

Chapter-II

WATER SUPPLY AND SANITATION DEPARTMENT

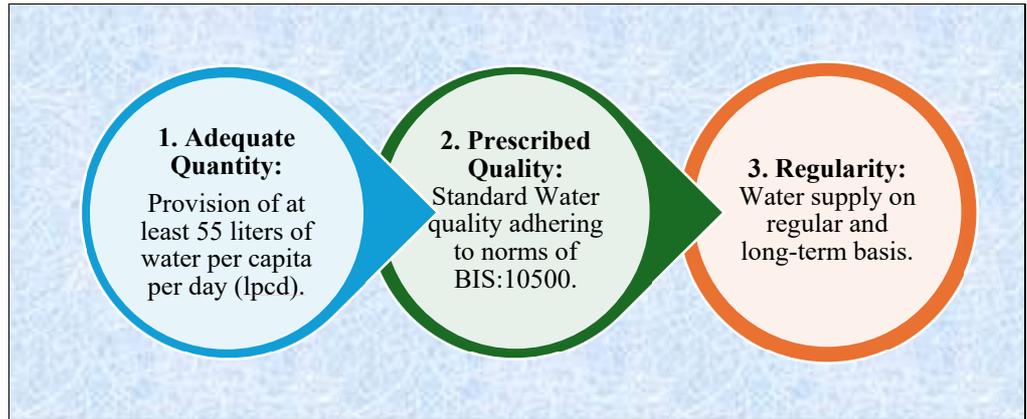
Implementation of Jal Jeevan Mission

The implementation of the Jal Jeevan Mission (JJM) in Punjab encountered several structural and operational challenges. Annual Action Plans were inaccurate and unstructured, failing to account for households already having drinking water access. This led to underutilisation of funds, inability to meet utilisation thresholds and delays in Utilisation Certificates, hindering further release of Central Share. There was an absence of critical planning tools like the State Action Plan (SAP), resulting in unrealistic targets. Over-reliance on over-exploited groundwater with limited adoption of sustainability measures was noticed. Lack of a formal O&M strategy and inadequate handover of schemes to Village Water and Sanitation Committees (VWSC) was observed. Insufficient Block-Level Laboratories and shortage of trained human resources led to inadequate water quality monitoring. Minimal use of Internet of Things (IoT), Geographic Information System (GIS) mapping and solar-powered pumping was noticed affecting sustainable and efficient rural water supply management. Community contributions remained low, reflecting weak community engagement and ownership.

2.1 Introduction

With a growing population and expanding economic activities, there is an increase in demand for water in various sectors *viz.* agriculture, industry, domestic, recreation, infrastructure development, etc. The widening gap between demand and supply is further compounded by other challenges, *viz.* depletion of groundwater caused by over-extraction, poor recharge, presence of contaminants, etc.

Recognising these challenges, the Government of India (GoI) launched (August 2019) the Jal Jeevan Mission (JJM) as a flagship initiative to ensure sustainable access to safe and adequate drinking water. The JJM is a time bound Mission Mode Programme to ensure piped water supply to every rural household in the country through Functional Household Tap Connections (FHTC) by 2024. An FHTC embodies three essential characteristics:



Source: Operational guidelines for the implementation of JJM

The 73rd Amendment to the Constitution of India has assigned the management of drinking water to Gram Panchayats. Under JJM, Gram Panchayats and local communities were to play a pivotal role in planning, implementation, management, operation and maintenance of in-village water supply systems including the drinking water sources. Public Health Engineering Departments (PHED)/Rural Development & Panchayati Raj/RWS Departments, in-charge of rural drinking water in States were to facilitate Gram Panchayats to perform their duties.

At the launch of JJM in August 2019, Punjab had already provided tap water connections to 16,78,558 households, accounting for 48.98 *per cent* of the total 34,26,808 rural households in the State. Punjab reported to have achieved the JJM target of providing functional tap connections to 100 *per cent* rural households by 5 April 2023.

2.2 Components of JJM

JJM is a demand driven, de-centralised and community managed programme. For this purpose, it has incorporated several components in its planning and implementation which enables it to achieve its objectives. The main components of JJM are as under:

- Development of in-village piped water supply infrastructure to provide tap water connection to every rural household;
- Development of reliable drinking water sources and/or augmentation of existing sources to provide long-term sustainability of water supply system;
- Wherever necessary, construction of facilities for bulk water transfer, treatment plants and distribution network to cater to every rural household;
- Technological interventions for removal of contaminants where water quality is an issue;
- Retrofitting of completed and ongoing schemes to provide FHTCs at minimum service level of 55 litres per capita per day (lpcd);

- Provision of support activities i.e., IEC, HRD, training, development of utilities, water quality laboratories, water quality testing & surveillance, R&D, knowledge centre, capacity building of communities, etc.; and
- Any other unforeseen challenges/issues emerging due to natural disasters/calamities which affect the goal of FHTC to every household by 2024, as per guidelines of Ministry of Finance on Flexi Funds.

2.3 Audit Objectives

Audit adopted a result-oriented approach to evaluate the extent to which the Jal Jeevan Mission (JJM) has achieved its goal of providing a sustainable long-term water supply to all rural households of minimum 55 lpcd that meets BIS 10500 quality standards. The objectives of the audit were to ascertain whether:

- financial resources were employed in an economic and efficient manner;
- efficient institutional framework was in place for proper planning, monitoring and sustainability of the provision of at least 55 litres per capita per day drinking water, meeting BIS 10500 quality standards for all households;
- post-operational management of the schemes was in compliance with JJM norms; and
- monitoring of water quality and its mitigation measures were adequate.

2.4 Audit Criteria

The audit findings were based upon the following criteria:

- Operational Guidelines for implementation of JJM, SDG obligations and Standard Operating Procedure for Water Sanitation & Hygiene Standards;
- *Margdarshika*¹ for Gram Panchayat & VWSC to Provide Safe Drinking Water in Rural Households;
- Water Quality Monitoring & Surveillance Framework; and
- Orders issued by the State Government and Central Government for facilitating the implementation of JJM and devolution of powers as envisaged in 73rd Amendment Act of the Constitution of India.

2.5 Audit Scope and Methodology

The audit of Jal Jeevan Mission covered the period from 2019-20 to 2023-24. A 'Performance Audit of National Rural Drinking Water Programme' covering the period from 2012-2016 was conducted during March 2017 to

1 *Margdarshika* is a compilation of guidelines for Gram Panchayats and VWSCs issued by Ministry of Jal Shakti.

February 2018. The findings related to Punjab, as reported in CAG's Audit Report No. 15 of 2018, were also reviewed during the conduct of the present audit of JJM.

This audit of JJM was conducted between July 2024 and December 2024 by selecting four Districts² (out of 23) by adopting Stratified Random Sampling Method on the basis of Functional Household Tap Connections (FHTC). In these selected Districts, nine blocks³ covering 21 villages⁴ were selected by adopting the Simple Random Sampling Method. In addition to it, in these 21 villages, a beneficiary survey was carried out, covering 428 households.

Department of Water Supply and Sanitation (DWSS) is the nodal department for the implementation of Government of India's flagship programme JJM in Punjab. During audit, records of the Mission Director JJM, eight Executive Engineers, Water Supply & Sanitation Divisions having jurisdiction in the four selected Districts and the Executive Engineer Water Quality were test-checked.

An entry conference was held on 4 September 2024 with the Principal Secretary to Government of Punjab, Department of Water Supply and Sanitation wherein audit objectives, scope, criteria and audit sample were discussed.

The exit conference was conducted on 25 February 2025 with the Principal Secretary to the Government of Punjab, Department of Water Supply and Sanitation wherein audit findings were discussed. The replies given during the exit conference and subsequently received in May 2025 have been included in the report at relevant places.

2.6 Audit Findings

The audit findings have been categorised into the following five section:

- Financial Management
- Planning and Monitoring
- Post Operational Management and Sustainability
- Water Quality Monitoring and Surveillance
- Results of Survey

² (i) Ludhiana; (ii) Pathankot; (iii) Sangrur; and (iv) Tarn Taran.

³ (i) Ludhiana = Ludhiana-2, Pakhowal, Sidhwan Bet; (ii) Pathankot = Pathankot, Gharota; (iii) Sangrur = Andana, Sunam; and (iv) Tarn Taran = Chohla Sahib, Patti.

⁴ (i) Ludhiana-2 = Sasrali, Chak Kalan, Gadowal; (ii) Pakhowal = Narangwal, Kailey, Nangal Kalan; (iii) Sidhwan Bet = Khursaidpur, Sadarpura, Swaddi Khurd; (iv) Pathankot = Kuther, Napwal; (v) Gharota = Jakror, Dibku; (vi) Andana = Rampur Gujran, Chahte Gobindpura; (vii) Sunam = Chhajli, Ghasiwala; (viii) Chohla Sahib= Raniwala, Wariah; and (ix) Patti= Bangla Rai, Ubhoke.

2.6.1 Financial Management

With a view to achieve the vision of Jal Jeevan Mission, aimed at providing potable drinking water to rural communities, efficient financial management is crucial for ensuring timely allocation and effective utilisation of funds. This demands robust financial planning, systematic budgeting and rigorous monitoring. Preventing delays, underutilisation and misallocation of resources is essential for optimising fund usage and successfully meeting the Mission's objectives.

2.6.1.1 Funding and Expenditure under JJM

As per Paragraph 7.5 of the JJM Operational Guidelines, States were required to develop a Five-Year State Action Plan (SAP), outlining annual targets for providing Functional Household Tap Connections (FHTC) along with a corresponding financial roadmap. These targets of FHTCs were to be established through a structured planning process, beginning at the village level with Village Action Plans (VAP) based on re-verified baseline data and community needs. These plans were then to be consolidated at the district level and further aggregated into the SAP, as detailed in **Paragraph 2.6.2.2**.

As per Paragraph 7.5.3 of the Operational Guidelines of JJM, the Annual Action Plan (AAP) of the State was to emerge from the approved SAP. The AAP was to include an annual fund requirement by pooling all the available resources⁵. The funding of JJM was to be shared between the Government of India (GoI) and the Government of Punjab (GoP) in the ratio of 50:50. The allocation of Central Share was based on discussions with National Jal Jeevan Mission (NJJM) for finalisation of the AAP submitted by the State. The annual Central Share allocation was to be released in two equal instalments, each divided into two tranches, depending upon the State's fund utilisation, as detailed below:

- The first tranche of the first installment was to be released after adjusting the excess opening balance beyond 10 *per cent* of the previous year.
- The second tranche of the first instalment was to be released automatically once 80 *per cent* of available funds (opening balance + first tranche) was utilised.
- Any balance from the first installment was to be released after submission of Utilisation Certificates (UC) by the State showing 60 *per cent* utilisation of available Central Share.
- The first tranche of the second instalment was to be released upon submission of provisional UC for the current year showing at least 60 *per cent* utilisation, report of the Accountant General preceding the

⁵ Funds received from Center, State, MPLADS, MLALADS, DMDF, CSR, donations, etc.

previous year and Statement of Accounts of previous year audited by CAG's empaneled CA along with final UC for the previous year.

- The second tranche of the second instalment was to be released automatically once 80 per cent of total available funds (Central and State Share) were utilised.

The details of allotment of funds as Central and State Share and expenditure during the period 2019-20 to 2023-24 is given in **Table 2.1**.

Table 2.1: Allotment, release of Central and State Share and Expenditure

(₹ in crore)

Year	Opening Balance (Centre)	Central Share approved	Central Share released	State Share released	Expenditure			Unspent balance (State)	Unspent balance (Centre)
					Centre	State	Total		
2019-20	102.91 ⁶	227.46	227.46	78.20	73.27	78.20	151.47	0.00	257.10
2020-21	257.10	362.79	0.00	152.77	146.74	152.77	299.51	0.00	110.36
2021-22	110.36	1,656.39	402.24	265.70	247.83	265.70	513.53	0.00	264.77
2022-23	264.77	2,403.46	0.00	220.70	264.80	210.69	475.49	10.01	-0.03
2023-24	-0.03	479.02	119.76	315.19	103.79	166.43	270.22	148.76	15.94
Total		5,129.12	749.46	1,032.56	836.43	873.79	1,710.22		

Source: Website- <https://ejalshakti.gov.in/>

As is evident from **Table 2.1**, in addition to the opening balance of ₹ 102.91 crore, against the allocation of ₹ 5,129.12 crore, the State could avail Central Share of ₹ 749.46 crore (15 per cent) only during the period 2019-20 to 2023-24.

The State's inability to fully utilise allocated funds stemmed from the inaccurate preparation of Annual Action Plans (AAP), which were prepared in the absence of re-verified baseline data, Village Action Plans (VAP) and the State Action Plan (SAP) and inflated reporting. Therefore, despite targeting of 17.48 lakh FHTCs under JJM during 2019-2024, the SWSM had reported (April 2023) the State to have 100 per cent coverage by providing 5.55 lakh FHTCs only, as discussed in **Paragraph 2.6.2.3(a)**. In addition, the Ministry of Jal Shakti attributed (November 2024) short claiming of the allocated Central Share by the State to non-submission of documents required for its release as per JJM guidelines.

The inaccurate coverage report of targeted FHTCs by the State and lack of submission of requisite documents led to non-utilisation of allocated Central Share during 2019-2024, as discussed below:

- In 2019–20, the launch year of JJM, fund allocation was not based on the AAP; instead, ₹ 227.46 crore was released unconditionally by the GoI as Central Share.

⁶ According to Paragraph 7.4 of Operational Guidelines of JJM, unspent Central Share of NRDWP components amounting to ₹102.91 crore was carried forward as JJM's opening balance in 2019.

- At the commencement of 2020-21, the State had an unspent balance of ₹ 257.10 crore from 2019-20, which exceeded ₹ 90.70 crore (25 per cent of ₹ 362.79 crore) that was due for release as first tranche of the first instalment of 2020-21. Thus, due to insufficient fund utilisation, GoI withheld further release.
- For 2021–22, against an approved allocation of ₹ 1,656.39 crore, ₹ 414.10 crore was due as the first tranche. GoI released only ₹ 402.24 crore i.e., short by ₹ 11.86 crore. The State could utilise 48 per cent (₹ 247.83 crore) of the available ₹ 512.60 crore (₹ 110.36 crore + ₹ 402.24 crore), leading to non-releases of subsequent tranche/instalment.
- In 2022–23, due to availability of Central Share with the State, it did not seek additional Central Share, and no release was made by GoI. However, by the end of 2022-23, of ₹ 732.61 crore available with the State, it had spent ₹ 732.64 crore.
- For 2023–24, GoI released ₹ 119.76 crore as the first tranche of first instalment against an allocation of ₹ 479.02 crore. But the State submitted its UC in October 2024 i.e., after the close of financial year, resulting in non-release of further Central Share. However, as of March 2024, of the Central Share, there was an unspent balance of ₹ 15.94 crore.

The Government in its reply (May 2025) stated that notional allocation approved by GoI were substantially higher than the amounts proposed in AAPs submitted by the State. Regarding short utilisation of funds, reiterated the facts that the funds could not be utilised as planned due to unforeseen reasons including COVID-19 pandemic.

Given that the Central allocation was finalised during the meetings held for the approval of the AAPs, non-availing of allocated Central Share could be attributed mainly due to lack of absorptive capacity of already released Central Share.

2.6.1.2 Delay in Release of Funds

As per Paragraph 7.5.3 of the JJM Operational Guidelines, fund release to States begins in April, following consultations on Annual Action Plans (AAP) submitted by States in February. Further, as per Paragraph 7.9 of Operational Guidelines of JJM, State was required to transfer the funds released by the Government of India (GoI) from State Treasury to the Single Nodal Account (SNA⁷) of State Water and Sanitation Mission (SWSM) within 15 days, along with the corresponding State Share.

⁷ A dedicated bank account in a scheduled commercial bank designated to “Single Nodal Agency” by the State Government.

Short/Delayed Release of Matching State Share

The State was initially required to transfer the Central Share along with the matching State Share to the SNA within 15 days. Following a procedural revision in February 2023, the Central Share was released directly by GoI to the SNA. Under the revised norms, the State was required to transfer matching State Share to the SNA within 30 days of receiving the Central Share. Failure to do so would attract an interest penalty of seven *per cent* per annum on the delayed amount, effective from 1 April 2023, which was to be deposited into the Consolidated Fund of India.

Status of Central Share received from GoI and release of matching State Share by GoP during 2021-2024 to the SNA was, as detailed in **Table 2.2**.

Table 2.2: Transfer of matching State Share against Central Share

(₹ in crore)

Year	Receipt of Central Share in SNA		Transfer of matching State Share in SNA		Delay in release of State Share beyond	Interest accrued with effect from 1 April 2023 on delay beyond			
	Amount	Date	Amount	Date	15 Days	30 Days	Amount		
2021-22	402.24	13-12-2021	08.75	27-05-2022	150	-	-		
			33.18	07-06-2022	161	-	-		
			4.07	21-06-2022	175	-	-		
			41.24	23-06-2022	177	-	-		
			11.48	29-06-2022	183	-	-		
			123.00	11-08-2022	226	-	-		
			77.81	08-09-2022	254	-	-		
			35.37	20-12-2022	357	-	-		
			4.19	27-12-2022	364	-	-		
			16.28	29-03-2023	456	-	-		
-	-	Amount	Date	30 Days	-	-			
-	-	19.13	26-06-2023	530	56	0.21			
-	-	18.38	04-07-2023	538	64	0.23			
Total Released			392.88	-	-	-	0.44		
Not released up to 31.03.2024			9.36	-	-	335	0.60		
2023-24	113.77	13-10-2023	15.00	14-11-2023	2	2	0.01		
			5.99	16-10-2023	23.26	29-11-2023	17	17	0.08
					15.00	30-11-2023	18	18	18.00
					13.50	26-12-2023	44	44	44.00
					3.00	23-02-2024	103	103	103.00
Total			69.76	-	-	-	0.31		
Not released up to 31.03.2024			44.01	-	-	140	1.18		
2023-24	5.99	16-10-2023	-	-	-	-	-		
Not released up to 31.03.2024			5.99	-	-	137	0.16		
Grand Total			-	-	-	-	2.26		

Source: Details of transactions occurred in SNA Bank Account.

Audit observed that:

- Against the Central Share of ₹ 402.24 crore received on 13 December 2021 in the State Consolidated Fund, the Government of Punjab (GoP) released only ₹ 392.88 crore between May 2022 and July 2023 with a significant delay of up to 538 days. The State Share was also short by ₹ 9.36 crore as compared to the Central Share. This was primarily because of the State's inadequate planning, which is evident from the fact that during 2020-21 and 2021-22, the SWSM had targeted 16.47 lakh FHTCs, but only 4.76 lakh FHTCs were provided during these two years as by then 12.10 lakh households had already arranged their own drinking water and thus did not require FHTCs under JJM.
- Of these ₹ 392.88 crore, ₹ 37.51 crore was released after 1 April 2023, which attracted an interest liability of ₹ 0.44 crore and non-release of remaining matching State Share of ₹ 9.36 crore up to 31 March 2024 attracted additional interest liability of ₹ 0.60 crore.
- Similarly, against Central Share of ₹ 113.77 crore received on 13 October 2023, the GoP released ₹ 69.76 crore only as the matching State Share with delays ranging between 2 and 103 days. This delay beyond 1 April 2023 attracted an interest liability of ₹ 0.31 crore. The matching State Share of ₹ 44.01 crore that remained un-released up to 31 March 2024 also attracted interest liability of ₹ 1.18 crore.
- Further, non-release of matching State Share of ₹ 5.99 crore till 31 March 2024, which was due for release against the Central Share of ₹ 5.99 crore received on 16 October 2023 also resulted in interest liability of ₹ 0.16 crore.

As a result, in violation of JJM Operational Guidelines, matching State Shares were released in piecemeal rather than lump sum, with delays of up to 538 days, thereby creating an interest liability of ₹ 2.26 crore. Defective planning pushed the State into a vicious cycle of short utilisation of funds, causing it to miss both key prerequisites for subsequent Central Share releases: (a) achieving the required utilisation thresholds, and (b) timely submission of Utilisation Certificates.

However, the DWSS admitted (February 2025) delayed release of matching State Share in comparison to Central Share and also attributed the delay in release of funds to the financial progress.

2.6.1.3 Inadmissible Expenditure

As per Paragraph 7.10 of the Operational Guidelines of JJM, the State Government and SWSM must ensure that inadmissible expenses, such as cost escalation, tender premium, centage charges, land or vehicle purchases,

building construction/renovation, excess expenditures and salaries, are not charged to Central Share. Additionally, no expenditure on O&M viz. payment of electricity bills related to water works, etc. will be made.

Audit of data made available through Integrated Management Information System (IMIS) revealed that during 2019-2024, from the expenditure incurred on works/items in respect of 1,660⁸ schemes, ₹ 1.92 crore were inadmissible, as detailed in **Appendix-2.1**. This expenditure was reported to have been incurred on demonstrating the desirable service level for three months before handing over the scheme to VWSCs (known as Gram Panchayat Water and Sanitation Committees) under the provisions of World Bank Project. The expenditure incurred on Operation and Maintenance of the scheme for three months was as per the provisions of the World Bank Project, which was not applicable to funding under JJM. Thus, the expenditure incurred in violation of the Operational Guidelines of JJM was not admissible.

The Government stated (May 2025) that at the time of launch of JJM, Punjab was already implementing the World Bank-funded project, which permitted expenditure during a three-month trial period prior to the transfer of completed scheme to the Gram Panchayat Water and Sanitation Committees (GPWSC). Subsequently, erstwhile NRDWP was also subsumed into JJM and all works approved under NRDWP were formally integrated into the JJM. Accordingly, the guidelines governing these projects remained applicable.

The response is not acceptable, as the provisions under the World Bank Project and NRDWP were to be complied with using the respective project-specific funds. Since the JJM operational guidelines do not contain any such provision, such expenditure remained inadmissible.

2.6.2 Planning and Monitoring

Under JJM, States were to plan for achieving drinking water security and to provide FHTC to every rural household by 2024. For the effective planning, implementation, monitoring, management, operation and maintenance, every village was reckoned as a unit.

2.6.2.1 Non-Verification of Baseline Data

As per Paragraph 3.5 of Operational Guidelines of JJM, to achieve the objective of JJM, re-verification and firming of Baseline Data of household tap connections by States was required before March 2020 and reporting the same on IMIS of the Department/National Mission.

⁸ 1,079 Single Village and 581 Multi-Village.

Audit observed that the re-verification of Baseline Data, that was crucial for effective planning and preparation of Village Action Plans (VAP), was required to be completed by March 2020. However, the household survey was planned by the State Water Sanitation Mission (SWSM) in December 2020, nine months after the required timeline.

It was further seen that despite having a plan to conduct a survey to gather Baseline Data, the SWSM rather decided in July 2023 not to get it conducted, as the State by then had reported 100 *per cent* FHTC coverage. Baseline data was available as IMIS which was to be reverified as per Operational Guidelines of JJM. Although the reverification was planned nine months after the required timeline, yet the same was not done.

The Government stated (May 2025) that prior to the preparation of estimates, baseline data was re-verified for each new work, along with topographical surveys. These were further validated by the respective GPWSCs.

The response indicated that the Baseline Data remained dated as the information for taking up specific works were only re-verified. Re-verification and firming of Baseline Data of household tap connections was essential for accurate and effective planning and preparation of VAPs, which were foundational to formation of SAP.

2.6.2.2 Non/Delayed Preparation of Action Plans

As per Operational Guidelines of JJM, every village was reckoned as a unit for planning, implementation, monitoring, management, operation and maintenance. To provide FHTC to every rural household, Village Action Plan (VAP) was to be prepared⁹ based on Baseline survey, resource mapping and felt needs of the village community. The VAPs of all villages were to be aggregated in District Action Plans (DAP) and DAPs of all Districts in the State Action Plan (SAP). Further, State was to prepare an Annual Action Plan (AAP) in the month of February each year in consonance with SAP.

Audit noticed that out of 11,977 villages, VAPs of 11,877 villages were prepared by the respective Gram Panchayats by the end of March 2024, but these VAPs:

- were prepared without reverification of Baseline Data;
- were mostly completed after 20 May 2020 i.e., after submission of AAP for the year 2020-21; and

⁹ The VAPs were to be prepared by the Gram Panchayat or its sub-committee i.e., VWSC/Paani Samiti/User Group, etc. with support from ISA, PHED/RWS Department and DWSM.

- were not submitted to the respective District Water & Sanitation Mission (DWSM) for aggregation into DAPs, thereby preventing the formulation of the SAP.

Audit observed a similar situation in the test-checked 21 villages, as none of the VAPs was completed prior to 24 April 2022 (the date of submission of AAP for the year 2022-23) and no VAP was submitted to DWSM.

The Government reiterated (May 2025) that all components of the SAP had been addressed by the Department, either through the 4SAP¹⁰ or through other measures undertaken from time to time.

The reply was not tenable as 4SAP was primarily focused on monitoring SDG indicators and had a completely different structure than the one prescribed under JJM for SAP. However, the Department failed to conduct re-verification of the baseline data to form basis for preparation of VAPs, which were to be aggregated to DAPs and ultimately to SAP.

2.6.2.3 Preparation of Annual Action Plans

As per Paragraph 3.6.1 of Operational Guidelines of JJM, the Annual Action Plan (AAP) of States were to emerge from the approved State Action Plan (SAP) firming up the district-wise physical and financial targets.

As discussed in the previous paragraph, the State Water and Sanitation Mission (SWSM) had not prepared the SAP. As such, the AAPs did not emerge from the SAP, as was envisioned under JJM. Further, these AAPs had inconsistencies with reference to the Baseline Data of households having drinking water facility, as discussed in the succeeding paragraph.

(a) Preparation of incorrect Annual Action Plans

As per Operational Guidelines of JJM, a Village Action Plan (VAP) was to be prepared based on Baseline survey, resource mapping and felt needs to ensure provision of FHTC for all rural households. These VAPs were to be consolidated into DAPs, which were further to be integrated into the SAP. The State would then prepare AAPs each February in alignment with the approved SAP.

Audit noticed that the SWSM prepared AAPs without having prepared the SAP and re-verifying Baseline Data. As a result, AAPs were based on unverified

¹⁰ 4SAP was primarily focused on SDGs and included funding from NRWDP, NABARD, World Bank, and Swachh Bharat Mission (Gramin) and did not address key JJM-specific activities prescribed for SAP, such as water security plans, human resource requirements, ISAs, IEC activities, water quality laboratories, third-party inspections, and O&M provisions. Further, the 4SAP also lacked the necessary Village, Block and District-wise details, making it an insufficient substitute for the JJM-mandated SAP.

data, leading to inflated projections, which were also got approved from the National Jal Jeevan Mission (NJJM) without validation.

As per Ministry of Jal Shakti, at the launch of JJM, the SWSM identified 34.27 lakh rural households in Punjab, out of which 16.79 lakh already had FHTCs. Therefore, 17.48 lakh households were yet to receive FHTCs under JJM. Based on this, on the proposal of SWSM, for providing 17.48 lakh FHTCs, a Central Share of ₹ 5,129.12 crore was approved, as detailed in **Table 2.1**. However, the SWSM reported achieving of this target by incurring only ₹ 1,710.22 crore, which included Central Share of ₹ 852.37 crore.

Evidently, in the absence of VAPs and Baseline Data re-verification, the SWSM overlooked 11.27 lakh households that had arranged their own drinking water source without any assistance which were initially proposed for coverage under JJM but later incorrectly included in FHTC coverage reports, without actually providing them with piped drinking water from water supply schemes of SWSM leading to preparation of inflated proposals. Therefore, despite estimating the target of 17.48 lakh FHTCs to be covered under JJM during 2019-2024, the SWSM by providing FHTCs to only 5.55 lakh households under JJM reported (April 2023) the State to have 100 *per cent* coverage.

The Government stated (May 2025) that the State had declared 100 *per cent* coverage in accordance with the guidelines, which allowed and recognised private household tap connections as FHTCs. The IMIS portal also accepted the data entry, which ultimately led to the declaration of Har Ghar Jal (HGJ) status. Additionally, it was submitted that prior to the preparation of estimates, baseline data was re-verified for each new work, along with topographical surveys. These were further validated by the respective Gram Panchayat Water and Sanitation Committees (GPWSC).

The reply of Government could be seen in the light of the fact that AAPs prepared were incorrect, which was evident from the fact that the State had achieved the 100 *per cent* coverage status by providing 5.55 lakh FHTCs only, whereas the planned coverage was for 17.48 lakh FHTCs under JJM during 2019-2024.

(b) Delay in submission of Annual Action Plans

Paragraph 7.5.3 of Operational Guidelines of JJM stipulated that every year, States were required to prepare an AAP in the month of February, in consonance with SAP and submit the same online to National Jal Jeevan Mission (NJJM). The AAPs were to be approved by DDWS/NJJM based on consultation with the States in the month of March/April so that release of fund to States could begin from the month of April.

However, GoP submitted all the AAPs with delay during 2019-2024 as detailed in **Table 2.3**.

Table 2.3: Delay in submission of Annual Action Plans

Year	Targeted date of submission	Date of submission of AAP	Date of approval of AAP	Delay in submission* (Days)	Date of release of funds	Delay in release of funds (Days)
2019-20	February of preceding financial year	05-03-2019	28-03-2019	5	28-08-2019	119
2020-21		20-05-2020	24-06-2020	81	Not released	-
2021-22		19-04-2021	02-07-2021	49	01-12-2021	214
2022-23		20-04-2022	14-06-2022	50	Not released	-
2023-24		14-03-2023	20-03-2023	14	10-10-2023	162

Source: Departmental data

*Delay calculated from the last day of February i.e., 28th of February

As is evident from **Table 2.3**, none of the AAPs were submitted within the given timeline during 2019-2024 and the delay ranged from 5 to 81 days. Non-release and release of Central Share from GoI with delay of 119 to 214 days is also evident.

The Government stated (May 2025) that while the operational guidelines advised submission of AAPs in February, the GoI typically issued the AAP templates thereafter. Punjab had consistently submitted AAPs in line with the actual timelines communicated by NJJM. Moreover, the release of funds was linked to utilisation and compliance with documentation, not merely AAP approval dates. This broader context should be considered when evaluating delays.

The supporting documents for revised timelines for submission of AAPs as mentioned in the reply were neither found on the records nor were furnished along with the reply.

2.6.2.4 Short Collection of Community Contribution

The JJM aimed at inculcating a sense of ownership and responsibility among communities towards the community assets created by the Government. To achieve this, Paragraph 6.1.2 of the Operational Guidelines of JJM, mandated communities to contribute¹¹ to the capital cost¹² of in-village piped water supply and source development, at the rate of five *per cent* in hilly, forested, NE and Himalayan areas or villages with over 50 *per cent* SC/ST population, and 10 *per cent* in all other villages. In addition to this, at least 80 *per cent* of households must show willingness and contribute for the scheme to proceed.

Audit noticed that despite these clear guidelines of JJM (December 2019), the DWSS ordered (May 2020) to continue the previous practice (being followed under World Bank funded projects) of collecting contributions at flat rates of

¹¹ Self Help Group (SHG) contributions formed part of the community share.

¹² Capital cost, including expenses for retrofitting to meet JJM standards and developing additional infrastructure such as cattle troughs, washing blocks and rainwater harvesting systems.

₹ 800 per general category household and ₹ 400 per SC household in all villages. These rates were reduced to ₹ 400 and ₹ 200 per general/SC household in such villages with over 50 *per cent* SC population or those located in *Kandi*, *Border*, or *Waterlogged* areas. The amount of community contributions becoming due in the test-checked Districts and collection made under JJM is detailed in **Table 2.4**.

Table 2.4: Community contribution due and recovered

(₹ in crore)

District	Capital Cost	Contribution due as per norms fixed by		Actually Collected	Short collection as per norms fixed by	
		JJM	DWSS		JJM	DWSS
Ludhiana	16.21	1.27	3.31	0.18	1.09	3.13
Pathankot	9.59	0.73	0.27	0.16	0.57	0.11
Sangrur	17.26	1.68	1.80	0.42	1.26	1.38
Tarn Taran	30.14	2.92	1.29	0.25	2.67	1.04
Total	73.20	6.60	6.67	1.01	5.59	5.66

Source: Departmental data

As is evident from **Table 2.4**, the actual amount of community contribution collected by the DWSSMs from the beneficiary communities in the test-checked Districts was short by ₹ 5.59 crore with reference to the rates prescribed under JJM. The collection fell short by ₹ 5.66 crore, as compared to the flat rates fixed by the DWSS as well.

These significant shortfalls not only indicated non-compliance with JJM guidelines but also defeated the very objective of community contribution aimed at inculcating a sense of ownership and responsibility towards the community assets created by the Government.

The Government reiterated (May 2025) that under earlier World Bank projects, community contribution was not mandatory for schemes under ₹10 lakh. With the advent of JJM, contributions were being systematically collected based on fixed State-level norms and the shortfall in contributions was being met through State support.

The Government's response that community contribution was not mandatory under World Bank-funded projects was not in line to the audit observation. Further, the assertion that contributions were being collected in accordance with norms prescribed by the State Government was not factually correct, as there was a shortfall in the collection of community contributions amounting to ₹ 5.66 crore. Funding this shortfall through State support was inconsistent with the applicable guidelines, as it defeated the fundamental objective of fostering a sense of ownership and responsibility among community members towards the assets created under the programme.

2.6.3 Post-operational Management and Sustainability

Effective post-operational management and sustainability are critical for ensuring long-term success of water supply schemes implemented under the JJM. The JJM¹³ emphasised having an Operation and Maintenance (O&M) plan, handing over of commissioned Water Supply Schemes to VWSCs for O&M, taking measures like rainwater harvesting, artificial/borewell recharge and watershed management for source sustainability, community-based water management, technological innovations, and convergence with other programs to achieve the overarching goal of providing FHTCs with reliable and sustainable water supply.

2.6.3.1 Absence of Operation and Maintenance Plan and Non-handing Over of Completed Schemes to VWSCs

Paragraph 5.2 (xvii) of the Operational Guidelines of JJM mandated the Apex Committee to develop an Operation and Maintenance (O&M) strategy, including the establishment of monthly tariffs or user charges, to ensure the financial sustainability of water supply schemes. Additionally, State Governments were required to transfer all water supply schemes to Village Water Sanitation Committee (VWSC) to promote community ownership, empower local communities and ensure long-term water security.

Audit noticed that the Apex Committee had not developed any formal strategy or plan for the O&M of the water supply schemes under JJM. However, out of total 2,173 water supply schemes, only 1,459 (67 per cent) schemes were handed over to the VWSCs as of February 2025. As such, 714 schemes (33 per cent) were yet to be handed over to the VWSCs and were being managed by the Department. Incidentally, the O&M expenditure amounting to ₹ 1.92 crore was denied (February 2025) by the NJJM as the expenditure on O&M for demonstrating the desirable service level for three months before handing over the scheme to VWSCs was not permissible under JJM.

Similarly, in the test-checked four Districts, 35 per cent of the commissioned water supply schemes were yet to be handed over to VWSCs, as detailed in **Table 2.5**.

Table 2.5: Details of water supply schemes not handed over to VWSCs

District	Total schemes	Commissioned schemes	Schemes handed over to VWSCs	Percentage	Schemes yet to be handed over	Percentage
Ludhiana	177	171	73	42.69	98	57.31
Pathankot	45	43	42	97.67	01	2.33
Sangrur	77	71	49	69.01	22	30.99
Tarn Taran	89	88	78	88.64	10	11.36
Total	388	373	242	64.88	131	35.12

Source: Departmental data

¹³ Paragraph 6.1 of the JJM Operational Guidelines.

From **Table 2.5**, it is evident that out of a total of 373 commissioned water supply schemes, only 242 (65 *per cent*) schemes were handed over to the VWSCs, leaving 35 *per cent* of the schemes still being managed by the Department.

The absence of an O&M strategy and non-handing over of commissioned water supply schemes to the VWSCs undermines the financial sustainability and absolves the community's involvement in managing and sustaining the water supply schemes, defeating the key objective of JJM to that extent.

The issue of non-preparation of O&M plan was also discussed as Paragraph 4.5.1 of Union Government (Civil) Report No.15 of 2018 (Performance Audit) of National Rural Drinking Water Programme.

The Government stated (May 2025) that Punjab took early action by notifying Model Byelaws in 2015 and implementing Tripartite Agreements for sustainable O&M. These laid the foundation for community ownership and role clarity. As of March 2025, the O&M Policy had been formally approved by the SWSM. The Government further stated that handing over of scheme to VWSCs was an ongoing process, with 1,548 schemes already transferred. Remaining schemes were either stabilising or pending due to outgoing GP resistance.

The O&M policy was approved by the SWSM in March 2025. The delay in handing over of schemes completed prior to April 2024 reflected lack of timely action by the State in involving community for O&M of the water supply schemes.

2.6.3.2 Persistent Reliance on already Over-exploited Groundwater Resources

The JJM Guidelines stressed upon surface water based multi-village schemes¹⁴ over groundwater-based in places where groundwater was not abundant, especially in the designated dark Blocks and in areas affected by water quality issues.

As discussed in previous paragraphs, groundwater extraction in Punjab was not only maximum among all the States of India but was also significantly higher compared to neighboring States. Out of 23 Districts of Punjab, as far as groundwater extraction was concerned, only two Districts (nine *per cent*) were safe, whereas, 18 Districts were over-exploited (78 *per cent*), two were critical (nine *per cent*), and one was semi-critical (four *per cent*).

The source-wise and District-wise water supply schemes were, as detailed in **Table 2.6**.

¹⁴ A ground water/surface-water based scheme that caters to multiple villages.

Table 2.6: Detail of water supply schemes, source-wise and District-wise

Sr. No.	Category	District	Percentage of over-exploitation ¹⁵	Number of Households	Source of water supply schemes			
					Groundwater + Surface	Groundwater and Bulk Water-	Surface	
1.	Over-exploited	Sangrur	313.41	1,70,951	0	117	0	
2.		Malerkotla	302.39	49,881	0	88	0	
3.		Jalandhar	263.60	2,24,197	0	128	0	
4.		Kapurthala	237.40	1,11,598	0	79	0	
5.		Moga	237.22	1,44,042	0	71	80	
6.		Barnala	223.59	74,569	0	50	0	
7.		Ludhiana	221.04	3,25,877	0	247	0	
8.		Fatehgarh Sahib	215.61	78,475	0	63	0	
9.		Patiala	214.72	2,23,973	0	101	0	
10.		Tarn Taran	213.98	1,67,820	0	80	1	
			Sub Total		15,71,383	0	1,024	81
11.			Amritsar	178.11	2,13,512	0	61	3
12.			Gurdaspur	141.99	2,48,742	0	94	1
13.			Ferozepur	131.89	1,27,014	2	140	1
14.			SAS Nagar	130.00	82,024	0	35	0
15.			Faridkot	128.80	78,408	4	12	38
16.			SBS Nagar	123.24	1,10,148	0	26	0
17.			Hoshiarpur	117.58	2,73,829	0	96	1
18.		Bathinda	105.00	1,58,415	8	7	35	
19.	Critical	Mansa	98.94	1,08,594	7	5	35	
20.		Rupnagar	98.56	1,04,819	0	69	1	
21.	Semi-Critical	Fazilka	76.21	1,41,539	7	36	28	
22.	Safe	Pathankot	51.47	82,592	0	61	0	
23.		Sri Muktsar Sahib	24.13	1,25,789	1	0	46	
Total				34,26,808	29	1,666	270	

Source: Departmental data

- Audit noticed that despite 78 per cent of the Districts already facing over-exploited groundwater levels, 90 per cent of the rural water supply schemes (1,495 out of 1,666 groundwater schemes) taken up under JJM in these over-exploited Districts relied on groundwater sources.
- Of these groundwater-based rural water supply schemes, 61 per cent (1,024 out of 1,666 groundwater schemes) served the most over-exploited 10 Districts with above 200 per cent extraction levels, though these covered only 46 per cent of the households.
- Another 28 per cent of groundwater-based schemes (471 out of 1,666) catered to 38 per cent of the households in Districts with extraction levels

¹⁵ Above 100 per cent-Over Exploited, ranging 90 to 100 per cent-Critical, ranging 70 to 90 per cent-Semi-critical and less than 70 percent-Safe.

between 100 *per cent* and 199 *per cent*. The remaining 10 *per cent* groundwater-based schemes served 16 *per cent* of households in critical, semi-critical and safe Districts.

Thus, the SWSM, in departure from the Vision/Mission of JJM and knowing about the already over-exploited groundwater resources in the State, proceeded with planning groundwater-based schemes under JJM. This alarming level of over-exploitation of groundwater not only threatens the long-term viability of water supplies but also undermines the Mission's vision of ensuring water security.

The Government stated (May 2025) that the total annual groundwater extraction for domestic use is 1.05 billion cubic meters (bcm), which is less than the total annual groundwater allocation for domestic use, estimated at 1.08 bcm. Therefore, the issue of over-exploitation is not attributable to the extraction of groundwater for drinking purposes, but rather to excessive extraction for intensive agricultural activities. Converting groundwater-based schemes to surface water schemes will not address the issue of over-exploitation; instead, it will lead to increased capital investment, higher operational costs and greater manpower requirements.

The fact remains that though groundwater sources were over-exploited in the State, the water supply schemes planned under JJM remained primarily based on groundwater.

2.6.3.3 Non-implementation of Measures for Source Sustainability

JJM aimed at source sustainability to ensure that water supply schemes function throughout its full design period. To achieve source sustainability, the Operational Guidelines of JJM suggest measures like rainwater harvesting, artificial recharge, drinking water source augmentation and water treatment (for quality-affected sources). The DAPs and SAP also required inclusion of borewell recharge structures as source sustainability measure in cost estimates for groundwater-based village water supply plans.

Audit noticed that in all the test-checked 21 villages, groundwater was adopted as the only source for supply of drinking water. Though the Village Action Plans (VAP) were prepared with a delay, the status of inclusion of measures to make the water source sustainable for the designed life of the water supply schemes were, as detailed in **Table 2.7**.

Table 2.7: Status of measures proposed for source sustainability

Sr. No.	District (Percentage extraction) (Schemes)	Village	SVS/MVS	Source augmentation	Sustainability measures		Contamination 2019-2024	Water treatment	Solar powered pumping system	CGWB ¹⁶ map used	HGM ¹⁷ map used
					Borewell recharge	Rainwater harvesting					
1.	Pathankot (51.47) (61)	Dibku	MVS	No	No	No		No	No	No	No
2.		Napwal	MVS	No	Yes	No	HM	No	No	No	No
3.		Jakror	SVS	Yes	No	No		No	No	Yes	Yes
4.		Kuther	SVS	Yes	Yes	No		No	No	No	No
5.	Tarn Taran (213.98) (81)	Wariah	SVS	No	No	No	A	No	No	No	No
6.		Raniwala	SVS	No	No	No		No	No	No	No
7.		Ubhoke	SVS	No	No	No		No	No	No	No
8.		Bangla Rai	MVS	No	No	No	A	No	No	No	No
9.	Sangrur (313.41) (117)	Rampur Gujran	SVS	No	No	No	F	No	No	No	No
10.		Chathe Gobindpura	SVS	No	No	No		No	No	No	No
11.		Chhajli	SVS	Yes	No	No		No	No	No	No
12.		Ghasiwala	SVS	No	No	No		No	No	No	No
13.	Ludhiana (221.04) (247)	Sasrali	SVS	No	No	No		No	No	No	No
14.		Swaddi Khurd	MVS	No	No	No		No	No	No	No
15.		Khursaidpur	MVS	No	No	No		No	No	No	No
16.		Narangwal	SVS	No	No	No	HM	No	No	No	No
17.		Nangal Kalan	SVS	No	No	No		No	No	No	No
18.		Gadowal	SVS	No	No	No		No	No	No	No
19.		Chak Kalan	SVS	No	No	No		No	No	No	No
20.		Sadarpura	SVS	No	No	No		No	No	No	No
21.		Kailey	SVS	No	No	No		No	No	No	No
	506	HM-Heavy Metals; A-Arsenic; F-Fluoride									

Source: Departmental data

- Although all the 21 test-checked water supply schemes relied on groundwater, except for Pathankot all other three test-checked Districts had above 200 per cent extraction levels. Still 88 per cent (445 out of 506) of the rural drinking water supply schemes relied upon already over-exploited groundwater source.
- Though the groundwater source in Pathankot District was falling in the safe category with 51.47 per cent extraction, yet among the test-checked Districts, it was the only district to take most of the source sustainability measures.
- Source augmentation was planned in only three (14 per cent) of the test-checked 21 villages. This included Pathankot District, where, despite it being in the safe zone, two out of four test-checked villages had planned for source augmentation.

¹⁶ Central Ground Water Board.

¹⁷ Hydro-Geo-Morphological.

- Similarly, VAPs of only two (10 *per cent*) of the test-checked villages had provision of borewell recharge structure and that too in Pathankot District only, despite it being a safe district as far as groundwater extraction was concerned.
- The test-checked villages of Sangrur District, despite having maximum extraction level of 313.41 *per cent* in the State, had not planned for any sustainability measures for the source of drinking water to ensure longevity of the rural drinking water supply schemes. Similar trends of having no plans for sustainability measures were seen in Ludhiana and Tarn Taran where extraction levels were 221.04 and 213.98 *per cent*, respectively.
- None of the villages had planned for rainwater harvesting to ensure the sustainability of their water sources, as prescribed by the JJM guidelines.
- The DWSS reported heavy metals in village Napwal (Pathankot) and Narangwal (Ludhiana); Arsenic in Wariah (Pathankot) and Bagla Rai (Tarn Taran) and Fluoride in Rampur Gujran (Sangrur) during 2019-2024, whereas water treatment was planned for only one scheme (five *per cent*) at Kuther (Pathankot), where incidentally contamination was not reported.

Dependence on already over-exploited groundwater for drinking water supply schemes, with negligible source sustainable measures on the plan, not only posed a direct threat to long-term water sustainability but also undermines the Mission's objective of ensuring water security.

The Government while admitting (May 2025) stated that the observation regarding non-inclusion of sustainability measures is accepted in part. While some village schemes may lack formal recharge structures, the Department has prioritised surface water schemes in over-exploited zones. Moreover, the Department of Water Resources is the nodal agency for implementing rainwater harvesting and recharge programs under the 'Jal Shakti Abhiyan: Catch the Rain' initiative. DWSS complements these efforts through community education and planning coordination. Contrary to the reply, fewer than 12 *per cent* of schemes in over-exploited zones were found to have relied on surface water as the drinking-water source (Table 2.6).

2.6.3.4 Provision of Higher Service Level of Drinking Water

As per Paragraph 6.1 of the Operational Guidelines of JJM, the service level of potable drinking water supply should be at least 55 litres per capita per day (lpcd). The Guidelines further state that the States may enhance the same to higher level depending on availability of drinking water sources for which additional financial resources that may be required, will be met by the State Government or local community or donors.

Audit observed that the SWSM without having any water budget and the water security plan, continued to provide 70 lpcd under JJM through all surface and

groundwater schemes, in accordance with the Punjab State Rural Water Supply and Sanitation Policy 2014. Since the State provided higher service level of 70 lpcd against service level of 55 lpcd admissible for water supply schemes taken under JJM, the Central Share apportioned as ₹ 1,032.24 crore was reduced to ₹ 913.28 crore (January 2024), as detailed in **Table 2.8**.

Table 2.8: Details of cost difference due to service level exceeding 55 lpcd

(₹ in crore)

	Total schemes	Total Capital Cost as per 70 lpcd	Community Contribution	GOI Share as per 70 lpcd	Total Capital Cost as per 55 lpcd	Community Contribution required as per 55 lpcd	GOI share as per 55 lpcd (D-E)/2	Difference (C-F)
		A	B	C	D	E	F	G
MVS Completed	369	48.51	2.47	23.04	46.39	2.42	21.99	1.04
MVS Ongoing	287	1,696.16	28.15	834.00	1,480.37	26.45	726.96	107.04
SVS Completed	745	116.06	6.24	54.94	110.69	6.13	52.29	2.66
SVS Ongoing	564	252.65	12.19	120.26	235.71	11.64	112.03	8.23
Total	1,965	2,113.38	49.05	1,032.24	1,873.16	46.64	913.28	118.97

Source: Departmental data

Thus, the State's action of provisioning 70 lpcd without assessing availability of drinking water sources, especially when the State is already topping the list of States in over-exploiting the groundwater, which is the source of drinking water in over 90 per cent of the water supply schemes in Punjab, led to extra financial burden of ₹ 118.97 crore as 70 lpcd drinking water was provided by the State against 55 lpcd permissible under JJM.

The Government reiterated (May 2025) that the linkage between higher lpcd (70) and groundwater over-extraction was not justified. Domestic consumption accounts for only 2–4 per cent of Punjab's groundwater usage, well within permissible norms. The Water Policy of Punjab (2014), approved by the State Cabinet, predates JJM and provides for 70 lpcd. Further, under the national 'Viksit Bharat' vision, a service level of 135 lpcd is envisaged by 2047. The matter of ₹ 118.97 crore was being taken up at appropriate forums for consideration.

Reply could be seen in the context that request (May 2024) was sent by GoP for differential cost of ₹ 118.97 crore spent on provisioning higher service level of 70 lpcd. The request was rejected by the NJJM.

2.6.3.5 Non-use of Solar Power for Operation of Schemes

Paragraph 6.1 of Operational Guidelines of JJM advocated conjunctive use of solar power-based pumping to reduce rural water supply energy costs.

However, Audit noticed that none out of the 506 water supply schemes in the test-checked four Districts, as detailed in **Table 2.7**, were equipped for conjunctive use of solar power. The DWSM Pathankot reported (October 2024) to have proposed 17 schemes with solar power in *Kandi* and hilly area which were yet to be approved.

The Government reiterated (May 2025) to have noted the observation. Further, it was stated that the Department had already proposed 17 solar-powered schemes in Pathankot's hilly regions, which were awaiting approval. Further rollout was planned in other suitable regions based on feasibility and cost-benefit analyses.

2.6.3.6 Non-integration of Advanced Technologies

Paragraph 8.4 of Operational Guidelines of JJM prescribed utilisation of advanced technologies like Hydro-Geo-Morphological (HGM)¹⁸ and GIS mapping for identification of existing water sources; utilising digital 3D contour maps to identify gaps in village water supply infrastructure; use of Project Management Software for tracking implementation; Internet of Things (IoT) for capturing and transmitting the data using mobile networks for analysis; Supervisory Control and Data Access (SCADA) Systems in Multi-Village Schemes (MVS) for monitoring pressure, quality, the flow rate and distribution networks; Sensors for monitoring water level, discharge, water quality, automatic motor operation; data logger for capturing the data; and use of Real-Time Dashboards for constant monitoring of the household tap functionality.

In four test-checked Districts, 506 water supply schemes were taken up under JJM during 2019-2024, as detailed in **Table 2.9**.

Table 2.9: Detail of water supply schemes

District	Groundwater based	Surface water based	Surface & Groundwater based	Total schemes undertaken
Ludhiana	247	0	0	247
Pathankot	61	0	0	61
Sangrur	117	0	0	117
Tarn Taran	80	1	0	81
Total	505	1	0	506

Source: Departmental data

Audit noticed that despite implementing 506 water supply schemes, as detailed in **Table 2.7**, except for Pathankot, the advanced technologies such as HGM, GIS and digital 3D maps, IoT, Sensors and SCADA Systems were not found to have been integrated for enhanced water resource management, optimised infrastructure planning, and long-term sustainability of drinking water supply systems. The DWSM, Pathankot reported (October 2024) to have proposed an IoT-based project consisting of 11 schemes covering 29 villages in Block Bamial. The approval and funds for implementation of this project were yet to come (February 2025).

¹⁸ HGM maps developed by National Remote Sensing Centre (NRSC) to identify potential groundwater sources and recharge locations.

Thus, inadequate use of technology under JJM undermined its goals of sustainable and efficient rural water supply management.

The Government stated (May 2025) that Punjab had adopted SCADA in 16 large surface water schemes and was implementing IoT in 346 multi-village schemes. HGM and GIS tools had been utilised during planning stages. Advanced technologies were being incrementally rolled out across schemes, with due consideration to viability and regional requirements. However, use of the mandated advanced technologies were not found in any of the schemes of test-checked districts.

2.6.3.7 Achievement of Sustainable Development Goal-6

In pursuit of SDG-6, DWSS set a target (April 2019) to increase functional household tap connections (FHTC) with piped water supply from 17.59 lakh in 2019 to all the 33.16 lakh households by March 2021. Against these targets, DWSS reported to have achieved this target by the end of March 2023, as detailed in **Table 2.10**.

Table 2.10: Detail of achievement against indicators for SDG-6

Under SDG-6	As on	Baseline value		2019-20	2020-21	2021-22	2022-23
		Households	FHTCs				
Indicator (Target)	April 2019	33,15,890	17,59,212	6,83,094	8,73,584	-	-
Achievement	March 2023	34,25,723	17,59,212	76,519	8,31,414	8,24,625	12,602

Source: Departmental data

Upon comparing the ‘Progress Report’¹⁹ with the ‘Status Report’²⁰ on verification of beneficiary provided with tap water supply’, Audit noticed that of the 34.27 lakh households as of April 2024, 11.27 lakh households who managed drinking water from their own source, were yet to be covered (February 2025) with piped water supply by the Government.

The Government reiterated (May 2025) that all the habitations of the State had been provided with basic water supply infrastructure except some scattered households. However, these HHs had their own source of water supply. As per JJM operational guidelines, the potable water of private sources had been considered as FHTC. Efforts were being made to provide them tap connections by augmenting existing water supply schemes.

The reply was not tenable as 11.27 lakh households were yet to be covered with piped water supply by the Government.

¹⁹ ‘Progress Report’ is prepared on indicators by the DWSS for submission to the Planning Department.

²⁰ ‘Status Report’ is the data available on IMIS.

2.6.3.8 Lack of Convergence for Skill Development

The JJM guidelines state that convergence was the key for sourcing funds from different programmes and as per Paragraph 9.4 of these guidelines, for achieving universal FHTC coverage, high-quality human resources were required at the district and village levels for which convergence with Pradhan Mantri Kaushal Vikas Kendra (PMKVK), operational in each district, was to be worked out for skill development of plumbers, masons, electricians, motor mechanics, etc.

Audit noticed that the SWSM did not converge with the PMKVK, as envisaged in the JJM guidelines. Further, the Department signed an MoU with Punjab Skill Development Mission (PSDM) in October 2021, but no trainings were imparted. The trainings only began in the quarter July-September 2023 after the SWSM partnered with Directorate of Technical Education & Industrial Training (DTE&IT). Still, against the plan of training 8,118 workers, only 5,162 workers were imparted training as of September 2023 and that too at an expenditure of ₹ 1.56 crore met from JJM support activity funds. The NJJM advised (September 2023) the SWSM to incur expenditure on trainings for skill development from funds provided by the 15th Finance Commission (15th FC).

Audit of test-checked Districts disclosed that no trainings in convergence with PMKVK were conducted to develop skills of plumbers, masons, electricians, motor mechanics, etc.

Since these skill development trainings in convergence with PMKVK were aimed at creating a high-quality human resources to become rural entrepreneurs in the water supply sector to meet the demands for technical service and ongoing O&M of the completed water supply schemes, the objective of JJM remained unachieved.

The Government reiterated (May 2025) that the training efforts had been scaled up post-pandemic through convergence with DTE&IT. The 'Nal Jal Mitra' program was being rolled out and future training would be funded under 15th FC allocations. The earlier MoU with PSDM laid the groundwork. Progress was contingent upon approval and release of funds.

2.6.4 Water Quality Monitoring and Surveillance

Water Quality Monitoring and Surveillance was a crucial aspect of JJM, ensuring that rural households receive safe and potable water that meets prescribed health standards. This involved systematic testing, continuous monitoring, and vigilant oversight at the water source, within the piped distribution network and at the delivery point to prevent contamination and to promptly address any water quality issues.

Every Gram Panchayat or its designated sub-committee²¹ was mandated to conduct presumptive tests from sources and FHTCs using Field Test Kits (FTK) to detect contamination at the local level and report contamination to the nearest water quality testing laboratory available at Block, Sub-Division, District and State level for confirmation. Each level of Laboratory was given annual testing targets with a view to test cent *per cent* sources of drinking water, including the private ones. This monitoring system was envisioned to identify the sources of waterborne disease outbreaks in a timely manner, allowing for immediate corrective action to safeguard public health. A detailed overview of rural drinking water quality status in Punjab is discussed in the succeeding paragraphs.

2.6.4.1 Contamination of Drinking Water

As per Paragraph 3.2 of Drinking Water Quality Monitoring & Surveillance Framework (DWQMS) issued under Jal Jeevan Mission, Water quality refers to physical, chemical, biological and radiological characteristics of water. The safe drinking water quality standards (IS 10500:2012), specified by the Bureau of Indian Standards (BIS), have two limits *viz.* ‘acceptable limits’ and ‘permissible limits in the absence of an alternate source’. If any parameter exceeds permissible limits, an investigation should be conducted. Where appropriate, remedial measures were to be implemented, or restrictions were to be placed on the use of the water supply for drinking until the water quality meets acceptable limits.

The annual Water Quality Report published by the Department of Water Supply & Sanitation, Punjab (DWSS) revealed that during 2019-2024, habitations affected by contaminants in rural drinking water supply reduced from 1,634 to 1,023, as detailed in **Table 2.11**.

Table 2.11: Habitations affected by contaminants in drinking water

Habitations affected by heavy metals									
Year	Arsenic	Nitrate	Iron	Selenium	Mercury	Mixed parameters including heavy metal ²²	Fluoride (1.5 ppm relaxation)	Uranium (60 ppb relaxation)	Grand Total
2019-20	815	69	45	0	0	134	319	252	1,634
2020-21	803	56	21	74	41	77	282	171	1,525
2021-22	785	30	14	49	12	62	282	147	1,381
2022-23	681	24	0	27	0	34	227	121	1,114
2023-24	593	20	0	19	0	22	195	174	1,023

Source: Annual Water Quality Report published by DWSS, Punjab

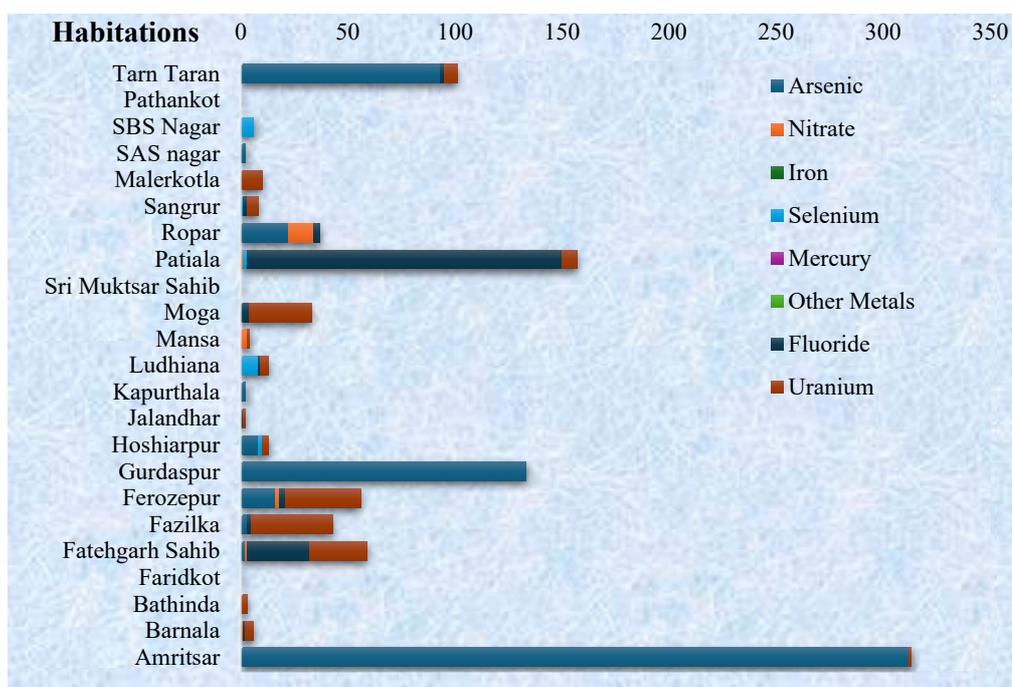
Between 2019 and 2024, water quality data analysis revealed significant contamination on various parameters in Punjab. Details given in **Table 2.11**,

²¹ Such as the Village Water and Sanitation Committee (VWSC), Paani Samiti, or User Group.

²² Cadmium, Chromium, Aluminium, Nickel and Lead.

when read in conjunction with District-wise status given in **Appendix-2.2** shows that Arsenic levels exceeded the safe limit of 0.01 PPM in 815 to 593 habitations, with Amritsar, Gurdaspur and Tarn Taran being the worst affected. Nitrate contamination (69 to 20 habitations) surpassed the 45 PPM limit, particularly in Ferozepur, Ludhiana and Roopnagar. Iron contamination (45 to 14 habitations) exceeded 1.0 PPM, with Amritsar, Ferozepur and Roopnagar being the most impacted. Other metal contamination (134 to 22 habitations) surpassed limits, affecting Fazilka and Patiala the most. Fluoride levels exceeded safe limits (319 to 195 habitations), with Patiala and Fatehgarh Sahib being the worst affected. Uranium contamination (252 to 174 habitations) was detected in Fazilka, Ferozepur and Moga, surpassing the BIS and Atomic Energy Regulatory Board (AERB) safety limits. Notably, uranium data for 2023-24 was unavailable. The latest status of presence of contaminants across the Districts of Punjab as on 31 March 2024 was, as exhibited in the **Chart 2.1**.

Chart 2.1: Contaminants in drinking water in number habitations across Districts of Punjab



The Government stated (February/May 2025) that DWSS, committed to provide safe drinking water to all the rural habitations, conducted testing of water sources in NABL-accredited labs as per ISO 10500:2012 and got the results published in the annual report. The Government also stated that water quality being dynamic, DWSS took short-term solutions for immediate relief and long-term strategies for sustainability. These included access to potable water from nearby villages with potable sources/mitigation plants, availability of individual RO units with consumers, water supply through tankers where necessary (May 2025).

The measures taken by DWSS were not found to be adequate, as 8,16,404 households remained affected during the period April 2019 to March 2024.

2.6.4.2 Supply of Water from Contaminated Water source

The JJM operational guidelines outline a strategic approach for achieving JJM objectives. Paragraph 3.5 (x) *inter alia* prescribed that for villages with water quality issues and non-availability of suitable surface water sources in nearby areas, it may be more appropriate to transfer bulk water from long distance. In water quality-affected habitations, especially with Arsenic and Fluoride contaminants, potable water must be ensured on priority. However, SWSM was also to prioritise such areas for providing potable water through FHTC to every rural household by March 2021.

Audit observed that despite having first-hand knowledge of quality issues with the water source identified by the SWSM for supplying piped water to 1,634 habitations, water supply schemes were based on such contaminated water sources in violation of the objectives of JJM. Audit further observed that though the mitigation measures were taken, 1,114 habitations were being supplied with contaminated water as of April 2023 as detailed in **Table 2.12**.

Table 2.12: Details of habitations affected by contamination

Type of contamination	Habitations affected as on 1 st April of				Habitations where contamination mitigated during			
	2020	2021	2022	2023	2020-21	2021-22	2022-23	2023-24
Arsenic	815	803	785	681	199	18	148	642
Nitrate	69	56	30	24	9	26	12	9
Iron	45	21	14	0	11	7	10	0
Selenium	0	74	49	27	0	0	0	18
Mercury	0	41	12	0	0	0	0	0
Others Heavy Metals	134	77	62	34	24	93	136	25
Fluoride	319	282	282	227	105	0	62	223
Uranium	252	171	147	121	129	0	0	96
Total	1,634	1,525	1,381	1,114	477	144	368	1,013

Source: Annual Water Quality Report published by DWSS, Punjab

As shown in **Table 2.12**, piped water was being supplied to 815 habitations from an Arsenic-affected water source as of April 2020. Similarly, 319 habitations were receiving Fluoride-contaminated piped water. Although the number of habitations receiving contaminated water decreased over four years from 2020 to 2024, there were 101 (1,114-1,013) habitations, that were still being supplied with contaminated piped water.

Despite clear directives for the SWSM to prioritise these areas and ensure the provision of potable water through FHTCs to every rural household by

March 2024, as many as 101 habitations were still receiving contaminated water through FHTCs as of April 2024.

The Government while intimating (May 2025) that corrective measures were being taken, agreed that mitigating measures for all affected habitations were yet to be taken. However, the Government did not specify the reasons for i) identifying a water source to supply piped water to rural habitations that were contaminated with Arsenic, Fluoride, etc. and ii) non-prioritising such contaminated areas for providing potable water through FHTC to every rural household by March 2021.

2.6.4.3 Shortage of Water Quality Testing Infrastructure

As per Paragraph 6 of DWQMF, the water quality testing network included Laboratories at State, Sub-Divisional, District and Block-Level and Mobile Laboratories based on necessity.

(a) Shortage of Laboratories at Block Level

As per Paragraph 4.3 (iv) of DWQMF, water quality testing laboratories were essential for effective monitoring and surveillance. States were to establish a well-equipped laboratory network at all levels, ensuring at least one Block-level laboratory per Block, with additional laboratories for larger Blocks as needed.

Audit observed that as on 31 March 2024, there was one State Laboratory, 17 District Laboratories²³, six Regional Laboratories²⁴, seven Block Laboratories²⁵ and two Mobile Laboratories in the State. There was 95 *per cent* shortage of Block Laboratories as against 153 Blocks, there were only seven Block Level Laboratories.

The Government stated (May 2025) that the existing network of State, District, Regional, Block and Mobile Laboratories met testing mandates, and setting up more Block-Level Laboratories would cause unnecessary costs without added benefits. The reply was not satisfactory, as against the target of testing 12,137 water sources, on an average 35 *per cent* (4,251) water sources remained untested during 2022-2024. Further, in the absence of Block Level Laboratories, the onus of testing shifted to District Level Laboratories whereas these District Level Laboratories across Punjab were consistently unable to meet their own water testing targets, with significant shortages²⁶ each year *viz.* 54,070 tests in 2021-22, 44,384 in 2022-23 and 35,893 in 2023-24 indicating inadequate testing infrastructure.

²³ Bathinda, Barnala, Faridkot, Fatehgarh Sahib, Fazilka, Ferozepur, Gurdaspur, Jalandhar, Kapurthala, Ludhiana, Malerkotla, Mansa, Pathankot, Nawanshahar, Roopnagar, Sri Muktsar Sahib and Tarn Taran.

²⁴ Amritsar, SAS Nagar, Sangrur, Moga, Hoshiarpur and Patiala.

²⁵ Anandpur Sahib-Roopnagar, Abohar (Ferozepur Distt.), Batala, Garhshankar (Hoshiarpur Distt.), Khanna (Ludhiana Distt.), Malout (Sri Muktsar Sahib Distt.), Talwara (Hoshiarpur Distt.).

²⁶ Against target of 69,000 tests per year.

The Government further stated (May 2025) that the testing in DWSS laboratories had improved over the years 2022-23 and 2023-24 and that additional private/other departmental testing data was maintained in the in-house LIMS but not reflected on the WQMIS portal. This reply may be seen in the light of shortage in presumptive and advance water quality testing, as discussed in subsequent paragraphs.

(b) Shortage of Human Resource

As per Paragraph 5.2 of DWQMS framework, staff required for various levels of laboratories. Status of human resources required and Men-in-Position in the State, Sub-Divisional, District, Block Level Laboratories and Mobile Laboratories was as detailed in **Table 2.13**.

Table 2.13: Status of human resource in laboratories at various levels

Sr. No.	Post	State				Regional				District				Block*				Mobile				
		REQ	SAN	MIP	VAC	REQ	SAN	MIP	VAC	REQ	SAN	MIP	VAC	REQ	SAN	MIP	VAC	REQ	SAN	MIP	VAC	
1.	Chief Chemist/ Chief Water Analyst	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.	Sr. Chemist/ Sr. WA/Sr. Microbiologist	1	1	1	0	6	6	4	2	0	0	0	0	0	0	0	0	0	0	0	0	0
3.	Chemist/WA	2	3	3	-1	12	13	9	3	23	0	0	23	0	0	0	0	0	0	0	0	0
4.	Microbiologist/Bacteriologist	1	1	1	0	6	6	6	0	23	0	0	23	153	0	0	153	0	0	0	0	0
5.	Lab Assistant	3	3	1	2	18	8	4	14	46	0	1	45	153	0	0	153	0	0	0	0	0
6.	DEO	2	0	0	2	12	6	6	6	23	0	0	23	153	0	0	153	0	0	0	0	0
7.	Lab Attendant	2	0	0	2	12	0	0	12	23	0	0	23	153	0	0	153	0	0	0	0	0
8.	Field Assistant/MTS/driver	2	4	3	-1	12	12	10	2	46	16	14	32	153	4	6	147	2	2	0	0	2
9.	Jr. Chemist/Microbiologist	0	0	0	0	0	0	1	-1	0	17	16	-16	153	7	7	146	1	1	0	0	1
Total		14	13	9	5	78	51	40	38	184	33	31	153	918	11	13	905	3	3	0	0	3

Source: Data provided by DWSS, Punjab

*Keeping in view 153 blocks that existed in the State as on 31 March 2024.

REQ=Required, SAN=Sanctioned, MIP=Men-in-position, VAC=Vacancy, WA=Water Analyst

The table shows shortage of human resources at District and Block levels, with many posts remaining vacant, while overstaffing in some positions indicates inefficient resource allocation as detailed below:

- Even the key post of one Chief Chemist/Chief Water Analyst required at the State level was vacant.
- There was shortage of two Senior Chemist/Senior WA/Senior Microbiologist (33 per cent) at Regional Level.
- In the post of Chemist/WA, there was vacancy of 25 per cent at Regional Level, as against the requirement of 12, only 9 posts of Chemist/WA were filled. At District Level, there was cent per cent shortage of 23 Chemists/WAs, as none of the posts were filled. One Chemist was posted in excess of the requirement at State level.

- Though the Microbiologist/Bacteriologist posts were fully filled at the State and Regional Levels, there was critical *per cent* shortage at District and Block levels (23 and 153 respectively).
- Shortage of Lab Assistants existed at all levels, rather it kept on increasing from top to bottom *viz.* State: 2 (66 *per cent*); Regional: 14 (78 *per cent*); District: 45 (98 *per cent*); and Block: 153 (100 *per cent*).
- The Data Entry Operators (DEO) were fully filled at the State level, however, there was shortage of 50 *per cent* at Regional (6), *per cent per cent* at District (23) and Block levels (153).
- Lab Attendants were not found recruited across all levels, thereby leaving a *per cent per cent* vacancy against requirement (two at State, 12 at Regional, 23 at District and 153 at Block levels).
- The post of Junior Chemist/Microbiologist were short by 95 *per cent* at Block level, as there existed vacancy of 146 against the requirement of 153.
- Mobile Laboratories were completely non-operational as against the requirement of two posts of Field Assistant/MTS/Drivers and one post of Junior Chemist/Microbiologist, none were filled.

Thus, there is an urgent need to address shortage of human resources, especially at Block and District levels, to ensure efficient functioning of laboratories and equitable service delivery.

The SWSM stated (September 2024) that a gap assessment had already been completed, and ensured to fill the vacant posts shortly, as the process of filling vacancies was underway. The Government reiterated the same in February 2025, indicating that despite having acknowledged the need for filling the vacancies and requirement of human resource as per DWQMS, still the process to fill the vacant posts was underway. The Government while intimating (May 2025) that DWQMS staffing norms were indicative and not binding, once again reiterated that gap assessment was being conducted regularly and the recruitment undertaken on functional needs. The reply was not tenable as critical shortage of staff at Block and District level required urgent intervention, especially in the light of significant shortage in water quality testing as discussed in the succeeding paragraphs.

2.6.4.4 Inadequate Water Quality Testing

As per DWQMS, 100 *per cent* testing of all drinking water sources, including private ones at village level using Field Test Kits (FTK) and bacteriological (H2S) vials and wide dissemination of reports was mandatory in addition to reporting of positive samples. Further, the District Water Testing Laboratories were to conduct 3,000 tests annually, including randomly selected and positive

cases reported by Block Level Laboratories, forward confirmed positive cases to the State Laboratory, and monitor water quality hotspots.

(i) Shortfall in presumptive water quality testing at village level

As per Paragraph 4.3(v)(c) of the DWQMF, the VWSC was responsible for presumptive water quality testing using FTKs and bacteriological (H2S) vials, reporting results to the RWS/PHE Department, ensuring household water quality through regular testing, and monitoring all drinking water sources, including private ones.

Audit observed that during the period 2021-2024, there was shortfall in coverage of villages for water quality testing using Field Test Kits as shown in **Table 2.14**.

Table 2.14 Status of water quality testing done in villages using FTKs

Sr. No.	Year	Total Villages	Villages where testing was done using FTK	Shortfall	Shortfall percentage
1.	2021-22	11,972	2,704	9,268	77
2.	2022-23	11,827	10,762	1,065	9
3.	2023-24	11,863	11,078	785	7

Source: Data extracted from IMIS (DWSS, Punjab)

As can be seen from **Table 2.14**, there was significant improvement in water quality testing using FTKs, yet as many as 785 villages were being provided piped water without conducting presumptive water quality testing during 2023-24. Audit further noticed that:

- A total of 576 villages (73 per cent) were located in Ferozepur District, where water sources were found to contain hazardous levels of heavy metals, including Arsenic, Uranium, Fluoride and Nitrate.
- In Gurdaspur District, 42 villages were not covered despite having Arsenic contamination in water sources, and 38 villages in Mansa District where water sources were contaminated with Nitrate were also left untested respectively.

In May 2025, the Government reported that during 2024-25, 99.91 per cent of villages across all districts of Punjab had been covered through FTK testing. However, the reasons for persistent shortages (ranging from 7 to 77 per cent) during 2021-22 to 2023-24 were not provided.

(ii) Shortfall in advance water quality testing

The Senior Advisor (Water Quality) directed (November 2021) the collection of samples from 100 per cent DWSS sources to test heavy metals, 11 basic chemical parameters and bacteriological contamination.

Audit noticed that despite categorical instructions, there was significant shortfall in testing the sources of water across Punjab during 2022-23 and 2023-24, as detailed in **Table 2.15**, due to shortage of infrastructure and human resources.

Table 2.15: Status of testing the water quality at source across the State

Year	No. of sources	Sources tested	Shortfall	Percentage shortfall
2022-23	12,137	6,218	5,919	48.76
2023-24	12,137	9,554	2,583	21.28

Source: Data extracted from IMIS (DWSS, Punjab)

The Government assured (February 2025) compliance of audit observations and intimated that the requisite directions were issued in October 2024 to all the field laboratories to ensure adherence to the monitoring protocols. The Government further intimated (May 2025) that above data pertained to tubewells, whereas testing was being monitored on a source-wise and village-wise basis, according to which, there was minimal shortage during 2022-23 and 2023-24. The reply was not fully justified, as 85 per cent of the water supply schemes under JJM in Punjab relied on groundwater sources (**Table 2.6**), all of which were required to be tested for heavy metals, 11 basic chemical parameters and bacteriological contamination.

(iii) Shortfall in testing water samples

As per Paragraph 5.1.3.2 (xxv) of DWQMS (October 2021), District Water Testing Laboratories were required to conduct a minimum of 3,000 tests annually (at the rate of 250 water sources/samples per month), covering randomly selected sources including the referred samples declared positive by Block Level Laboratories. These District Level Laboratories were required to forward confirmed positive cases to the State laboratory. These District Water Testing Laboratories were also required to monitor and visit water quality hotspots regularly.

The status of testing of drinking water samples in four test-checked Districts during 2021-2024 was, as shown in the **Table 2.16**.

Table 2.16: Status of testing of drinking water samples in test-checked Districts

District	Ludhiana				Tarn Taran				Sangrur				Pathankot			
	2021-22	2022-23	2023-24	Total	2021-22	2022-23	2023-24	Total	2021-22	2022-23	2023-24	Total	2021-22	2022-23	2023-24	Total
Target	3,000	3,000	3,000	9,000	3,000	3,000	3,000	9,000	3,000	3,000	3,000	9,000	3,000	3,000	3,000	9,000
Achieved	981	1,928	2,001	4,910	434	1,221	627	2,282	659	1,003	1,560	3,222	161	683	375	1,219
Shortfall	2,019	1,072	999	4,090	2,566	1,779	2,373	6,718	2,341	1,997	1,440	5,778	2,839	2,317	2,625	7,781
Percentage shortfall	67	36	33	45	86	59	79	75	78	67	48	64	95	77	88	86

Source: Data extracted from IMIS (DWSS, Punjab)

- (a) As shown in **Table 2.16**, against the annual target of 3,000 tests for the District Water Testing Laboratories, a shortfall ranging between 33 and 95 *per cent* during 2021-2024 was seen.
- (b) These District Level Laboratories were required to forward confirmed positive cases to the State Laboratory immediately for further testing on advanced parameters. Audit noticed that during 2021-2024, out of 588 samples tested positive in these four test-checked Districts, only the District Laboratory in Ludhiana sent 11 (2.83 *per cent*) samples²⁷ to the State Laboratory, while the other District Laboratories failed to comply with the DWQMS guidelines. The District-wise detail of samples tested positive are shown in **Table 2.17**.

Table 2.17: Detail of Samples tested positive during 2021-2024

District	Year			Total
	2021-22	2022-23	2023-24	
Ludhiana	31	132	13	176
Tarn Taran	2	152	0	154
Sangrur	64	180	10	254
Pathankot	2	2	0	4
Grand Total				588

Source: Departmental data

The DWSM Ludhiana attributed (February 2025) the shortage of testing of samples and non-sending of positive samples to the State Laboratory to shortage of manpower and equipment. The Government assured (February 2025) compliance of the audit observation and intimated that the requisite directions were issued in October 2024 to all field laboratories to ensure adherence to the monitoring protocols.

The Government clarified (May 2025) that apart from DWSS, testing was being carried out by other departments and through FTKs/H₂S vials in the field, the results of which were not being reflected on the JJM WQMIS portal. The reply did not justify the shortfall in water quality testing at District Level laboratories, which ranged between 33 and 95 *per cent* during 2021-2024, nor did it address the inability to forward samples tested positive to State Level laboratories. Moreover, the FTKs/H₂S vials were meant for presumptive water quality testing by VWSC.

2.6.4.5 Significant Delay in Reporting Results of Water Quality Testing

As per Paragraph 6.8 of the DWQMS framework, timely test results were crucial for managing contaminated water sources. States were required to monitor turnaround times, ensuring completing of chemical tests within 24 hours and bacteriological tests within 48 hours.

²⁷ 2021-22=7, 2022-23=4.

Analysis of IMIS data showed that against the maximum permissible turnaround time of two days, the turnaround time taken by the Laboratories was much higher, as detailed in **Table 2.18**.

Table 2.18: Turnaround time of water quality testing in Laboratories

Year	Samples tested	Average turn-around time in days	Results declared within		Results declared in days			
			24 Hrs Percentage	48 Hrs Percentage	3 to 7 Percentage	8 to 15 Percentage	16 to 30 Percentage	31 and above Percentage
2021-22	14,841	48.41	37	88	769	2,770	4,414	6,763
			0.25	0.59	5.18	18.66	29.74	45.57
2022-23	24,616	73.10	218	208	1,111	2,957	4,616	15,506
			0.89	0.84	4.51	12.01	18.75	62.99
2023-24	33,559	12.40	4,605	5,291	13,961	4,249	1,998	3,455
			13.72	15.77	41.60	12.66	5.95	10.30

Source: Departmental data

Table 2.18 shows an increase in the number of water samples tested during three years. Despite this improvement in water sample testing from 14,841 in 2021-22 to 33,559 samples in 2023-24, the increase was found to be less than half the target of testing 69,000 samples per annum by the District Level Laboratories. This slow progress indicated lack of focus on water quality monitoring under the JJM, as large number of water sources remained un-tested for years, leaving households exposed to untested drinking water.

During 2021-22 and 2022-23, results of water quality testing of as many as 45.57 *per cent* and 62.99 *per cent* samples, respectively were declared after 31 days of receiving the sample, thereby making the chances of timely intervention nearly impossible.

Despite some improvement in 2023-24, test results of 10.30 *per cent* samples still took over a month, thereby not only delaying early detection and intervention but also depriving households of the assurance of safe drinking water. The Water Quality Testing Laboratories could declare results of only 13.72 *per cent* of samples within 24 hours in 2023-24. Similarly, test results of only 15.77 *per cent* samples were declared within the given turnaround time of 48 hours.

The Government attributed (February 2025) the high turnaround time to testing heavy metals in addition to the basic parameters and reporting of results only after complete analysis. However, the Government also assured that efforts would be made to meet the turnaround time by instructing the laboratories to upload results on in-house laboratory management software immediately upon completion of the testing process.

2.6.5 Results of Survey

A household survey, to assess access to Functional Household Tap Connections (FHTC) and identify challenges faced by households, across 21 Villages in nine Blocks spanning four test-checked Districts to evaluate the implementation and outcomes of the Jal Jeevan Mission (JJM) was also conducted by audit. The

survey covered 428 households with 178 from Above Poverty Line (APL) and 250 from Below Poverty Line (BPL) households. The survey was attended by 209 females and 219 males.

The details of the survey and its key results are summarised below:

2.6.5.1 Households Not Connected with Piped Water Supply Under JJM

Out of 428 households, as many as 110 participants stated that they were not covered under JJM with piped water supply provided by SWSM even though the State had declared 100 per cent coverage of FHTC, as detailed in Table 2.19.

Table 2.19: Details of Villages, Blocks and Districts with no FHTC

Category	Sr. No.	District	SN	Blocks	Sr. No.	Villages	House holds
Households arranged water from their own Borewell or Handpump	1	Pathankot	1	Pathankot	1	Napwal	1
	2	Tarn Taran	2	Chohla Sahib	2	Raniwala	9
					3	Wariah	18
			3	Patti	4	Ubhoke	2
					5	Bangla Rai	1
					3	Sangrur	4
	7	Chahta Gobindpura	12				
	5	Sunam	8	Chhajli	19		
			9	Ghassiwal	3		
Total							67
Households with no inhouse water supply or FHTC under JJM or any other scheme	1	Tarn Taran	1	Patti	1	Bangla Rai	1
					2	Ubhoke	19
			2	Chohla Sahib	3	Raniwala	3
					4	Wariah	2
	2	Sangrur	3	Andana	5	Chahta Gobindpura	8
					6	Rampur Gujran	6
			4	Sunam	7	Chhajli	1
					8	Ghassiwal	3
Total							43

Source: Household Survey

(i) Households arranged water from their own Borewell or Tubewell

Table 2.19 shows that 67 households of nine villages reported that they had arranged drinking water from their own Borewell, Handpump or other self-managed source of water supply.

(ii) Households with no water supply

There was no piped drinking water supply provided to 43 households of eight villages in Tarn Taran and Sangrur Districts even though the State had declared 100 per cent coverage of FHTC. These beneficiaries reported that they were

arranging drinking water from nearby Gurdwara, Mosque, Community-Hall, Panchayat or the neighbours, etc.

2.6.5.2 Evaluation of Services of DWSM by the Beneficiaries

For evaluating DWSM services, beneficiary households rated from one (completely dissatisfied) to five (completely satisfied). Out of 318²⁸ beneficiaries, 121 gave five marks, 179 gave four, eight gave three and nine gave one.

2.6.5.3 Lack of Community Participation

According to the Operational Guidelines of JJM, institutional arrangements were to be established with State PHE/RWS Departments, who play a key role for Mission implementation. They were mandated to support Gram Panchayats and their sub-committees in planning, implementing, managing, operating and maintaining in-village water supply systems, and instil a sense of ownership within the village community as the Mission reckoned village as a unit.

However, an audit survey of 428 households revealed several shortcomings:

(i) Community Consultation & Participation

- 85 households (20 per cent) were not consulted before inception of the Water Supply Scheme in their village.
- 319 households (75 per cent) were unaware of their share in the scheme, indicating a lack of community participation.

(ii) Inadequate IEC Efforts

- 141 households (33 per cent) were not informed about clean drinking water benefits, conservation methods and hygiene habits.
- 140 households (33 per cent) stated that no IEC activities (writings, posters, programs) were conducted in their village.

(iii) Resistance to Contribution

- 84 households (20 per cent) were unwilling to contribute their financial share to the in-village water supply scheme, reflecting insufficient IEC efforts.
- 22 households (5 per cent) refused to contribute to the Scheme's Operation & Maintenance.

²⁸ Out of total 428 beneficiaries, 67 had their own arrangement and 43 did not have FHTC.

(iv) Lack of VWSC Engagement

- 216 households (50 *per cent*) reported that the Village Water and Sanitation Committee (VWSC) never visited their home.

This highlights gaps in community engagement, awareness initiatives and institutional support under the Mission.

2.6.5.4 Results of Village Water Sanitation Committees Survey

A survey was conducted across 21 selected Villages, covering six Multi-Village Schemes (MVS) and 15 Single-Village Schemes (SVS). Of these 21 Villages, in 13 Villages water supply schemes were completed, two of the Water Supply Schemes stood transferred to VWSCs and six were yet to be completed as of 31 March 2024.

According to Operational Guidelines of JJM, despite it being mandatory for each village to have a Village Water Sanitation Committees (VWSC) in two villages (Wariah and Ghasiwala), VWSCs were not established indicating non-compliance with institutional requirements.

(i) Institutional Framework of VWSCs

The evaluation of 19 VWSCs revealed following compliance and governance gaps, in adherence to the institutional framework prescribed under the Operational Guidelines of JJM:

- Only 15 VWSCs were constituted in an open Gram Sabha, indicating partial compliance.
- While 13 VWSCs met the criteria of having participation of at least 50 *per cent* women representatives and 25 *per cent* members from weaker sections (SC/ST), six VWSCs failed to ensure adequate representation.
- Only eight VWSCs adhered to the requirement of convening at least four meetings in a year, highlighting irregularity in governance.
- Although 17 VWSCs identified five women each for training, but only seven received the Field-Testing Kits for water quality monitoring.

These non-compliances, shortcomings and gaps in resource allocation indicated a need for stronger institutional compliance to improve the functioning of VWSCs under JJM.

(ii) Community Participation and Contribution

- Thirteen VWSCs confirmed that the DWSS provided information on economic and technical aspects of the water supply scheme during an open meeting attended by 80 *per cent* of the community, after which the Gram Sabha consented to its implementation. However, six VWSCs reported not receiving any such information.

- Only two, out of 19 VWSCs opened bank accounts to deposit community contributions for the Scheme, while the remaining 17 VWSCs did not contribute. Among these, two had initially agreed to provide contributions in the form of labour, cash or kind but failed to do so.
- Of the 19 VWSCs surveyed, eight had not mandated any community contribution for Operation and Maintenance (O&M). While 11 VWSCs had prescribed contributions for O&M, only four had opened a dedicated bank account and deposited funds accordingly.

These shortcomings in community participation, particularly in capital cost and O&M contributions, indicated a deficit in the intended sense of community ownership, thereby compromising the long-term sustainability of the JJM .

(iii) Satisfaction Levels of VWSCs

The survey results revealed 16 of the VWSCs to have complete satisfaction (5 out of 5) or high level of satisfaction (4 out of 5), only three VWSCs rated their satisfaction at 1 out of 5, expressing complete dissatisfaction.

2.6.5.5 Social Audit

As per Paragraph 5.4 (xviii) of the Operational Guidelines of JJM, Gram Panchayats and their sub-committees, including VWSCs, are responsible for conducting social audits. Audit noticed that out of the 19 VWSCs, only one (Jakror of Pathankot) had conducted a social audit, while the remaining 18 villages failed to comply with this requirement. The absence of social audits highlights a critical gap in community oversight, limiting transparency in scheme execution and fund utilisation.

2.7 Conclusion

The implementation of the Jal Jeevan Mission (JJM) in Punjab faced various challenges, including unstructured planning leading to preparation of inaccurate Annual Action Plans, underutilisation of funds causing a shortfall in meeting required utilisation thresholds and absence of essential planning components like the State Action Plan (SAP), which resulted in unrealistic projections.

The Mission also struggled with sustainability, as there was an over-reliance of rural drinking water supply schemes on already over-exploited groundwater, with minimal adoption of conservation measures like rainwater harvesting and artificial recharge. Additionally, there was lack of a formal Operation & Maintenance (O&M) strategy and shortfall in transfer of commissioned schemes to VWSCs. Water quality monitoring was inadequate due to shortage of Block-Level Laboratories and human resources. Minimal integration of advanced technologies such as IoT, GIS mapping and use of solar-powered

pumping was also observed. Community participation remained weak, as despite deviations from prescribed norms, community contributions remained unsatisfactory.

2.8 Recommendations

With a view to enhance the efficiency, sustainability and long-term success of the Jal Jeevan Mission in Punjab, ensuring reliable and safe drinking water for all, the Government may:

- (i) Ensure structured planning based on verified Baseline Data including reverification of number of leftover households;*
- (ii) Regularise the functioning of key Committees and adopt a formal O&M strategy along with integration of IoT, GIS mapping, and smart monitoring systems;*
- (iii) Explore sustainable water sources for schemes in areas with over-exploited groundwater including implementing rainwater harvesting and artificial recharge measures;*
- (iv) Conduct the required number of tests, expand the number of water testing laboratories and introduce real-time monitoring technologies to ensure supply of contamination-free drinking water; and*
- (v) Enforce community contributions as per JJM guidelines, strengthen Gram Panchayats' role in scheme management and engage Implementation Support Agencies (ISA) for capacity-building.*