrary to the guidelines, community contributions towards user charges and O&M of the projects were not collected from the beneficiaries. Thus, the State failed to instil a sense of ownership amongst the beneficiaries and make the schemes self-sustainable.
- ❖ Out of 77 laboratories in the State, only 26 were NABL accredited and 17 laboratories were NABL recognised. The remaining 34 laboratories had neither got NABL accreditation nor recognition. In the Districts and sub-divisions, the laboratories failed to test the required number of parameters for water quality. Besides, shortage of manpower, lack of trainings and defunct equipment compromised the quality of water testing in the laboratories.
- ❖ Monitoring mechanism in the State suffered due to non-use of prescribed technology in planning and non-installation of sensors/water meters in FHTCs to ensure supply of adequate quantity of water and control wastage of water.

To overcome the above issues, it is recommended that:

- 1. The Government may take steps to constitute VWSCs in all villages and to strengthen their functioning through monitoring, capacity building, IEC activities etc., so that they effectively discharge their role for ensuring sustainable water supply.***
- 2. The Government may formulate a Strategic Plan to cover the left over habitations on priority basis for supplying adequate and safe potable water to the rural people. SWSM may also formulate plans for capacity building, training, O&M and IEC activities among the rural people, which should be closely monitored by RWSS divisions in their jurisdiction to achieve the objectives of the Mission.***
- 3. The Government may enhance its spending on Support activities and Water Quality Monitoring and Surveillance up to the limit permissible under the guidelines to ensure long term sustainability of water supply systems and supply of quality water.***
- 4. The Government may take effective action for expediting completion of piped water supply projects including Mega projects, so that all rural households are provided with FHTCs within the Mission period.***
- 5. The Government should focus on measures to enhance source sustainability while planning and undertake steps to ensure sustainability of projects for their full design period.***

2.1.1 Introduction

Government of India launched (August 2019) the flagship scheme, 'Jal Jeevan Mission (JJM)' to provide safe and adequate drinking water to all rural households in the country through Functional Household Tap Connections

(FHTCs)¹ by 2024². The Mission aimed to assist, empower and facilitate the States in planning participatory rural water supply strategy for ensuring potable drinking water security, on long-term basis to every rural household and public institution. As per the JJM operational guidelines, the States were to create water supply infrastructure so that every rural household has FHTC with provision of water in adequate quantity (minimum 55 lpcd³), and of prescribed quality (BIS:10500 standard) on regular basis in the long term.

The Mission was also to implement source sustainability measures as mandatory elements, such as recharge and reuse through grey water management, water conservation and rainwater harvesting. The Mission was based on a community participation approach and included extensive Information, Education and Communication measures as a key component.

2.1.2 Piped water supply scenario in the State before JJM

Before JJM, various Central and State schemes were under implementation in the States for providing piped water supply to rural households. The Central schemes included Accelerated Rural Water Supply Programme (ARWSP) and National Rural Drinking Water Programme (NRDWP), while the Odisha Government schemes included Rural Infrastructure Development Fund (RIDF), Buxi Jagabandhu Assured Drinking Water to all Habitations (BASUDHA), Water supply schemes under Odisha Mineral Bearing Areas Development Corporation (OMBADC) and District Mineral Fund (DMF).

After the introduction of JJM, six programmes⁴ implemented under erstwhile NRDWP were subsumed under JJM and the remaining State schemes like RIDF, BASUDHA *etc.*, continued along with JJM.

Prior to August 2019, only 3.11 lakh rural households in the State had been covered under different schemes for provisioning piped water supply. After implementation of JJM, 64.71 lakh out of 88.68 lakh rural households in the State were provided with FHTCs, as of March 2024.

2.1.3 Organisational set up

The Panchayati Raj and Drinking Water (PR&DW) Department is the nodal department for implementation of JJM in the State. The Engineer-in-Chief (EIC), RWSS is the implementing agency under the nodal department. The organisational set-up and functionaries responsible for implementation of JJM in the State, are shown in **Chart 2.1.1**.

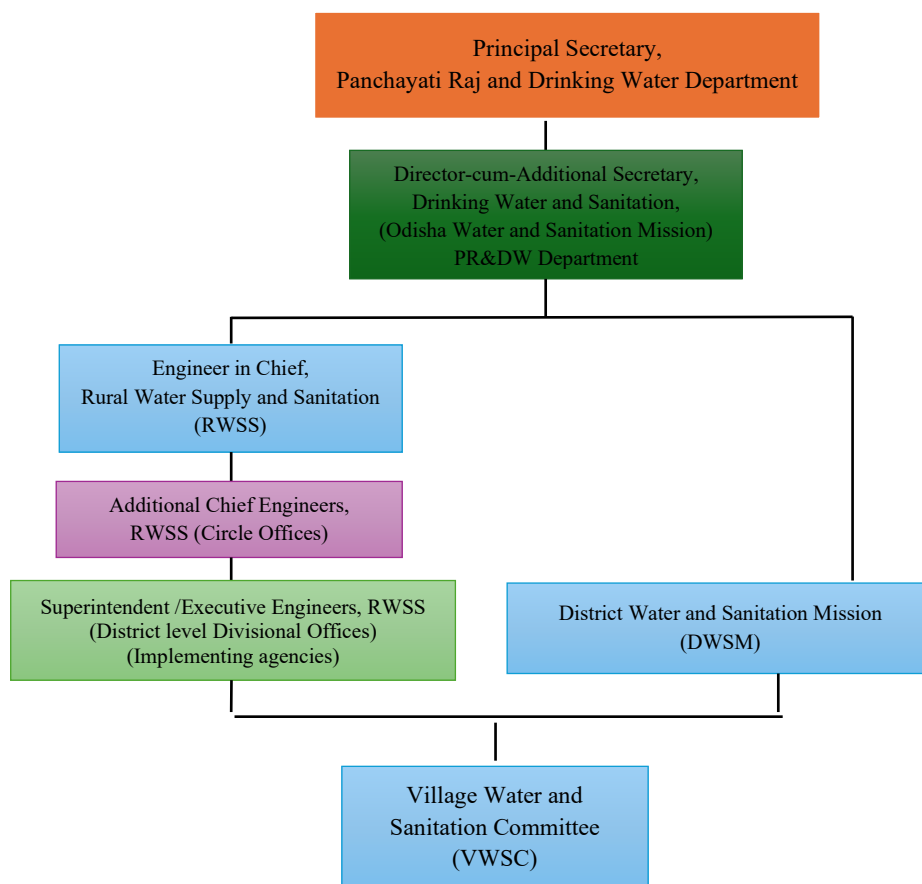
¹ FHTC refers to a tap connection to a rural household for providing drinking water in adequate quantity of prescribed quality on regular basis.

² The mission period was extended up to 2028

³ Litres per capita per day

⁴ (i) Rural Water Supply & Sanitation for low income States, (ii) National Water Quality Sub-Mission, (iii) Water supply schemes for Japanese Encephalitis-Acute Encephalitis Syndrome affected areas, (iv) Swajal, (v) Water Quality Monitoring and Surveillance and (vi) Support Activities

Chart 2.1.1: Organisational structure of JJM in Odisha



2.1.4 Audit Objectives

The Performance Audit was conducted to ascertain whether:

- An efficient institutional framework was in place for implementation and post operational management of the Scheme;
- Financial resources were employed in an economic and efficient manner; and
- Scheme objectives were achieved successfully and assets created were sustainable in nature, without compromising water security for future generations.

2.1.5 Audit Criteria

The Audit criteria for the Performance Audit, were derived from the following:

- Operational Guidelines for Implementation of JJM issued by Ministry of Jal Shakti, Government of India, Department of Drinking Water and Sanitation, National Jal Jeevan Mission;
- Water Quality Monitoring and Surveillance Framework issued by Ministry of Jal Shakti, Government of India, Department of Drinking Water and Sanitation, National Jal Jeevan Mission;

- Sustainable Development Goals’ (SDG) obligations and Standard Operating Procedure for Sustaining Water, Sanitation and Hygiene in Schools (WASH) standards issued by Department of Economic and Social Affairs, United Nations and Ministry of Education, Government of India respectively;
- Orders issued by the State Government/ Department facilitating implementation of JJM;
- Orders issued by the State Government pertaining to devolution of powers as envisaged in 73rd Amendment Act of the Constitution of India.
- Central Ground Water Board Report on ‘Ground Water Quality in Shallow Aquifer of India’ (2023).

2.1.6 Scope and methodology of audit

The Performance Audit of JJM, covering the period from August 2019 to March 2024, was conducted between June and September 2024. Audit examined records in five selected districts⁵ and sampled block level units.

Under each district, two Blocks were selected and under each Block, four villages were selected for detailed examination of status of implementation of JJM in the State. A total of 10 blocks and 40 villages were covered under this Performance Audit. The list of sampled units is given in *Appendix 2.1*.

Selection of all units was made by adopting the Stratified Random Sampling method. The audit process, *inter alia*, involved conduct of Focus Group Discussion (FGD)⁶, Joint Physical Inspection of Piped Water Supply (PWS) schemes, interview of at least 20 beneficiaries⁷ in each sampled village provided with FHTC, taking of photographic evidences wherever necessary, collection of information from other stakeholders, such as Director, Economics and Statistics *etc.*

The objectives, criteria, scope and methodology of the Performance Audit were shared with the Principal Secretary, PR&DW Department in an Entry Conference, held on 25 June 2024. The audit findings were discussed with the Principal Secretary of the Department in an Exit Meeting, held on 5 May 2025. The Department accepted all the recommendations of Audit and assured to take remedial action to mitigate the gaps. The responses received from the Department have been suitably incorporated in the report.

2.1.7 Acknowledgement

We acknowledge the cooperation and assistance extended by PR&DW Department for providing information during the conduct of this Performance Audit.

⁵ Balasore, Baragarh, Kandhamal, Malkangiri and Puri

⁶ Focus Group Discussion (FGD) is a qualitative research method that involves a group of people discussing a topic or issue in-depth. For conducting FGD for JJM, audit teams interacted with rural communities, Village Water and Sanitation Committees, Gram Panchayat representatives, NGOs/ Implementing Support Agencies and Implementing Agencies *etc.*

⁷ Audit interviewed 816 beneficiaries in 40 villages of 10 Blocks of five test-checked districts during July to September 2024

Audit Findings

2.1.8 Institutional framework

As per JJM Operational Guidelines, a robust institutional framework was required for successful implementation of the Scheme and to achieve the stated goals. Hence, a four-tier institutional mechanism was to be set up at the National, State, District and Village levels.

At the National level, there would be National Jal Jeevan Mission (NJJM). In case of the State, there would be a State Water and Sanitation Mission (SWSM) and in each district, there would be a District Water and Sanitation Mission (DWSM). At the village level, Gram Panchayat (GP) and/ or its sub-committee, *i.e.* Village Water and Sanitation Committee (VWSC)/ Paani Samiti/ User Group, *etc.*, would function as the legal entity to provide FHTC to all existing rural households. Institutional arrangements were to be established at all levels with linkages and convergence of other programmes for successful implementation of JJM in the State, as detailed below:

Institutional framework

<u>SWSM</u> Responsible for overall implementation of JJM in the State	<u>DWSM</u> Responsible for implementation of JJM at the District level	<u>VWSC</u> Responsible for taking lead role in planning, implementation, management, operation and maintenance of in-village water supply system
Function: • To provide policy guidance for overall planning, strategising and implementation of JJM in the State • Developing Operation & Maintenance (O&M) strategy and monthly tariff for ensuring financial sustainability of the system/ scheme • Monitoring of physical and financial performance • Create and maintain digital inventory of JJM assets on a GIS platform • Engage third party inspection agencies for inspection of work before payment	Function: • To approve the Village Action Plans (VAPs) that would contain the estimate for in-village infrastructure <i>viz.</i> retrofitting or new scheme and its implementation timeline. • Finalise a District Action Plan to provide FHTC to every rural household by 2024 • Coordinate with Gram Panchayat and its subcommittee, <i>i.e.</i> VWSC • Monitor and evaluate physical and financial performance at district level • Identify individuals to be trained as master trainers • Conduct awareness campaigns with regard to JJM	Function: • Provide FHTC to every rural HH • Preparation of VAP for water supply scheme • Plan, design, implement, operate and maintain the in-village water supply schemes and decide seasonal supply hours • Mobilise and motivate the community to contribute towards O&M charges • Supervise construction of in-village infrastructure including source sustainability, greywater reuse, water conservation measures <i>etc.</i>

Source: JJM Operational Guidelines

In this context, Audit observed the following:

2.1.8.1 Improper functioning of SWSM

Paragraph 5.2 of JJM Guidelines stipulated that in order to provide specialised support, SWSM would hire consultants for which funds would be provided under a component, namely Support activities. Audit observed that prior to implementation of JJM, the State had appointed (April 2019) one consultant as the Project Monitoring Unit⁸ (PMU) under *BASUDHA* scheme to oversee all water supply schemes of the State Government. To achieve the objectives of JJM, the State in its State Level Scheme Sanctioning Committee (SLSSC) approved (June 2021) the continuity of the existing PMU under SWSM and the same was made effective from February 2022 onwards.

Initially, the PMU was assigned with works such as (i) procurement support, (ii) technical support, (iii) tracking of progress of projects (iv) programme management, institutional strengthening, IEC and Capacity development; and (v) documentation, knowledge management and information dissemination. In February 2022, while extending the terms of the PMU for two more years (upto March 2024) for the purposes of JJM, the EIC, RWSS assigned the agency some additional tasks such as monitoring of progress of FHTC, quality control measures, O&M sustainability, project preparatory activities and community participatory measures.

On scrutiny of the records of the EIC and during detailed examination of test-checked districts, Audit observed that the PMU had not functioned properly, as envisaged in the scheme guidelines, as discussed below:

- There were data discrepancies between JJM web portal and figures reported by the EIC, raising doubts about the actual coverage of villages and households with FHTCs, as detailed in **Paragraph 2.1.12.3**. This indicated that tracking of progress of FHTCs by the PMU was not correctly done.
- Audit observed in the sampled RWSS Divisions that in the past five years, no IEC activities or awareness campaigns on water security and management were conducted in schools, AWCs or health centres or GPs, as discussed in detail in **Paragraph 2.1.13.1**. Audit further noticed that the information on water quality tests and water quality testing laboratories were not shared within the community (**Paragraph 2.1.14.7**). Thus, the PMU had not carried out the assigned responsibility of institutional strengthening, knowledge management and information dissemination.
- Capacity building programmes, as part of project preparatory activities, were not taken up in villages during the period 2019-24.
- The State did not have a durable O&M plan for the water supply projects (**Paragraph 2.1.10**), which was to be developed by the PMU.
- The PMU had also not carried out the assigned functions properly under water quality monitoring, as Audit observed deficiencies like shortage and non-upgradation of testing laboratories, shortfall in accreditation of water testing laboratories, malfunctioning of

⁸ M/s Ernst and Young LLP, New Delhi.

laboratories, testing on inadequate number of parameters *etc.* (**Paragraph 2.1.14**).

Thus, the PMU was not functioning properly, as prescribed under JJM guidelines, which impacted successful implementation of the programme to achieve the Mission goals.

In reply, the Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the engagement of already existing PMU for implementation of JJM was done in order to ensure efficient utilisation of resources and continuity in programme management across schemes. The reply is not convincing as the department did not monitor the functioning of the PMU to ensure successful implementation of the scheme.

2.1.8.2 Working of DWSMs

As per Paragraph 5.3 of the JJM Operational Guidelines, DWSMs at the district level were responsible for overall implementation of the Scheme. The DWSM had to discharge functions like convening monthly meetings to consider and accord administrative approval of the in-village water supply schemes, plan protection and preservation of village water sources, manage greywater, prevent water bodies/ sources from getting polluted, prepare a district annual action plan, monitor and evaluate physical and financial performance, analyse data on health indicators, water-borne diseases, *etc.*, for corrective action and grievance redressal.

On scrutiny of records in test-checked districts, Audit noticed that the DWSMs had not carried out their mandated functions either properly or in their entirety, as envisaged in the guidelines, as discussed below:

- **Consolidation of Village Action Plans (VAP⁹):** Out of 8,800 villages in the five test-checked districts, 1,237 villages (14 *per cent*) had not prepared VAPs. As such, the VAPs could not be consolidated by DWSM to form a part of District Action Plan (DAP) (**Paragraph 2.1.9.1**).
- **Finalisation of DAP:** The VAPs of all villages in a district were to be aggregated for preparing the DAP. Except Kandhamal, none of the sampled districts had prepared a DAP. In other districts, only a database namely the District Saturation Plan was prepared, which lacked the prescribed details (**Paragraph 2.1.9.2**).
- **Help in formation of VWSC and Coordination with Gram Panchayats (GPs)/ VWSCs:** VWSCs were not constituted in 1,230 villages of test-checked districts. In the remaining villages, where these VWSCs were constituted, these committees were either inactive or were bypassed in preparation of VAPs. The VAPs were directly prepared by Implementation Support Agencies (ISA) without involvement of GPs (**Paragraphs 2.1.8.3**). Thus, the DWSM had no role in formation of VWSC and it had not ensured that the ISA had coordinated with GPs for formation of VWSC and preparation of VAP.

⁹ Plan prepared by the GP/ VWSC to provide FHTC to every rural household based on survey, resource mapping and felt needs of village community

- **Monitoring and evaluation:** Against 255 meetings required to be held during 2019–24, only 33 meetings (13 *per cent*) were held in the test-checked districts, with proceedings available for only 12 meetings. The shortfall in meetings significantly impacted monitoring of both physical and financial performance, resulting in shortfalls in physical progress due to non-completion of projects (*Paragraph 2.1.12.4*), along with retention of large unspent balances (*Paragraphs 2.1.11.1 and 2.1.11.2*).
- **Implementation of IEC strategy:** One of the functions of DWSM was to implement IEC strategy and ensure effective utilisation of the earmarked support fund for the same. However, neither any awareness campaigns nor IEC activities on water security, community contribution towards user fees/ O&M or judicious use of potable water were conducted in test-checked districts (*Paragraph 2.1.13.1*).

Thus, the DWSMs were not functioning properly, as prescribed under JJM guidelines, resulting in inadequate planning and monitoring, thereby hampering effective implementation of the Mission.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the DWSMs had been actively contributing to the successful implementation of JJM. The reply is not tenable as in none of the test-checked districts, Audit could find any record/ documents regarding involvement of DWSMs in implementation of the JJM scheme.

2.1.8.3 Constitution of VWSCs

As per Paragraph 5.4 of the Operational Guidelines of JJM, the Gram Panchayat or its sub-committee *i.e.*, VWSC was to act as a legal entity responsible for ensuring FHTCs to all households. The functions of the VWSCs, *inter-alia* included preparation of VAP, O&M of in-village water supply schemes, mobilisation of community for contributing towards O&M charges (user fees), accounts and asset record maintenance, supervising construction of in-village infrastructure and sustainability measures, ensuring inclusive participation through regular meetings and social audits, *etc.*

As per the information furnished by EIC (July 2024), 45,044 VWSCs (97 *per cent*) had been constituted in the State against the target of 46,422. Thus, there was a shortfall of about 1,378 VWSCs to be formed in respective villages. In five test-checked districts, Audit noticed that VWSCs were formed in 7,570 out of 8,800 villages, as of March 2024 and the remaining 1,230 villages had no VWSCs, even after four years of launching of JJM. Non-formation of VWSCs impacted the success of the programme, as these were key institutions for planning, implementing and operating the FHTCs in a sustainable manner, with community participation at the ground level.

Audit further noticed that the VWSCs suffered from various deficiencies, as was noticed during the Focused Group Discussions (FGD) and beneficiary interviews conducted by Audit, as discussed in the subsequent paragraphs.

(i) Engagement of Implementation Support Agency

As per Paragraph 5.5 of the Operational Guidelines, non-Government Organisations (NGOs)/ village organisation (VOs)/ women SHGs/

Community based organisations (CBOs)/ Trusts/ Foundations are referred to as Implementation Support Agencies (ISAs), who play a critical role as partners in mobilising and engaging communities to plan, design, implement, manage, operate and maintain in-village water supply infrastructure under JJM. DWSMs were to engage ISAs from the empanelled¹⁰ list prepared by SWSM.

Audit observed that the EIC, RWSS had engaged (June-July 2021) six ISAs for all the 30 districts for preparation of VAPs and formation of VWSCs with a timeline of one year. As per the agreement entered into between the ISAs and respective RWSS Circles, the ISA would be paid ₹5,500 per village for preparation of VAP and formation of VWSC. Audit, however, observed that in the test-checked districts, even though an amount of ₹4.57 crore had been paid to the ISAs (as of September 2024), they had not discharged their responsibilities towards preparation of VAPs, mobilising people for community ownership, *etc.*, as discussed in **Paragraphs 2.1.8.3, 2.1.9.1 and 2.1.9.2.**

(ii) Deficient functioning of VWSCs

Based on examination of records, beneficiary interviews, interaction with VWSC members and FGDs conducted by Audit¹¹ in 39 villages, the following deficiencies were noticed in functioning of VWSCs:

- One of the key functions of ISA was to provide handholding support to GPs and VWSCs in all the functions mandated for VWSCs in the guidelines. The members of 24 out of 39 VWSCs expressed during the FGD that they were not aware of their roles and responsibilities, regarding supervision of creation of in-village infrastructure for FHTCs under JJM or of any post operational activities, *etc.* Due to this, one of the major objectives of the Scheme, *i.e.*, to instill a sense of community participation and ownership of assets among users, could not be achieved.
- The willingness of community, reflected through resolution in Gram Sabha and community contribution, was the foremost criterion for planning of water supply systems in villages. As per JJM guidelines a VAP had to be prepared by GP and/or its sub-committee *i.e.* VWSC and approved by the Gram Sabha for the implementation of the Scheme. In 24 out of 39 sampled villages, the formation of VWSCs had not been approved by the Gram Sabha. In 23 villages, the ISA had not contacted the VWSC/ the Sarpanch for preparation of the VAP and had prepared the VAPs without the approval of the Gram Sabha. Thus, the GPs were not aware of the VAPs prepared by the ISA and were therefore not involved in the activities of the VWSCs.

¹⁰ The organisations willing to get empanelled are to get registered on JJM portal and SWSM is to adopt a transparent selection process for ISAs from the portal and empanel them for the State; only such organisations having a good track record in the related fields are to be considered and preference is to be given to ISAs with technical expertise of facilitating community-based rural water supply.

¹¹ While beneficiary interview and interaction with VWSC members was conducted in all 40 sampled villages, FGD was conducted in 39 villages only due to some local issues

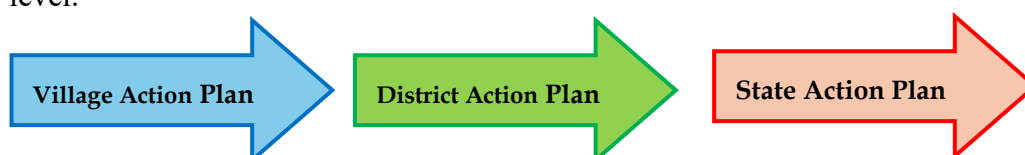
- The VWSCs were required to take a lead role in the planning, implementation, and supervision etc., of the JJM Scheme at the village level. However, during 2019-24, a maximum of only two meetings had been held by each VWSC against a minimum requirement of four meetings a year, highlighting that the role of the VWSCs needed to be strengthened.
- JJM Guidelines required opening of bank account/ use of existing account of GP for depositing community contribution towards O&M and user fees *etc.* In 16 out of 39 villages, VWSCs had opened bank accounts, but the executives as well as the members were not aware of the amount to be collected and deposited in these accounts. In the remaining 23 villages, no bank accounts had been opened.
- Audit examined 27 VAPs in the test-checked villages of five selected districts. In villages like Machhapada (Gualipada GP, Delang) and Saragailo (Teishipur GP, Pipili), the VWSC executives stated that they had not signed the VAPs, even though their signatures were present on the said documents. In most of the cases, it was observed during interaction with the VWSC executives that except one to two executives, all other members of the committee, had not signed the VAP or the Resolution of VWSC, raising doubt on genuineness of the signatures in the VAPs.
- In 31 villages, timing and duration of water supply had not been decided by the respective Panchayats as stipulated under Para 5.4 of the JJM Guidelines. During beneficiary survey, 547 beneficiaries (67 *per cent*) of 30 villages stated that water was not supplied for a fixed duration *i.e.* at least for four hours in a day. Also, 285 villagers (35 *per cent*) of 18 villages complained that water was supplied for less than two hours and therefore, they were not able to get sufficient water for their daily needs.

Thus, the very purpose behind the formation of VWSCs remained unachieved after lapse of five years of the Mission period. Lack of control of the RWSS Divisions over the functioning of ISAs was the main reason behind failure of the VWSCs.

The Director, Drinking Water and Sanitation, PR&DW Department acknowledged (January 2025) the issues raised by Audit on the role of VWSCs and stated that several corrective measures were initiated to empower VWSCs and to fulfill their intended responsibilities as per the JJM guidelines.

2.1.9 Planning for implementation of JJM

Under JJM, States were to plan for achieving drinking water security and provide FHTC to every rural household. To achieve 100 *per cent* FHTC, Action Plans were to be prepared and executed at village, district and State level.



Village Action Plan (VAP) was to be prepared based on a baseline survey, resource mapping and felt needs of village community. The VAPs of all villages in a district were to be aggregated for preparing the District Action Plan (DAP). Similarly, DAPs of all districts in the State would be aggregated to formulate the State Action Plan (SAP). Further, the State had to prepare an Annual Action Plan (AAP) detailing yearly targets commensurate with the annual allocation under JJM made by GOI.

Audit however, observed deficiencies in preparation of action plans at different levels, as discussed in the succeeding paragraphs.

2.1.9.1 Preparation of VAP

Paragraph 3.6.1 Operational Guidelines of JJM stipulated that VAP should be prepared by Gram Panchayat or its sub-committee (VWSC), based on baseline survey, resource mapping and felt needs of the village community with support from ISA and approval of the Gram Sabha. The VAPs should include the components as detailed in **Table 2.1.1**.

Table 2.1.1: Major Components of VAP

1	History of water supply/ availability in the village	5	Plan for providing water to public institutions
2	Current availability of water in water source (yield measured) and its long-term sustainability	6	Identify barefoot technician for minimal repair works, O&M, etc.
3	Willingness including affordability of people to contribute towards partial capital cost in cash/ kind	7	Identify dedicated persons in village to conduct water quality tests through Field Test Kits and train them for the same
4	Water safety and security plan	8	Greywater management measures

(Source: JJM Operational Guidelines)

The ISAs were initially given time up to April 2023 for preparation of VAPs. Audit noticed that out of the total 46,422 revenue villages planned under JJM in the State, VAPs had been formulated by the ISAs in 44,241 villages (95 *per cent*). The VAPs for the remaining 2,181 villages had not been prepared as of July 2024. In five test-checked districts, VAPs had been prepared and approved for 7,563 out of 8,800 revenue villages and VAPs for the remaining 1,237 villages (14.06 *per cent*) were yet to be prepared (July 2024) by the ISA. Even after extension of time, *i.e.* up to April 2024, the work could not be completed by the ISAs, as was noticed in sampled districts. The reasons of failure of ISAs were lack of field survey, non-receipt of complete data about villages, and lack of co-ordination with respective RWSS Sections and GPs.

Moreover, documentary evidence in support of approval of VAPs by Gram Sabhas was available only for 316 GPs of Balasore district and the same was not available in case of the remaining sampled districts. Further, FGD revealed that in 24 out of 39 sampled villages, Gram Sabha was not held for approval of the VAP.

Audit further noticed that the VAPs prepared by ISAs were largely uniform, following a common template covering aspects like population projections, baseline survey, existing infrastructure, water quality, source sustainability, *etc.* The uniformity across all VAPs reflected a mechanical, format-driven approach. This standardisation, while useful for consistency, failed to capture the actual requirements and felt-needs of the community, challenges and

priorities of individual villages, thereby diluting the essence of participatory and need-based planning, as envisaged under JJM. The VAPs lacked realistic approach and were not based on any field assessment or coordinated efforts with GP or its sub-committee, as revealed during JPI of 40 villages (discussed in the subsequent paragraphs).

Thus, delay in preparation and approval of VAPs, over-standardisation of VAPs and absence of approval of Gram Sabha compromised the bottoms-up planning approach, as envisaged under the scheme guidelines and also delayed implementation of the scheme in the villages, where VAPs had not been prepared.

The Director, Drinking Water and Sanitation (January 2025) attributed delays in preparation of VAPs to local challenges such as technical issues, discrepancies in names of villages *etc.*

2.1.9.2 Preparation of DAP

As per the Paragraph 3.6.1 of JJM Operational Guidelines, the District Action Plans which were to be prepared by respective DWSMs should include the components as detailed in **Table 2.1.2**.

Table 2.1.2: Major Components of DAP

1	Strategic plan for FHTC to all rural households by 2024	6	Identification of villages where water supply system will be based on local water source, and estimation of type of water sources and other ancillary requirements
2	Aggregation of all VAPs	7	Plan for capacity building, training, third party inspection, O&M and IEC activities
3	Analysis and preparation of a database of various components emerging from the VAPs	8	Plan and identify models for block/ village level water quality testing
4	Timelines for all the activities identified for FHTCs coverage and financial requirement	9	Identification of sources of convergence to meet the requirements emerging from VAP
5	Overall human resource requirement at different levels of execution and O&M of project	10	Submission of final DAP to SWSM <i>etc.</i>

(Source: JJM Operational Guidelines)

As VAPs for 2,181 villages had not been prepared, the DAPs of the respective districts could not be prepared. In case of five test-checked districts, DAPs had only been prepared for Kandhamal district, with a delay of about 663 days from the scheduled date of preparation (May 2022). Audit further observed that the VAPs had been prepared and approved for 2,293 villages in Kandhamal district, whereas the DAP reflected 2,367 villages, resulting in discrepancy of 74 VAPs. Thus, correctness of the DAP was doubtful.

In other four sampled districts (Bargarh, Puri, Balasore and Malkangiri), District Saturation Plans (DSP) in the name of DAP had been prepared for 6,239 villages. The DSP was only an excel sheet containing the data relating to the district, division, block, GP, number of FHTCs *etc.*, and did not include the relevant details, as envisaged in the JJM Guidelines. As the database /DSPs did not present a proper plan and did not meet the prescribed conditions for preparing a DAP, the same could not be treated as a valid DAP. In the

absence of DAPs for the districts, the SAP prepared by the Department failed to reflect the actual status of division level planning.

2.1.9.3 Preparation of SAP

The SWSM was responsible for preparation and finalisation of SAP. The State plan was to be based on aggregation of all DAPs prepared in the State. The plan, apart from giving the roadmap to achieve the target of providing FHTCs, would also include long term drinking water security of the State. The SAP would include the components, as given in **Table 2.1.3**.

Table 2.1.3: Major Components of SAP

1	Accord priority to retrofitting of existing infrastructure identifying completed and ongoing PWS schemes and ensure their completion in the first two financial years	6	Preparing detailed action plans for ensuring functionality of household tap connections (HTCs) and Water Quality Monitoring & Surveillance (WQM&S)
2	Making efforts to improve the water availability through convergence of resources and efforts	7	Specifically identifying areas (hilly/tribal/ forest/inaccessible) requiring innovative Technological Interventions to provide assured water supply using renewable energy
3	Taking decision for transfer of water from surplus regions to scarce regions and develop distribution network for MVS	8	Planning for convergence for source sustainability and grey-water management measures
4	Mentioning institutional reforms required including unbundling the existing water supply departments into different agencies focusing on specific aspects of water supply	9	Intimating timelines for all the activities identified under district-wise FHTCs coverage and financial requirement
5	Specifying bulk water tariffs for both accessing water from source and supply from the grid	10	Assessing human resource management including capacity building and training

(Source: JJM Operational Guidelines)

Audit noticed that the SAP had been prepared in 2020-21 aggregating DSPs and DAPs (wherever prepared) by the PR&DW Department. However, the SAP did not include the remaining components of the above table, as prescribed under the operational guidelines. As the SAP did not include all DAPs, it thus did not follow a bottoms-up approach in the preparation of a road-map to achieve the target of provision of FHTCs to all by 2024.

The Director, Drinking Water and Sanitation stated (January 2025) that the divisions had been given instructions for immediate necessary action.

2.1.10 Non-availability of a robust O&M plan

As per Paragraph 3.6.1 of JJM Operational Guidelines, the VAPs *inter alia* should contain long-term O&M plan/ arrangement. Similarly, the DAP should contain O&M plan for both in-village as well as regional water supply, financial and institutional requirement, while the SAP needed to incorporate, a comprehensive O&M plan for the system. One of the main functions of SWSM Apex committee was to develop an O&M strategy and make a firm policy for the accounts meant for operation of O&M (comprising of community contribution and user fees) and its operation process by GP and/ or its sub-committee.

Audit examined 27 VAPs and noticed that the VAPs of one village of Balasore district did not include any O&M plan/ arrangement. In case of the remaining 26 VAPs although, there was a plan, yet no such activities were carried out at the ground level. Even the DAPs did not have a concrete plan for O&M focusing on in-village and regional water supply systems. Absence of a robust O&M plan/ arrangement contributed to non-sustainability of water supply projects, interrupting supply of drinking water to the targeted households, as discussed in **Paragraph 2.1.12.7**.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the State would develop a new O&M policy that would incorporate the suggestion from GoI. The policy would address all aspects of O&M, including financial sustainability, institutional roles, user fee structures and long-term planning for both in-village and regional water supply systems.

Recommendation 1:

The Government may take steps to constitute VWSCs in all villages and to strengthen their functioning through monitoring, capacity building, IEC activities etc., so that they effectively discharge their role for ensuring sustainable water supply.

Recommendation 2:

The Government may formulate a Strategic Plan to cover the left over habitations on priority basis for supplying adequate and safe potable water to the rural people. SWSM may also formulate plans for capacity building, training, O&M and IEC activities among the rural people, which should be closely monitored by RWSS divisions in their jurisdiction to achieve the objectives of the Mission.

2.1.11 Financial Management

Jal Jeevan Mission was to be funded both by the Central and State Government. The components of JJM were broadly divided into three major categories viz., Coverage or programme expenditure, Support Activities (IEC, human resource development and training, community mobilisation etc.) and Water Quality Management and Surveillance (WQM&S). The fund sharing pattern between the Centre and the State under JJM was 50:50 for Coverage or programme expenditure (creation of assets) and 60:40 for Support Activities and WQM&S. The earmarked expenditure for Support activities and WQM&S was up to five and two *per cent* of total allocation, respectively.

During 2019-24, the State had mobilised ₹14,534.59 crore under JJM. This included Central share of ₹7,343.68 crore and State share of ₹7,190.91 crore. Out of this, ₹13,568.78 crore had been utilised. The year-wise receipt and utilisation of funds is given in **Table 2.1.4**.

Table 2.1.4: Receipt and expenditure of JJM funds from 2019 to 2024 (₹in crore)

Year	OB	Receipt	Interest	Total	Expenditure	Refund	CB	Percentage of unspent funds
2019-20	96.66*	720.97	4.57	822.20	549.16	0.00	273.04	33
2020-21	273.04	1,204.01	10.64	1,487.69	1,314.74	0.00	172.95	12
2021-22	172.95	4,946.37	35.91	5,155.23	2,589.46	8.63	2,557.14	50
2022-23	2,557.14	3,495.36	50.64	6,103.14	4,175.92	22.53	1,904.69	31
2023-24	1,904.69	4,167.88	45.82	6,118.39	4,939.50	45.82	1,133.07	19
Total		14,534.59	147.58		13,568.78	76.98		

(Source: Audited Accounts and PFMS account of EIC, RWSS, Odisha)

* Unutilised funds of erstwhile NRDWP, which was subsumed into JJM

It can be seen from **Table 2.1.4** that the State could utilise only ₹13,568.78 crore out of the available funds of ₹14,682.17 crore (receipt of ₹14,534.59 crore + interest of ₹147.58 crore) during 2019-24. The unspent balance ranged between 12 *per cent* to 50 *per cent* of the available funds during 2019-24.

2.1.11.1 Receipt and utilisation of funds in test-checked districts

In the five test-checked districts, the RWSS Divisions had received ₹2,706.77 crore under JJM for providing FHTC to 8,800 villages, against which ₹2,565.99 crore had been spent during 2019-24, as detailed in **Table 2.1.5**.

Table 2.1.5: Component-wise financial status of JJM in five selected districts during 2019-24

(₹in crore)

Sl. No.	Name of the district	Allotment received	Programme expenditure	Expenditure on Support Activities	Expenditure on WQM&S	Unspent fund
1	Balasore	1,053.32	939.61	14.39	0.55	98.77
2	Bargarh	401.09	396.68	3.99	0.42	0.00
3	Kandhamal	642.45	600.60	0.44	1.37	40.04
4	Malkangiri	339.99	335.73	3.29	0.97	0.00
5	Puri	269.92	260.24	6.85	0.86	1.97
Total		2,706.77	2,532.86	28.96	4.17	140.78

(Source: Information furnished by the respective RWSS Divisions)

Audit observed that:

- Unutilised amount of ₹140.78 crore was lying with three RWSS Divisions (Balasore, Kandhamal and Puri) without being surrendered to the State Government, as of August 2024.
- Overall expenditure on Support activities in five test-checked districts was 1.07 *per cent* of the available funds, against the permissible limit of five *per cent*. RWSS Division, Kandhamal could spend only 0.07 *per cent* of the allocation, while RWSS Division, Puri incurred 2.54 *per cent* expenditure. Such minimal expenditure indicated that the interventions under Support activities were either not executed or partially implemented.
- Similarly, against the permissible limit of two *per cent* of funds received under the WQM&S component, only 0.15 *per cent* expenditure had been made in these test-checked districts.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the unutilised amount of ₹98.77 crore in Balasore Division was surrendered to the Government and the funds lying with Kandhamal Division, had been spent during FY 2024-25. However, no documentary evidence in support of surrender and expenditure of unspent amount was made available to Audit. The reply was also silent about the unutilised funds of ₹1.97 crore in Puri Division.

2.1.11.2 Short utilisation of funds on Support activities and Water Quality Monitoring and Surveillance

As per JJM Guidelines, a provision of up to five *per cent* of the annual allocation to the States was to be made as funds for Support Activities. These funds were to be used to spread awareness and sensitise communities about judicious use of water, community contribution and ownership, capacity building of GPs and/or their sub-committees to plan, implement, manage,

operate and maintain in-village infrastructure, focus on setting up long-term sustainable institutional mechanisms, build skills of various human resources required, viz. masons, plumbers, electricians, motor mechanics, pump operators, etc. Further, WQM&S was essential for ensuring supply of safe and clean water to communities. To achieve this goal, a provision of up to two *per cent* of the allocation to States had been made for carrying out WQM&S activities which included setting up of laboratories at the State/District/Sub-divisional level, laboratories under PPP mode, upgradation of existing water quality testing laboratories which *inter alia* included procurement of equipment, instruments, chemicals/reagents, etc.

Audit observed that while the expenditure on Coverage / creation of assets, which included construction of Mega Water Supply projects¹², single village scheme (SVS)¹³/ multi village scheme (MVS)¹⁴ etc., (₹13,186.70 crore) for provisioning of FHTCs to households constituted 96.43 *per cent* of the allocation (₹13,673.68 crore), the expenditure on Support activities (₹325.74 crore) and WQM&S (₹56.30 crore) was insignificant with 2.20 *per cent* and 0.38 *per cent* of the allotted funds¹⁵ respectively.

Receipts (₹14,534.59 crore)	Expenditure (₹13,568.78 crore)
• ₹13,673.68 crore under Coverage • ₹614.94 crore under Support Activities • ₹245.98 crore under WQM&S	• ₹13,186.70 crore (97.19 <i>per cent</i>) on Coverage • ₹325.74 crore (2.40 <i>per cent</i>) on Support Activities • ₹56.30 crore (0.41 <i>per cent</i>) on WQM&S

Such minimal expenditure on WQM&S and Support activities indicated that the performance of the EIC, RWSS Divisions was not satisfactory, in regard to execution of activities planned under these components, as discussed in *Paragraphs 2.1.13 and 2.1.14*.

2.1.11.3 Inadmissible expenditure of ₹1.38 crore

As per JJM Operational Guidelines, expenses due to cost escalation, tender premium and other programme expenses were not to be funded under the Central share of JJM. The State Government/ SWSM was to decide about the source of funds for bearing such expenditure.

Audit test-checked records of 80 piped water supply projects executed under JJM in five selected districts and observed inadmissible expenditure of ₹1.38 crore from the Central share in 22 PWS projects taken up during July 2019 to June 2022.

¹² Mega Water Supply Project is a large scheme aiming to supply drinking water to multiple villages across various GPs and Blocks using surface water.

¹³ SVS is a groundwater/ spring based/ local surface water scheme, which is planned and managed by Gram Panchayat and/ or its sub- committee, i.e. VWSC/ Paani Samiti/ User Group etc.

¹⁴ MVS is a ground water/ surface water based scheme that caters to multiple villages and is usually planned by Public Health Engineering Department/ RWS Department/ Board/ Agency, wherein Gram Panchayat and/ or its sub-committee, will manage, operate and maintain the in-village water supply system

¹⁵ In addition, there was expenditure of ₹0.04 crore on Natural Calamities

In case of 20 PWS projects taken up in four districts, the Divisions had paid ₹1.11 crore¹⁶ as tender premium cost, and ₹0.11 crore had been paid towards price escalation for materials, during execution of two projects by the Puri Division from JJM funds. Also, RWSS Division, Puri had paid ₹0.16 crore for deviations made against the approved estimates.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the Department had decided (January 2023) that tender premium would be met from the JJM funds, if the work order in respect of works had been issued on or after 21 June 2022.

The reply is not tenable as the agreements for all the 20 projects pointed out by Audit related to the period prior to 21 June 2022. Thus, the payments from Central share were not admissible.

2.1.11.4 Irregular expenditure under Support Activities

As per the JJM guidelines, provision up to five *per cent* of annual allocation was to be set aside towards conducting Support activities like IEC activities, Human Resource Development (HRD), Public utility and leadership development, Integrated Management Information System¹⁷ (IMIS) support and related IT infrastructure and payment to ISA *etc.* No funds under Support activities were to be utilised for activities like advertisement in newspapers/magazines, gifts, hosting avoidable functions for publicity *etc.*

Audit noticed that the EIC, RWSS received ₹614.94 crore towards Support activities during 2019-24, of which ₹325.74 crore was reported as utilised, as reflected in the audited accounts of the EIC. However, on comparison it was noted that the related expenditure reflected in PFMS was only ₹239.22 crore (March 2024), highlighting a discrepancy of ₹86.52 crore. The EIC could not furnish the details of such differential amount as of May 2025, to ascertain the actual expenditure incurred on the Support activities under JJM. Out of the reported utilisation of ₹239.22 crore in the State, ₹30.08 crore was either spent on activities not admissible under Support Activities, or on items for which supporting documents were not available, as detailed in **Table 2.1.6**.

Table 2.1.6: Inadmissible/ doubtful expenditure from Support Fund in the State

Purpose of expenditure	Amount (₹in lakh)	Remarks
Material testing laboratories	11.85	Not covered under Support Activities.
Activities already funded under BASUDHA scheme	974.05	For use of JJM funds for work under State scheme, no justification was provided.
Documentation under MIS	676.95	No supporting documents were provided by the EIC / test-checked districts.
Administrative expenses, Workshops, Seminars <i>etc.</i>	1,346.00	No records made available to Audit and no such events observed in test-checked districts.
Total	3,008.85	

(Source: PFMS records of EIC, RWSS, Odisha)

¹⁶ Puri: 05 (₹5.79 lakh), Balasore: 07 (₹15.63 lakh), Bargarh: 01 (₹11.83 lakh) and Malkangiri: 07 (₹77.28 lakh) schemes

¹⁷ The Department/ National Mission would maintain IMIS of JJM to capture real-time physical and financial progress. This would be available in public domain for social monitoring

Thus, there was a risk that expenditure of ₹30.08 crore from the Support Fund was either inadmissible or doubtful.

Further, Audit observed that in the five test-checked districts, ₹28.96 crore was spent from the Support Fund, of which:

- ₹9.03 crore was incurred on preparation of Detailed Project Report (DPR), which was not admissible under the JJM Support Fund.
- ₹6.15 crore was spent on Third Party Monitoring and Inspection of State scheme projects.
- ₹0.71 crore was incurred on WQM&S (lab-related activities).

Thus, an amount of ₹15.89 crore (55 *per cent*) was spent on activities not allowed under Support activities or spent on activities related to other state schemes and was thus, inadmissible. These expenses were to be recouped from the programme expenditure.

The Director, Drinking Water and Sanitation, PR&DW Department assured (January 2025) that necessary instructions would be issued to divisions for taking corrective action.

Recommendation 3:

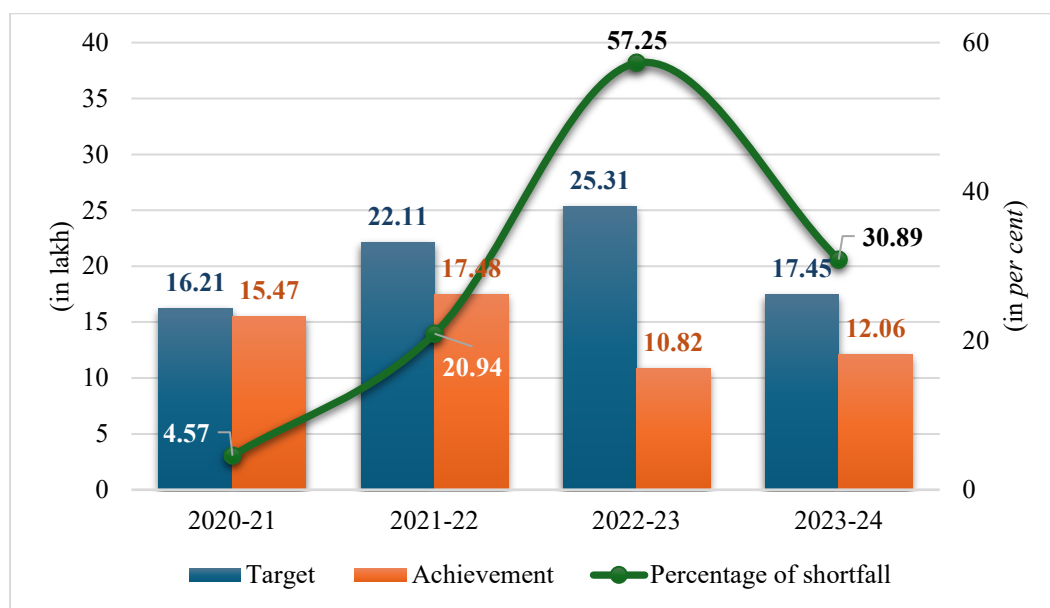
The Government may enhance its spending on Support activities and Water Quality Monitoring and Surveillance up to the limit permissible under the guidelines to ensure long term sustainability of water supply systems and supply of quality water.

2.1.12 Implementation and sustainability of water supply projects

2.1.12.1 Coverage of households by FHTCs

As per JJM guidelines, the SWSM was responsible for setting of quarterly and district-wise targets for provisioning FHTCs and estimating the required funds each year. Additionally, the SWSM had to prepare an Annual Action Plan (AAP) outlining yearly objectives aligned with the annual fund allocation of the Mission.

The State began preparing AAPs from 2020-21 onwards. Although quarter-wise targets were not formulated, district-wise execution plans for FHTCs were developed by the DWSMs from 2020-21. Up to 2019-20, 7.47 lakh FHTCs had been provided in the State under all water supply schemes, including JJM. The year-wise targets and corresponding achievements in the State for FHTCs under all schemes including JJM, during 2020-21 to 2023-24, are depicted in **Chart 2.1.2**.

Chart 2.1.2: Physical Target and Achievement of FHTCs in the State under all schemes/ programmes during 2020-21 to 2023-24

(Source: Information furnished by the EIC, RWSS, Odisha)

Audit noticed an overall shortfall of 31 *per cent* in coverage of FHTCs (shortfall of 25.25 lakh FHTCs) under all water supply schemes, compared to the targets set for four years' period (81.08 lakh FHTCs) of 2020-24. Maximum shortfall (57.25 *per cent*) was registered during 2022-23, as only 10.82 lakh households were covered with FHTCs, against the target of 25.31 lakh.

The Department attributed the shortfall to manpower shortages, geographical and weather challenges, community resistance, unsustainable water sources *etc.*

Under JJM, 55.78 lakh households were targeted for coverage under FHTCs through 15,377 SVS and MVS during 2019-24 (from September 2019), against which only 26.28 lakh households (47 *per cent*) were provided with potable water through FHTCs, as of March 2024.

Audit observed that the shortfall in achievement was mainly due to non-completion of the water supply projects, as discussed in **Paragraph 2.1.12.4**.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that all projects were underway and the State would cover 100 *per cent* HHs by June 2026.

2.1.12.2 FHTC status in test-checked districts

In the test-checked districts, villages partially covered under other Central and State schemes were also taken up under JJM. **Table 2.1.7** shows the details of households (HHs) planned and covered for provision of FHTC under JJM in test-checked districts.

Table 2.1.7: Number of HHs planned and covered with FHTCs under JJM in test-checked districts, as of March 2024

Sl. No.	Name of district	Projects sanctioned	Projects completed	HHs planned	HHs covered	Percentage of Achievement
1	Balasore	1,162	1,012	3,77,311	2,57,745	68.31
2	Bargarh	660	08	1,35,803	60,031	44.20
3	Kandhamal	1,522	82	1,34,879	93,938	69.65
4	Malkangiri	687	167	1,06,710	11,950	11.20
5	Puri	376	262	2,42,077	82,446	34.05
Total		4,407	1,531	9,96,780	5,06,110	50.77

(Source: Information furnished by the respective RWSS Divisions)

As can be seen from **Table 2.1.7**, out of 4,407 projects sanctioned (including Mega water supply projects, SVS and MVS), only 1,531 projects (35 *per cent*) had been completed in the test-checked districts. Kandhamal had 69.65 *per cent* achievement, followed by Balasore with 68.31 *per cent*, while Malkangiri district was the lowest performer with 11.20 *per cent* achievement, in regard to provision of FHTCs to the rural households.

While accepting the facts, the Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the pace of execution was good, except in Malkangiri which faced issues like geographical, connectivity, water source, community resistance, administrative and security challenges. The reply is not tenable as achievement of other districts like Bargarh and Puri also remained sub-optimal with less than 50 *per cent*.

2.1.12.3 Data discrepancy in JJM web-portal

As per the JJM web portal as of March 2024, 26.28 lakh households were reported to have received tap connections under JJM Scheme, whereas the records of EIC, RWSS showed that only 25.64 lakh households had been provided with FHTCs. Thus, there was a discrepancy of 0.64 lakh households, which indicated over-reporting of households by 2.49 *per cent* in the JJM web-portal.

Similarly, in test-checked districts, there was discrepancy between the figures reported by the EIC and those shown in the JJM web portal, with regard to the number of villages having 100 *per cent* FHTCs. As per web-portal, 3,111 villages were shown as having 100 *per cent* FHTCs, whereas 3,311 villages were reported by the EIC, as having *cent per cent* FHTCs.

As such, there was data inconsistency between the information available on the JJM web portal, compared to the figures reported by the EIC. This raised a doubt regarding actual coverage of villages and households by FHTCs under JJM. Maintenance of different data sets of FHTCs by EIC and on JJM web-portal would also impair further planning and financial management.

The Director, Drinking Water and Sanitation, PR&DW Department admitted (January 2025) the data discrepancies and attributed these to delay in updating the records at division level, dynamic nature of data, limited time for reconciliation etc., and assured that steps would be taken to ensure data accuracy.

2.1.12.4 Non-completion of Mega water supply projects

During 2019-24, the Government of Odisha had initiated 207 Mega water supply projects, out of which 133 were being taken up under JJM. As of June 2024, only two of these projects had been fully completed. The status of Mega water supply projects taken up for construction in five test-checked districts under JJM, during 2019-24 is shown in **Table 2.1.8**.

Table 2.1.8: Status of Mega piped water supply projects in test-checked districts as of September 2024

District	Mega water supply projects sanctioned	Project cost (₹ in crore)	Projects started	Projects completed	HHs planned for coverage
Balasore	4	533.09	4	0	1,17,572
Bargarh	1	453.10	1	0	65,748
Kandhamal	4	630.86	4	0	78,789
Malkangiri	8	1,054.63	8	0	96,769
Puri	4	695.78	0	0	96,649
Total	21	3,367.46	17	0	4,55,527

(Source: Information furnished by EIC, RWS&S, Odisha)

Audit noticed that none of the Mega water supply projects in four test-checked districts had been completed, while in Puri district, work on Mega projects had not even commenced as of September 2024. Of the total 15.27 lakh households in these districts, only 4.56 lakh (30 per cent) had been planned for coverage under these Mega projects, while the remaining were to be covered through SVS and MVS. Delay in commencement/ completion of projects was mainly due to issues related to land acquisition, non-setting up of water treatment plants and slow execution by the contractors.

Further, JJM web-portal showed that 31 projects¹⁸ across seven districts had not commenced despite issue of work orders between April 2019 and November 2023. These included 19 projects which had not started even after more than one year of issue of work orders. Consequently, 6,616 households planned under these projects were not provided with FHTCs for availing safe drinking water. The reasons for such abnormal delays in commencement of projects were not on record.

The prolonged delays left a substantial number of households without access to assured and safe drinking water through FHTCs, resulting in non-achievement of the objectives of the Mission.

2.1.12.5 Inadequate supply of water

As per Paragraph 6.1 of Operational Guidelines of JJM, volume of potable drinking water supply should be a minimum of 55 lpcd. States could enhance supply of water to higher levels depending on the availability of drinking water sources. Accordingly, GoO had planned to provide 70 lpcd of water under all projects, as was noticed from the plan documents.

Paragraph 11.1 of the operational guidelines required installation of sensors in SVS and PWS systems with stand posts to measure daily water drawn from various sources and to track bore-well water levels in ground water-based schemes.

¹⁸ Kalahandi: 02, Khordha: 01, Koraput: 09, Malkangiri: 08, Mayurbhanj: 07, Nabarangpur: 01 and Puri: 03.

Audit noticed that in none of the villages of test-checked districts, flow meters/ household meters or modern sensors had been installed to record water flow to households through PWS systems. In absence of such mechanisms, no assurance could be drawn whether minimum prescribed volume of 55 lpcd water was actually being provided to each household.

During beneficiary interview, 298 beneficiaries from 25 villages reported that water supply was insufficient for daily domestic needs (drinking, cooking and domestic work). The reasons for insufficiency were irregular supply of water/ voltage fluctuation/ power supply failure/ non-construction of overhead tanks *etc.* This shortage was a common concern and was also confirmed in FGD, in 16 of the 39 test-checked villages experiencing persistent water shortage.

Supply of piped water was also hampered due to inadequate water sources, power supply failure, irregular operation of in-village projects, *etc.*, as discussed in **Paragraph 2.1.12.7.**

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the planning phase of Internet of Things (IoT) based solutions to measure water distribution was under implementation. This would ensure compliance with the prescribed 70 lpcd norm and real time monitoring.

2.1.12.6 Non-engagement of barefoot technicians / pump operators

As per Paragraphs 3.6.1 and 10.4 of JJM operational guidelines, Gram Panchayats should identify and engage Barefoot Technicians¹⁹ (BTs) for routine repair, operation of water supply system and water quality management and ensure their training under IEC activities for sustainable O&M. Further, as per Chapter 9 *ibid*, capacity building of skilled human resources like masons, plumbers, electricians, motor mechanics, pump operators, *etc.*, was required for ensuring long-term sustainability of water supply systems.

Audit test-checked 27 VAPs in four test-checked districts²⁰ and observed that in 18 villages, BTs had not been engaged. In their absence, the water quality tests were being done by the Master Book Keepers (MBKs) or Community Resource Persons (CRPs)²¹. Meanwhile, the contractors had been managing the repair/ maintenance work in these 18 villages, as per the agreement.

In 40 test-checked villages, 27 pump operators were in place, while in 12 of the remaining villages, PWSs were solar power based (auto-operated through sensor) and in one village (Saitingia, Kandhamal), no pump operator was posted. The pump operators were engaged by the contractors during the project period after which the GP administration had to take charge of maintenance work. During FGD, it was revealed that in 19 villages, where pump operators appointed by the contractors had been managing the operations, no records like log book of pump house had been maintained for monitoring supply of prescribed quantity of water to the households.

¹⁹ Barefoot Technician: A local youth, preferably from the same GP or village selected after giving basic training on plumbing, pipe fitting, pump operation and simple repair and maintenance of rural water supply systems.

²⁰ In Malkangiri, VAP had not been submitted to Division office by the ISA

²¹ MBKs and CRPs are trained persons at GP and Block level, who can conduct water quality tests

Thus, the guidelines were not adhered to in letter and spirit regarding engagement of BTs and posting of pump operators, due to which the O&M of piped water supply was likely to suffer once the project period was over.

2.1.12.7 Water supply projects having functionality issues

One of the components of JJM was to develop reliable drinking water sources and/ or augmentation of existing sources to ensure long term sustainability of water supply systems *i.e.* water source, water supply infrastructure, and regular operation and maintenance.

On scrutiny of records relating to the PWS projects and JPI along with departmental officials, Audit observed that the PWS projects, as detailed in **Table 2.1.9**, were either defunct or not functioning properly affecting the provision of required quantity of water to the rural households. Neither the VWSCs nor the RWSS Divisions had taken corrective action for restoration of the defunct projects and augmentation of the existing piped water supply systems.

Table 2.1.9: Details of piped water supply projects with functionality issues

PWS projects	Functional status of the projects	Cause of non-functioning	Impact/ outcome
Nedipadar village (Kandhamal district) and Jhankarpali village (Bargarh district)	The projects constructed at ₹1.48 crore failed to provide required quantity of water. Either yield from source was not assessed before construction or augmentation of the sources was not contemplated.	Insufficient yield from water source and non-augmentation of water sources	189 households could not avail minimum required volume of water. Thus, expenditure of ₹1.48 crore proved to be largely unproductive.
11 villages ²² in Puri and Kandhamal districts	Water supply frequently interrupted for hours/ days together. During beneficiary survey, 298 people opined that voltage fluctuation/ power supply failure was one of the reasons for insufficient water supply.	Power supply failure/ frequent load shedding/no solar panels installed / damaged pipelines	2,251 households did not get regular and long-term water supply.
Saitingia village (Kandhamal district)	The PWS was non-operational. Neither RWSS officials nor VWSC had monitored the pump operation or checked other operational constraints.	Non-engagement of pump operator/ non-arrangement of Self-Employed Mechanic (SEM)	The expenditure of ₹43.44 lakh incurred on the project proved unfruitful. 111 households of the village did not get water supply.
Sripurushottampur and Saragailo villages under Puri district,	Non-repair/ replacement of damaged pipelines	Damaged pipelines	Villagers did not get piped water and the expenditure of ₹2.46

²² **Puri district:** Sripurushottampur, Macchapara, Sripatipur, Buali, Saragailo (Nirmala) and Chandrakot; **Kandhamal district:** Kandibali, Neidipadar, Saitingia, Ladari, Kruttamgarh

PWS projects	Functional status of the projects	Cause of non-functioning	Impact/ outcome
Tikarpada of Malkangiri district, Bhagirathihipur of Balasore district	caused water logging in other villages, resulting in FHTCs getting blocked.		crore, incurred on the construction of the projects in four villages proved to be unfruitful.
Dangarkermali village under Sohela Block	Four solar projects were lying defunct due to missing/ damaged solar panels since February 2024.	Non repair/ replacement of damaged/ missing solar panels by the contractor although same was included in the agreement.	Water supply was completely stopped to these villages and FHTCs to the households were not operational. Expenditure of ₹19.26 lakh incurred on these projects proved unproductive.
Jenapur village in Puri district	Water quality of the PWS, constructed (April 2022) at ₹1.16 crore was not suitable as salinity, turbidity and iron content were beyond BIS standards as indicated in laboratory reports. Beneficiaries did not use water for drinking purposes.	Non taking of mitigation measures to improve quality of water	371 households could not get safe drinking water through FHTCs and the expenditure of ₹1.16 crore incurred, proved largely unproductive.
Than Thana and Jamalpur (Pipili) in Puri district	Retrofitting of PWS to Than Thana' village was abandoned (September 2022) by the contractor after incurring ₹42.85 lakh. The PWS remained incomplete as of August 2024. Another PWS at Jamalpur (cost: ₹23.12 lakh) was not functional due to non-laying of pipeline from the overhead tank.	Non-taking of initiatives by the divisions for completion of PWS project works for more than two years	The households of the villages were deprived of safe drinking water since last two years. The expenditure (₹65.97 lakh) proved to be unproductive due to non-completion of the project.

(Source: Records relating to PWS projects and JPI)

It was also observed that VWSCs of the five test-checked districts were not actively involved in water supply activities like operation and maintenance of in-village water supply schemes, deciding on water supply hours *etc.* This also contributed towards non-supply of required quantity of water to rural households.

The Director, Drinking Water and Sanitation, PR&DW Department accepted (January 2025) the audit observations and assured that steps would be taken to ensure adequate water supply to all households.

2.1.12.8 Inaction on sustainability of water resources

Paragraph 3.5 of the Operational guidelines of JJM prescribe that measures like bore well recharge, rainwater harvesting, increasing water storage and de-

silting should be taken up for ensuring sustainability of water sources throughout the system's design life. VAPs should assess current water availability and sustainability. Both DAPs and SAPs should prioritise sustainability measures for long-term water service.

Scrutiny of records relating to VAPs, DAPs/ DSPs and JPIs in 27 villages, along with FGDs with GP executives and VWSC members revealed that:

1. The DAP of Kandhamal and DSPs of other districts²³ did not have any mention of sustainability measures.
2. In 10 villages, bore well recharge structure was stated to be available in VAP, but it did not exist anywhere, as confirmed during JPI (July-August 2024). The EIC also had no data on such structures.
3. Rainwater harvesting structure was not available in any of the villages of the test-checked districts. During JPI and FGD, the villagers and Panchayat members stated that they did not have any rainwater harvesting plan.
4. The VAPs mentioned that rejuvenation of the existing water bodies of the village was necessary, but no action on such rejuvenation by the RWSS had taken place.
5. In Nedipadar village of Kandhamal, the water sources were not sufficient for yielding water as no sustainability measures, as prescribed in the guidelines, were taken up by RWSS.

Further, Audit also analysed information on source sustainability requisitioned from the EIC and noted the following:

6. Out of 7,284 water sources in the State, only 125 sources were augmented, while 525 (7.2 per cent) were reported as failed due to reasons such as insufficient water and bore well collapse²⁴. As many as 229 projects remained non-functional due to failure of water source. Out of 20 Divisions where sources had failed to yield water, Kalahandi (221), Nabarangpur (112) and Mayurbhanj (45) were the major three divisions with maximum cases of source failure (**Appendix 2.2**). As such, people of the concerned villages could not get piped water under JJM during 2021 to 2025.
7. EIC reported that 123 sources were found to have insufficient water during the mission period and action had been taken for finding an alternate source.
8. Audit observed that all 35 RWSS Divisions had been using Central Ground Water Board (CGWB) Quality and Quantity Block Maps to identify safe ground water blocks and Hydro-

²³ Balasore, Bargarh, Puri and Malkangiri

²⁴ Borewell collapse occurs when the walls of a drilled well or borehole lose stability often due to factors like improper drilling techniques, insufficient casing or geological issues leading to collapse of the well

Geomorphological Maps for planning sources. In spite of that, 648 (525+123) water sources (8.9 *per cent*) had failed.

9. The common format of VAPs did not contain current availability of water sources with their measured yield and their long-term sustainability. The EIC stated that the said information had been collected at the time of preparing the DPR. However, the fact remained that DPR was prepared for distribution network and PWS and not for source.

The EIC stated that all the projects were designed keeping in view the cost effectiveness and sustainability of the projects but, no evidence in support of such claim could be produced to Audit. He also stated that sources were identified by the RWSS, based on inputs given by geologists and thus, no separate certification was made.

The response of EIC on source sustainability showed that the measures were not adequate either at State level or at district/ GP levels for ensuring sustainability of the sources.

The Director, Drinking Water and Sanitation, PR&DW Department reiterated (January 2025) the State's commitment to achieving long-term sustainability of water sources and ensuring uninterrupted safe drinking water supply, even during distress periods in line with JJM guidelines.

Good Practice

Provision of piped water at the hill-top of two Blocks of Malkangiri

During Joint Physical Inspection of the Water Supply Assets in Malkangiri district, it was seen that in Suripada village of the Korukonda Block and Tulasi village of the Mathili Block, one agency M/s Greenco System Private Limited had installed solar energy based water supply system at isolated hill-tops at an elevation of 842 meters and 750 meters above the sea level, respectively.



Photo 1: Solar energy-based water supply system at Suripada village of the Korukonda Block (24 HHs) (26 September 2024)



Photo 2: Solar energy-based water supply system at Tulasi village of the Mathili Block (118 HHs) (29 September 2024)

In Suripada (Korukonda block), all 24 households were provided FHTCs, while in Tulasi (Mathili block), 118 out of 121 households received FHTCs through six of eight sanctioned projects. Joint physical inspection and beneficiary interview confirmed that the agency, with support from RWSS, executed these works under adverse road and climatic conditions at elevations above 750 meters. The effort was commendable as it ensured clean water supply at villagers' doorsteps at hill tops.

Recommendation 4:

The Government may take effective action for expediting completion of piped water supply projects including Mega projects, so that all rural households are provided with FHTCs within the Mission period.

Recommendation 5:

The Government should focus on measures to enhance source sustainability while planning and undertake steps to use technical knowhow to ensure sustainability of projects for their full design period.

2.1.13 Support activities

To achieve the goal of providing FHTC to every rural household by 2024, along with development of water supply infrastructure, there was need to spread awareness and sensitise communities on judicious use of water, community contribution and ownership, build capacities of GP/ VWSC to plan, implement, manage, operate and maintain in-village infrastructure for long term sustainability. For this purpose, the Mission has made provision of up to five *per cent* of annual allocation to the States as support activities fund. The functions to be carried under this component *inter-alia* included IEC activities, human resource development, training and skill development, third party inspection *etc.*

Audit noticed that the Support activities undertaken by the State were not significant. The State had incurred only 2.20 *per cent* of the total allocation, for support activities as discussed under **Paragraph 2.1.11**. There were deficiencies in implementation of activities like IEC, third party monitoring, training and skill development *etc.*, as discussed in the following paragraphs.

2.1.13.1 Non-conduct of IEC activities

IEC activities, one of the key components of the Support Fund aimed to promote behavioral change, raise awareness about protecting and conserving water sources, improve health and hygiene practices, encourage community participation in managing and maintaining water supply systems and water metering to foster a sense of ownership among users. SWSM was to lead IEC plans and would be responsible for embedding of such interventions across the State.

Audit scrutiny of records at the sampled RWSS Divisions for the years 2019-20 to 2023-24 revealed that the Department had spent only ₹22.47 lakh on IEC activities. No records regarding conduct of IEC activities or awareness campaigns on Participatory Rural Appraisal activities, inter-personal communication, behavioral change communication, water security and management were available in the test-checked RWSS Divisions. During interviews of 816 beneficiaries in 40 villages, the beneficiaries stated the following:

- 814 beneficiaries stated that no IEC activities to create awareness had been conducted.
- 796 beneficiaries (98 *per cent*) stated that they were not made aware of the benefits of clean drinking water, methods and benefits of water

conservation, hygiene habits by ISA, any VWSC members or any government officials.

- 731 beneficiaries (90 *per cent*) stated that they were not made aware of any community contribution either by the VWSC/ ISAs or by RWSS officials. Only 24 beneficiaries were aware of community contribution. This showed that the VWSC and the ISAs had failed to mobilise a sense of community ownership amongst people towards in-village water supply infrastructure and its operation and maintenance.

Scrutiny of records and beneficiary interviews in the test-checked districts, corroborated by minimal expenditure on the Support activities, indicated that the State had not conducted sufficient IEC activities for spreading awareness and sensitising communities regarding water conservation, community ownership, *etc.*, for long term sustainability of the water supply projects.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the Government was committed to balancing infrastructure development with community engagement and would ensure that future IEC activities were aligned with the broader objectives of water security and sustainability.

2.1.13.2 *Inappropriate role of Third Party Monitoring Agency*

As per Para 9.6 of JJM operational guidelines, SWSM would empanel Third Party Monitoring agencies based on the Terms of Reference (ToR) issued by the Department/National Mission to check the quality of work executed by the agencies including quality of materials used for construction works.

On scrutiny of records at EIC, RWSS, Audit noticed that one Third Party, M/s TUV SUD South Asia Ltd. (TSSAL), Haryana, had been engaged by the EIC in December 2018 for independent monitoring of existing PWS works. This agency had been granted extension (December 2020) till the engagement of a new agency, on the grounds of substantial workload.

Subsequently, the EIC engaged (December 2021) two firms²⁵ including the earlier firm TSSAL and met the cost of Third Party Quality and Quantity Monitoring from JJM Support Fund. These two agencies were however, providing consultancy service for other State schemes like BASUDHA, OMBADC, DMF, RIDF, *etc.*, while payment to them was made from JJM funds only. Audit observed that while JJM guidelines specifically mandated engagement of third-party inspection agencies for independent inspection of works, the EIC instead engaged third-party consultancy firms for daily supervision and to assist executants in maintaining quality standards during project execution. Further, instead of carrying out independent inspection of works, they were performing supervisory work on daily basis, as seen from the records of SE, RWSS, Puri.

Audit observed that the agencies had been paid ₹27.48 crore from JJM Support activities fund which was inadmissible due to the fact that it was one type of centage²⁶ charge, which was to be met from the State fund.

²⁵ M/s Arkitechno Consultants Pvt. Ltd. (ACPL) for five circles and TSSAL for two circles

²⁶ Centage charges are the charges calculated for a work that the government executes on behalf of another government, a local body, or a private party. Centage charges can include agency charges, quality control, road safety and supervision charges.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that in order to manage the increased workload, RWSS had been outsourcing quality monitoring system termed as Third Party Quality and Quantity Management System. The Third party was to independently monitor the quality of implementation, operation and maintenance of newly sanctioned projects. The reply is not acceptable as the agencies did not provide independent inspection and monitoring of the projects, but assisted the RWSS engineers in performing their works, in contradiction to the JJM operational guidelines.

2.1.14 Water Quality Monitoring and Surveillance (WQM&S)

As per Chapter 10 of JJM Operational Guidelines, drinking water quality was to be monitored by the RWSS, *i.e.* supplier/ agency responsible/ mandated for surveillance or water quality, whereas the surveillance of water quality at grassroots would be the responsibility of the GPs/ rural community. Monitoring of water quality involved laboratory testing and field testing of water samples (using FTK) collected from water sources and FHTCs. For monitoring purpose, the Department had to employ water quality sensors and IoT based monitoring systems. RWSS was to monitor the process through online portal and field visits.

2.1.14.1 Shortage and non-upgradation of water quality testing laboratories

JJM guidelines prescribed use of State/District/Block-level and mobile laboratories for rural water quality monitoring. Laboratories were to be periodically upgraded²⁷ through assessment of manpower, infrastructure, equipment, AMC and testing performance with improvement plans to address the identified gaps.

Audit noticed that the State had 77 water quality testing laboratories. These included one State level, 30 District level and 46 Sub-divisional level laboratories (SDLL). However, there was no mobile laboratory in the State, as of August 2024.

The status of laboratories in five test-checked districts, is given in **Table 2.1.10**.

Table 2.1.10: Status of laboratories in the test-checked districts

Sl. No.	District	Number of Blocks/ sub-divisions	No. of SDLLs set up	No. of laboratories upgraded	No. of laboratories in working condition
1	Balasore	03	02	00	02
2	Bargarh	02	02	00	02
3	Kandhamal	02	02	02	02
4	Malkangiri	02	01	00	01
5	Puri	03	02	00	02
Total		12	09	02	09

(Source: Information furnished by respective RWS&S Divisions and EIC, RWSS, Odisha)

²⁷ As per JJM Guidelines, the activities for WQM&S *inter alia* include strengthening of water quality testing laboratories by setting-up/ upgradation of sub-division laboratories and monitoring by undertaking laboratory assessment and improvement plans.

Audit observed that:

- In all test-checked districts, district level laboratories were functioning as SDLLs. Only two laboratories in Kandhamal district had been upgraded and there was shortage of SDLLs in three districts.
- Neither the district laboratory nor the SDLL had the prescribed testing facilities for water quality tests.

Thus, upgradation and improvement of laboratories was not explored by the EIC, RWSS, despite availability of funds under WQM&S component of JJM.

2.1.14.2 Shortfall in accreditation of water quality testing laboratories

As per Chapter 10 of Operational guidelines of JJM, activities under WQM&S required the laboratories to obtain accreditation²⁸ for drinking water quality testing as per IS/ISO/IEC: 17025. NABL²⁹ accreditation is a process where a laboratory's technical competence is assessed against international standards, while recognition refers to the acceptance of NABL-accredited reports by various bodies and the public. The recognition ensures the accuracy, validity and reliability of a lab's reports.

It was noticed that 34 (44 *per cent*) out of 77 laboratories had neither got accreditation nor recognition from NABL, as given in **Table 2.1.11**.

Table 2.1.11: Status of Recognition and Accreditation of laboratories (March 2024)

Type of Laboratory	Total No.	NABL Accredited	Recognised	Not Accredited/ Recognised
State Level	1	1	–	0
District Level	30	21	0	9
Sub-divisional Level	46	4	17	25
Total	77	26	17	34

(Source: Information furnished by the State Laboratory)

As NABL accreditation signifies competence of laboratories in performing specific types of tests or calibration activities, the lack of accreditation of laboratories in the State cast doubts on their credibility and reliability for water quality testing.

2.1.14.3 Shortage of manpower and defunct equipment in laboratories

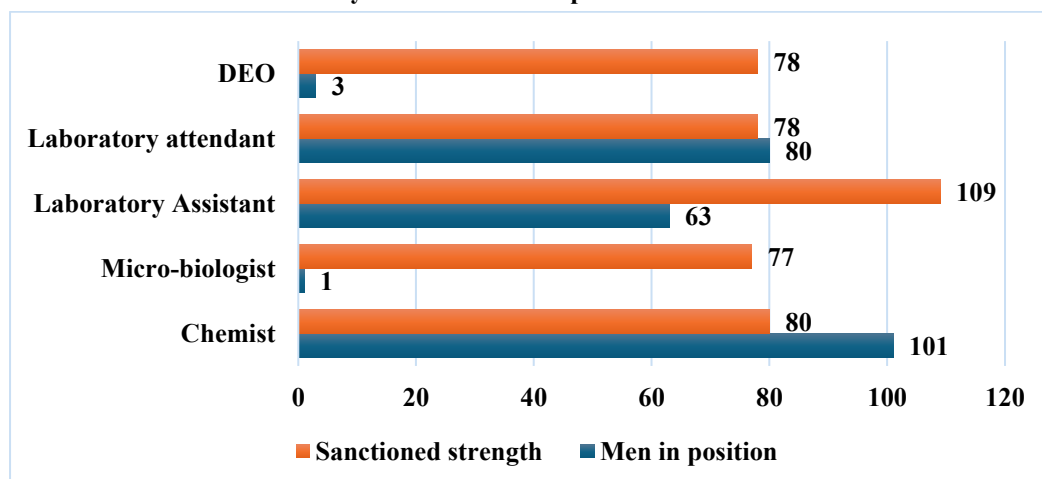
The water testing laboratories in the State had acute shortage of manpower and equipment. Against the sanctioned strength of 422 posts, only 248 (53 *per cent*) were in position. Acute shortage was noticed in key posts like Microbiologists (99 *per cent*), Laboratory Assistants (42 *per cent*) and Data Entry Operators (96 *per cent*).

The position of technical staff of State laboratories is shown in **Chart 2.1.3**.

²⁸ 'Accreditation' is the process of verifying that an institution of programme meets quality standards while 'Recognition' is the official acknowledgement by a national body that an institution, program or qualification is legitimate and fulfills the legal requirements to function.

²⁹ National Accreditation Board for Testing and Calibration Laboratories

Chart 2.1.3: Availability of Technical Manpower in laboratories in the State



(Source: Information furnished by EIC, RWS&S, Odisha)

Audit test-checked nine laboratories (SDLLs) in five test-checked districts and observed that as of September 2024:

- The percentage of vacancy of technical staff ranged between 35 and 50. In laboratories of four test-checked districts (except Kandhamal), 15 out of 31 laboratory personnel had not been imparted any skill upgradation training during the last five years.
- One of the key functions of WQM&S was strengthening of water quality testing laboratories by setting-up/ upgradation of State district/ sub-division/ block/ mobile laboratories and monitoring by undertaking laboratory assessment and improvement plans. The laboratory assessment *inter alia* included mechanism for annual maintenance contract (AMC) for upkeep of equipment. In eight laboratories, as many as 14 required equipment like distillation plant, water purifier, turbidity meter, fluoride meter *etc.*, were lying defunct. In none of the laboratories of the State, AMC was made in the last five years.

Shortage of manpower, lack of training and defunct equipment compromised the quality of water testing in the laboratories. Consequently, there were persistent shortfalls in achieving targets set for sample testing ranging from 101 to 4,749 tests across six³⁰ laboratories.

The Director, Drinking Water and Sanitation, PR&DW Department admitted (January 2025) the shortage of staff and stated that proposals had been initiated for recruitment of staff. The fact, however, remained that the State had failed to provide required manpower in the laboratories, even after five years of implementation of JJM.

2.1.14.4 Inadequate testing of samples

As per JJM Operational Guidelines, SDLLs should test 100 *per cent* water sources under their jurisdiction, once for chemical parameters and twice for bacteriological parameters (pre and post monsoon) in a year. Similarly, district

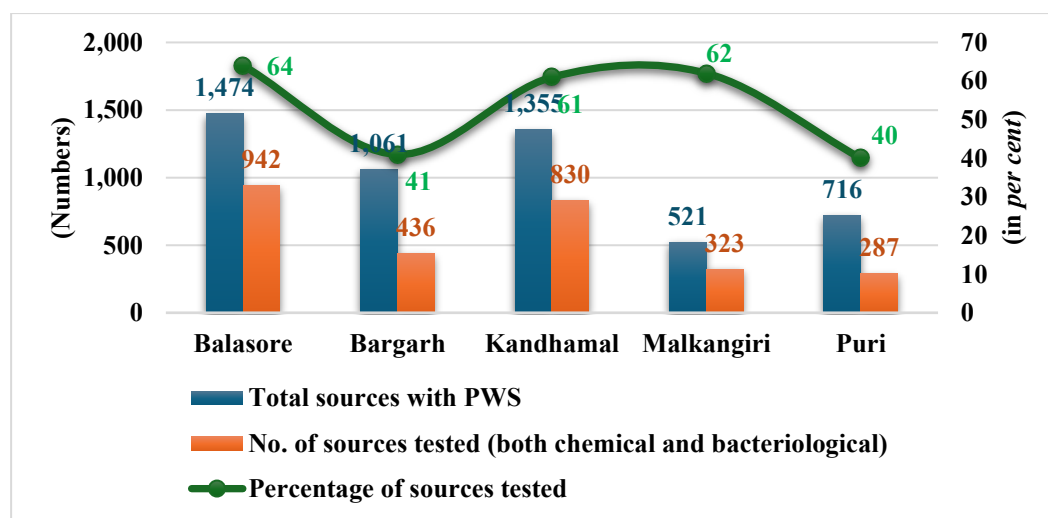
³⁰ Bargarh District Laboratory, Malkangiri District Laboratory, Mathili SDLL, G. Udayagiri SDLL, Baliguda SDLL and Puri DLL

laboratories should test 250 water sources/ samples per month (*i.e.* 3,000 in a year) covering all sources randomly including the positively tested samples referred by SDLL.

Audit noticed that in the five test-checked districts, the District Laboratories tested 250 samples in a month. However, in absence of SDLLs, the district laboratories were required to function as SDLLs and test 100 *per cent* water sources, which was not done.

Chart 2.1.4 shows the results of testing of water sources from PWS Systems in the five test-checked districts (as on 21 October 2024).

Chart 2.1.4: Source-wise water quality laboratory testing reports in selected districts



(Source: JJM web portal)

As can be seen from the above, only 40 to 64 *per cent* of PWS sources were tested by the laboratories in the test-checked districts. The results of testing of PWS sources revealed that 30 PWS sources were contaminated in three districts (Balasore: 3; Malkangiri: 12; Puri: 15). However, no corrective action was taken for any of these contaminated sources.

Thus, the laboratories were not testing the required number of samples prescribed for them under JJM Guidelines. The limited coverage of testing highlights serious gaps in water quality surveillance, undermining the objective of JJM to ensure safe drinking water for all rural households.

The Director, Drinking Water and Sanitation (January 2025) stated that remedial measures were taken in real time, field inspections were conducted and the target of 250 samples per month was achieved. The reply is not convincing as district laboratories were required to test all sources under their jurisdiction in absence of SDLLs.

2.1.14.5 Testing of inadequate number of parameters

As per JJM Guidelines, water testing is vital for ensuring safety, monitoring, supply and detecting contamination and outbreaks, and taking preventive measures. SDLLs were required to test all sources in a block for at least 13 basic parameters (pH, TDS, turbidity, chloride, alkalinity *etc.*), while district and State laboratories were to re-test samples received from lower-level labs for these 13 parameters.

Audit noticed that the sampled District level laboratories and SDLLs were not testing samples for all the prescribed parameters. The testing of parameters ranged between 9 and 14 in district laboratories while as in SDLLs, it was between 8 and 13, as of September 2024, as detailed in **Table 2.1.12**.

Table 2.1.12: Number of water quality parameters checked by the testing laboratories.

Name of the district	Parameters tested	Name of SDLL	Parameters tested
Balasore	13	Soro	10
		Jaleswar	8
Bargarh	10	Padmapur	10
		Bhatli	10
Kandhamal	9	G. Udayagiri	10
		Baliguda	8
Malkangiri	12	Mathili	11
Puri	14	Delanga	12
		Nimapara	13

(Source: Information furnished by respective RWS&S Divisions)

As can be seen from above table, in five test-checked districts, three district level laboratories and eight SDLLs did not adhere to the JJM guidelines for testing of basic parameters. This posed risk of inadequate water quality monitoring and undermined the objective of providing safe drinking water under JJM.

2.1.14.6 Non-adherence to Bureau of Indian standards (BIS) in maintaining water quality

Water quality must be tested at the source within the distribution system and at the consumer end to ensure safety. As per IS 10500:2012 standards, drinking water should meet the prescribed Acceptable Limits. Values beyond the acceptable limit make water unsuitable, but may be tolerated up to the Permissible Limit only in the absence of an alternative source; if even the Permissible Limit is exceeded, the source should be rejected. It was, however, recommended to implement Acceptable Limits.

i) Case Study: As a case study, Audit reviewed the water quality test registers of Krushnaprasad and Brahmagiri Blocks at the Puri District laboratory, which revealed serious deviations from the prescribed standards shown in **Table 2.1.13**.

Table 2.1.13: Water Quality Parameter values vs Acceptable/Permissible Limits in two blocks of Puri district

Parameter	Location & Date	Acceptable Limit (AL)/ Permissible Limit (PL)	Observed Value
Total Dissolved Solids	Jenapur-1, Jenapur GP, Delanga, Puri (29.08.2024)*	AL: 500 mg/L PL: 2000 mg/L	1960.4 mg/L
Chloride	Jenapur-1, Jenapur GP, Delanga, Puri (29.08.2024)	AL: 250 mg/L PL: 1000 mg/L	984 mg/L
	Gaudia Bandha, Manapada GP, Brahmagiri Block (04.11.2023)		1420 mg/L
Total Hardness	Sanagaon, Saraswotipur GP (14.09.2023)	AL: 200 mg/L PL: 600 mg/L	360 mg/L

Parameter	Location & Date	Acceptable Limit (AL)/ Permissible Limit (PL)	Observed Value
	Handiali, Gadaro-dhanga GP (14.09.2023)		692 mg/L
Fluoride	Patapur, Satapada GP, Krushnaprasad Block (05.01.2023)	AL: 1 mg/L PL: 1.5 mg/L	2.26 mg/L
	Aneea, Satapada GP, Krushnaprasad Block (05.01.2023)		1.75 mg/L
	Badajhada, Satapada GP, Krushnaprasad Block (05.01.2023)		2.2 mg/L

(Source: Information furnished by the respective Divisions)

* Dates mentioned are those to which the Reports related

From the above Table, it can be seen that although the Total Hardness and Fluoride content in the water of the two blocks were higher than the Permissible Limit and Acceptable Limit, the same water was being supplied to the households, without any treatment.

During FGD in 10 villages, the Sarpanch and villagers complained about water quality issues such as presence of iron content, total hardness, turbidity, salinity *etc.* in the supplied water. However, no tangible action had been taken by the RWSS Division to improve the quality of water.

In one village Sanagaon of Saraswatipur GP of Pipili Block, Puri, 19 out of 23 beneficiaries stated that they did not use the piped water for drinking or cooking due to excessive hardness which made it difficult to cook rice and dal. For drinking purpose, the beneficiaries collected water from the school tube-well which was at the other end of the village. The GP administration and RWSS were aware of the issue, but no quality control measures had been taken so far.

Despite the adverse impacts on health and usability, neither any Community Water Purification Plant (CWPP) was established in Puri district, nor was any alternate safe water source explored, leaving the users compelled to use unsafe water.

ii) Results of JPI: During JPI in presence of departmental officials, Audit Teams collected water samples from source points existing in in-village water supply infrastructure of 40 villages and got these samples tested at the respective SDLLs. In four test-checked districts, the values of parameters like, total hardness, alkalinity, turbidity, chloride content *etc.*, were above the prescribed standards.

Audit interviewed 816 beneficiaries in 40 villages of the test-checked districts during July to September 2024. Of these 162 people (20 *per cent*) stated that waterborne diseases were frequent in their locality.

iii) Water quality in test-checked schools and AWCs: Audit also visited 19 schools and AWCs of five test-checked districts where the students and the teaching staffs complained about bad taste of water. The staff of these

institutions reported that due to poor water quality, the children were reluctant to drink the supplied water.

Audit findings, corroborated through beneficiary interviews and FGDs with local stakeholders, established that the drinking water quality in the district was not fully safe for consumption. The presence of high Fluoride levels posed risk of skeletal fluorosis and elevated Iron levels affected taste, digestion, palatability and could result in health ailments. Further, the BIS standards for drinking water quality were not followed in letter and spirit by the district authorities.

2.1.14.7 Inadequate water quality monitoring and surveillance

As per JJM guidelines, the activities for water quality monitoring and surveillance *inter alia* include Awareness and education programmes on water quality in schools, Anganwadi Centres, Health Centres, GPs/ PRIs, *etc.*; engagement of communities in surveillance activities, such as mandatory sanitary inspections and enable communities to undertake presumptive testing of water quality using FTKs; sharing the results of water quality testing within community by way of SMS to all the major stakeholders in the community *viz.* Sarpanch, Up-Sarpanch, GP members/ VWSC *etc.* The drinking water quality should be monitored by the RWSS, *i.e.* the agency responsible for water quality, whereas the surveillance of water quality at grassroot level would be the responsibility of the GPs/ rural community.

In this regard, Audit observed that:

1. No awareness campaigns or educational programmes on water quality management and surveillance had been organised by RWSS officials, GPs and/or their sub-committees in schools, AWCs, health centres or GPs during August 2019 to March 2024.
2. Surveillance activities *viz.* mandatory sanitary inspections were not carried out by RWSS officials, GPs and/or their sub-committees.
3. Results of water quality tests were not shared within the community. Results of chemical and bacteriological tests found positive were not uploaded on IMIS of JJM portal.
4. As per JJM guidelines, GP and/or VWSC *etc.*, were to identify, train and appoint five women from the local community to conduct water quality tests using FTKs/ bacteriological vials and report the results. Audit noticed that women from local community were not included to conduct such water quality tests.
5. As per the WQM&S Programme journal for 2024-25 of GoO, as many as 93,613 women were trained for testing water quality using FTK during 2021-22 to 2023-24. In five sampled districts, ₹70.04 lakh was spent on imparting FTK training to women villagers. However, in the test-checked villages, Audit could not find any women trained for using FTK. In the absence of database of trained women at the State level, Audit also could not vouchsafe whether required number of women in all villages had been imparted FTK training.

Thus, the water quality testing and monitoring in the State as well as in five sampled districts was not adequate, as envisaged under the guidelines of JJM.

The Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that remedial measures were being taken in the test-checked villages at the instance of Audit.

2.1.14.8 Installation of Community Water Purification Plant in Groundwater Contaminated Areas

Community Water Purification Plant (CWPP) is a system aimed at treating or improving the physical, chemical or bacteriological quality of water to bring it into compliance with State Board of Health Standards. In order to provide immediate relief in Arsenic, Fluoride, Iron and other heavy metal affected habitations, JJM Guidelines provided that CWPP may be installed to provide 8-10 lpcd as short term measure for drinking and cooking purposes. However, as a permanent measure, safe ground water (from nearby village) or surface water supply based systems were to be established to provide FHTC with service level of 55 lpcd of water. Priority was to be given for provision of potable water in these quality affected habitations, especially with contaminants like Arsenic, Fluoride, Uranium *etc.*

Audit observed that although 19 districts of Odisha had fluoride, arsenic and uranium contamination in ground water, only 46 CWPPs had been set up in eight districts. Out of these, 24 CWPPs were Ion Exchange plants in four districts (Angul, Bargarh, Khordha and Nabarangpur) and the remaining 22 were Electric Defluoridation plants set up in four districts (Bolangir, Cuttack, Mayurbhanj and Nayagarh). These plants covered 41 habitations with population of 23,222. The Government had not set up any CWPP in the remaining locations to purify water.

In the test-checked districts, Audit observed that no CWPP was set up. However, 176 Iron Removal Plants, Fluoride Treatment Plants (88) and 32 Water Treatment Plants (WTP) existed in these districts.

Thus, due to non-installation of adequate number of purification plants, required priority was not given for provision of potable water in the quality affected habitations of test-checked districts.

The Department stated (January 2025) that there were 808 quality-affected habitations in the State. To address this, the State had installed 1,200 iron removal plants and 1,415 fluoride removal plants in these habitations. However, the State did not opt for the CWPP approach, as it was deemed unviable in the long run. The State had been implementing surface-water based mega water projects to ensure safe drinking water.

The reply is not acceptable as mega water projects would cover 55 lakh households out of 96 lakh households (as per 2011 Census) and the remaining population had to depend on SVS and MVS and other water sources for safe drinking water, for which CWPP were required, as envisaged in the JJM Guidelines.

2.1.15 Technological Interventions and Innovations for water supply

Chapter 8 of JJM Operational Guidelines highlights the need for technological interventions to address challenges in rural water supply, such as water pollution, long-distance water transport, power requirements, wastewater disposal, leakages, and misuse of water.

2.1.15.1 *Non-use of Technological Interventions in hard rock/ hilly/ coastal areas and prescribed technology in planning and monitoring*

Operational guidelines on JJM suggested using techniques such as bore-blast, fracture seal cementation, stream blasting, *etc.*, under skilled supervision for accessing ground water in hard rock areas. In hilly areas, especially at higher altitudes, spring-based sources, rainwater harvesting and stand-alone bore-wells were considered economical alternatives.

Audit observed that Odisha, being hard rock terrain, had not adopted any such Technological Interventions to supply drinking water in hilly and hard rock areas. Rain water harvesting projects were also not planned by the Government.

Paragraph 8.4 of JJM guidelines prescribed use of modern technologies like IoT, Geographic Information System (GIS), Hydro-Geo-Morphological Maps³¹ (HGM) to assess ground water potential, digital 3D contour maps for location and identification of gaps in drinking water infrastructure *etc.*

Audit observed that RWSS Divisions in the test-checked districts had not applied technologies/software for prioritising villages under JJM during 2019-2024. Although the EIC stated that HGM maps supplied by National Remote Sensing Centre, Hyderabad were used for identifying groundwater sources, however, the RWSS Divisions of the test-checked districts stated that no such HGM maps were being utilised. Use of prescribed technologies such as Supervisory Control and Data Acquisition (SCADA), sensors, Internet of Things *etc.* apart from the above tools could have resulted in better planning and monitoring mechanism.

Thus, failure of RWSS Division to adopt prescribed technologies under JJM led to weak planning, poor monitoring and compromised the sustainability and quality of water supply in the State. Cases of water leakage and losses in Sripurushottampur and Saragailo (Puri), Tikarpada (Malkangiri) and Bhagiratihipur (Balasore) as discussed in **Paragraph 2.1.12.7** highlight gaps that could have been avoided through use of prescribed technology.

The Director, Drinking Water and Sanitation, PR&DW Department assured (January 2025) that necessary instructions would be issued to the concerned divisions for taking immediate action in this regard.

³¹ Hydro-Geo-Morphological (HGM) maps are tools that integrate geological, hydrological and geomorphological data to assess groundwater potential and inform sustainable water resource management, especially for identifying suitable locations for bore wells and other water infrastructure.

2.1.16 Monitoring

2.1.16.1 *Non-conduct of Water audit*

Paragraph 8.7 of the JJM Operational Guidelines mandated regular Water Audits to minimise losses in the distribution system and enhance the efficiency of water supply. States were required to prepare a comprehensive water budget for each village by assessing total water availability from all sources, both groundwater and surface water and evaluate water usage across domestic, agricultural and industrial sectors. Additionally, intensive awareness campaigns should be conducted to promote water conservation among communities.

Audit noticed that since the inception of JJM, the State had not conducted any Water Audit. Consequently, opportunities to prevent water losses and improve water management efficiency remained unexploited. The VAPs lacked the concept of water budgeting and no awareness campaigns on water conservation were organised in the test-checked divisions by RWSS officials with the help of GPs and their sub-committees.

Absence of Water Audit and water budgeting severely undermined effective water resource management, leading to unchecked losses and inefficient utilisation.

The Director, Drinking Water and Sanitation, PR&DW Department admitted (January 2025) non-conduct of a formal Water Audit since the inception of JJM.

2.1.16.2 *Geo tagging of assets not done*

As per Paragraph 11.1.1 of Operational Guidelines, the data regarding physical progress of various projects, geo-tagging of assets, expenditure made on the projects, functionality status of projects was to be captured on JJM IMIS and kept in public domain. The RWSS was responsible for geo-tagging of assets of water supply schemes under JJM in the State.

Audit observed that:

- Out of 12,634 sources created under JJM in the State, only 9,173 sources (72.6 *per cent*) were geo-tagged, as of September 2024.
- Similarly, in the test-checked five districts, out of 3,381 sources created under the scheme since August 2019, only 2,173 sources (64 *per cent*) were geo-tagged.

Thus, due to non-geo tagging of 27 *per cent* assets, transparency in execution of projects was not ensured by the Divisions.

In reply, the Director, Drinking Water and Sanitation, PR&DW Department stated (January 2025) that the State had been actively implementing geo-tagging of water sources. The reply is not tenable as hundred *per cent* water sources have not been geo-tagged in the State.

2.1.17 Conclusion

In spite of Government's effort to provide potable piped water adequately to every rural household, 31 *per cent* households were yet to be provided with FHTCs. Out of 207 Mega-projects of the State, only two had been completed.

Village Water and Sanitation Committees responsible for planning, execution and operation and maintenance of piped water supply projects had not been formed in 1,378 villages as of July 2024. The existing VWSCs failed to play their assigned roles and responsibilities due to lack of guidance from ISA and monitoring by RWSS Divisions. The DAPs and the SAPs were deficient, as many of the parameters outlined in the JJM guidelines were not included in the plans. Absence of a robust operation and maintenance plan in VAPs/DAPs, adversely impacted sustainability of water supply projects, interrupting safe drinking water supply to the rural households.

There was minimal expenditure on support and WQM&S activities which indicated that performance of the scheme had remained sub-optimal. Water quality management system was also not adequate as all required parameters were not tested and the RWSS laboratories lacked resources to test samples from required points and deliver quality water to rural people.