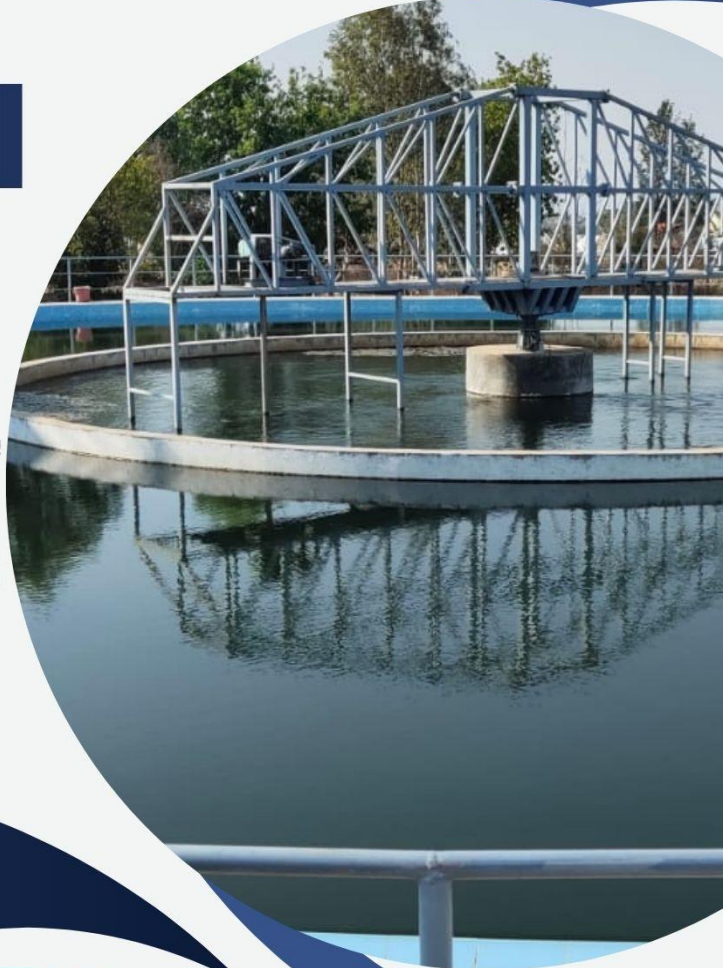




POLICY TIPS-II

**Need for Setting Up a
Bulk Water Supply
Monitoring Committee
for MVS in Rural
Drinking Water System**



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Need for Setting Up a Bulk Water Supply Monitoring Committee for Multi-Village Schemes in Rural Drinking Water System

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Introduction

Jal Jeevan Mission (JJM), launched in August 2019 by the Government of India, stands as a transformative initiative dedicated to providing access to adequate, safe and reliable supply of drinking water to all rural households. Over the past five years, this mission has achieved a significant milestone, connecting taps to more than 80% of the total households and significantly impacting rural communities. At its core, the JJM operates on a decentralized and community-driven model through Village Water and Sanitation Committees (VWSC), prioritising the active involvement of local communities to ensure continuous drinking water supply. By encouraging community participation in planning, implementation, and maintenance, the Mission not only envisages the sustainability of water supply systems but also instils a sense of ownership and empowerment among the rural masses.

The Multi-Village Scheme (MVS) in JJM, is a ground/surface water-based scheme that caters to the needs of multiple villages. Its operation consists of two parts: Bulk Water Supply (BWS) that includes water procurement, treatment, storage and bulk supply of water to individual villages; and In-Village Distribution Network (IVDN) that includes infrastructure designed for providing Piped Water Supply (PWS) to individual households. While BWS supply is to be operated by the State Department, it is expected that at IVDN operations will be run by the VWSC. VWSC is also expected to pay the BWS agency for water supplied on a volumetric basis. Hence, effective operations of piped water supply schemes in MVS requires coordination between multiple stakeholders such as the operating agency, government department, local bodies, VWSCs, and others.

Emerging Issues

As the operations and maintenance phase has begun to unfold in many completed schemes of JJM, steps for ensuring efficient operations, effective maintenance, prudent financial management and strong institutional setup need to be established on a priority basis. Community participation and ownership need strengthening, as do their training and capacity building programs. Effective monitoring systems need to be established through creating mechanisms for gathering information, analysis, and feedback to ensure sustainability.

Accurate cost computation, determining user charges to cover the costs and at the same time keeping user charges affordable are cornerstones of financial management in the rural drinking water supply system. Keeping the cost low is an important objective of the drinking water supply system as the user charges are dependent on the cost of delivering water supply. From a user-charge perspective, operating cost is a very important component as the fixed cost component may be met partially or fully by the Government. For a sound system however, user charges should be determined based on the total cost. The main components of operating

costs are salary and power costs, apart from repair and maintenance, at bulk supply level in MVS; and bulk water charges and salary at the IVDN level. Power costs are dependent on how much water is pumped at various stages in the system compared to how much was supposed to be pumped or supplied to the households. As Operations and Maintenance (O&M) cost increases it makes the user charges unaffordable for increasing number of households, potentially reducing the user charge collection. This underscores the need for efficient operations both at BWS and IVDN levels to ensure sustainability of water supply service.

Need for a Monitoring System

A monitoring system needs to be set up for continuous assessment of key performance parameters to provide feedback to system managers and to identify areas for improvement. Although JJM has integrated various technologies to promote community-led water management, the absence of a regular monitoring and evaluation framework in the MVS system remains a critical gap. While various issues are being discussed and debated, an area that needs immediate attention is ensuring effective monitoring of operations of bulk water supply in MVS systems.

MVS operations are large and spread over several villages and therefore require an effective monitoring system to ensure that costs are kept in check and the wastage of water is prevented. For this purpose, an appropriate framework needs to be developed to ensure improved coordination, enhance community participation, and regular monitoring to achieve sustainable outcomes.

For example, a case study of Arasikere MVS in Hassan district of Karnataka that supplies water to 45 Gram Panchayats, covering 329 villages and 530 habitations across Gandasi and Banavara blocks, highlights the scale and complexity of ensuring sustainable water supply management in the region. This extensive system serves approximately 68,822 households, necessitating a robust Monitoring and Evaluation framework to ensure efficient data collection, real-time assessment, and prompt corrective actions that facilitates the delivery of adequate, safe, and reliable water supply at affordable tariffs, ensuring long-term operational efficiency and financial viability. However, currently while data needed for monitoring and evaluation is collected, except for daily scrutiny of water quality testing there is no systematic monitoring and evaluation system that has been established. Currently only the operating agency and the department have access to the collected data. In this case establishing an effective MVS level committee is crucial to develop a robust monitoring system that systematically evaluates the system's performance in terms of water quality, Non-Revenue Water (NRW), O&M and bulk water supply cost.

Committee Composition

A committee at MVS level, comprising representatives from all key stakeholders, including government departments, project agencies, and members of the VWSCs or Gram Panchayats (GP) is needed for regular monitoring and assessment of the scheme. It is essential to include representatives from GPs/VWSCs into the MVS monitoring structure to bring in grassroots level insights ensuring that water supply solutions are tailored to the specific needs of the community and to ensure checks on the cost of operations which will then reflect in bulk water

rates. Furthermore, their involvement can also promote effective and efficient use of water resources, asset management, O&M and cost recovery. Additionally, other relevant stakeholders, such as experts from local engineering and higher educational institutions, can also be involved to strengthen the technical know-how of the users and the management of large-scale bulk water supply systems. This collective approach will foster community ownership, promote sustainable practices, and facilitate effective monitoring and evaluation mechanisms, thereby improving the overall performance and sustainability of the bulk water supply system.

To ensure equitable representation and effective community participation in the MVS governance framework, the committee formation should follow a structured and inclusive approach. The committee may comprise a maximum of 11 to 13 members including the chairperson for effective functioning and to ensure a balanced representation from various stakeholders' categories. The proposed committee could include 4 to 5 representatives from GPs/VWSCs or communities to ensure that grassroots perspectives are incorporated, effectively addressing the concerns and priorities of the local population. Moreover, these members should be selected on a rotational basis to ensure participation from all GPs/VWSCs in the operational area of the MVS are covered. This rotational mechanism promotes inclusiveness, prevents monopolization of decision-making, and enables broader community engagement and representation. In addition, these members should be selected through transparent processes so that diverse social groups including marginalized communities, women and youth are included. By maintaining a diverse and rotational membership structure, the committee can effectively uphold the principles of inclusiveness, transparency, and community-led governance in the MVS framework of the drinking water supply system.

The committee formation process involves clearly defining the objectives with specific indicators for quantity and quality of water, service delivery, infrastructure condition, customer satisfaction, system performance and sustainability. The data collection plan for each of the indicators should be specified in terms of frequency and timing, tools and technology and responsible agencies. The data analysis and reporting procedure should be determined, and benchmarks should be established to compare the actuals. A system of providing feedback to the decision makers needs to be established to take corrective actions and improve performance. Continuous effort in capacity building and training is needed to improve skills. The systems should focus on technology, innovation, processes for continuous evaluation and improvement. Information about the system performance should be transparent and accessible to stakeholders.

Function of the Committee

The monitoring committee that will be responsible for operating and managing the bulk water supply in the MVS system comprises of 11 to 13 members. The composition includes:

- 1 member from the private agency
- 1 member from the department concerned
- 4 to 5 members from VWSCs/GPs or community representatives
- 2 members from local engineering colleges or management institutes

- 1 member from the Zila Parishad
- 1 member from the Taluka representatives
- 1 member from the Legislative Assembly
- 1 representative from the Primary Health Centre (PHC)

This diverse representation will ensure inclusive decision-making and effective management of the MVS system. The committee must include a Chairperson, a Vice-Chairperson, and a Member Secretary to ensure smooth functioning and effective management of regular meetings. Typically, the member secretary is designated as the Project In-charge or Project Manager of the MVS, ensuring day-to-day functioning and the O&M of the project and accountability in overseeing the committee's operations. Additionally, the Chairperson of the committee will be from the Zila Parishad or Legislative Assembly, while a Vice-Chairperson can be from the department.

The function of the committee is to manage the database collected on different aspects of the MVS: Source sustainability, water quality & quantity, financial aspects, O&M and institutional aspects.

Additionally, the committee's responsibility is to analyze the data and display the results that will be accessible to all the stakeholders. Monthly review meetings are to be held and agendas to be included are report dissemination, actions-taken report, dispute settlement, feedback system from various stakeholders, water testing at IVDN and Water Treatment Plant (WTP) levels. **Annexures I and II** have sample key performance indicators. There is also a need to regularly assess these indicators against the benchmarks and in cases of deviation, the committee should discuss and take appropriate actions to address them.

What does existing evidence show?

As JJM encourages active participation and involvement of community members in O&M and financial management of the schemes at the village level, their active involvement and representations can enhance the system efficiency and effectiveness in the bulk water supply system as they affect user charges. Therefore, representatives from VWSCs/GPs must be actively involved in the committee to participate in the planning, implementation, and O&M of the MVS system. Their role should also include monitoring and managing of Non-Revenue Water (NRW) and overseeing the water quality assessment of both the WTP and the distribution system. While GPs/VWSCs manage the O&M of SVSs, including IVDN and Water Purification Plants (WPPs), their involvement in MVS would enhance financial and operational efficiency in many ways. Their active participation will facilitate accurate O&M cost estimation, budgeting, tariff collection, and cost recovery ensuring financial sustainability. Additionally, it would improve accountability in areas such as energy consumption, water tariff calculations (IVDS + MVS), billing, NRW management, and asset management.

The committee will also help in monitoring and assessing the scheme regularly and identifying the critical areas such as system efficiency, infrastructure integrity, non-revenue water, water quality data, and SCADA system audits. It will also help in identifying problem areas and take necessary actions within the stipulated time.

The committee should be responsible for overseeing the O&M, monitoring water quality and supply service standards, ensuring financial accountability and efficient management of resources, facilitating community engagement, grievance redressal, and awareness campaigns to promote sustainable water use practices among users. The committee should also play a crucial role in regularly assessing Key Performance Indicators (KPIs).

Several case studies highlight the significance of community representation and community-led management in both urban and rural drinking water supply systems. These studies emphasize the role of local participation in decision-making, operation, and maintenance, leading to improved water governance, sustainability, and service delivery (Hutchings et al., 2020; CPHEEO, 2023). For instance, in Surat, an NRW Cell was established in 2006-07 to address rising consumer complaints regarding low pressure, leakages, huge water wastage and service disruptions. The committee conducted a city-wide water audit and oversaw planning, implementation, and monitoring of water supply services. Supervised by senior engineers and supported by zonal officers, the initiative improved accountability but lacked ward member representation, leading to limited success in achieving service targets (CPHEEO, 2023).

Similarly, the WaterAid Ethiopia developed the 'Rural Water Boards' model for managing multi-village piped water schemes. This community-run utility leverages economies of scale to employ skilled professionals under the governance of community-elected boards. The model has effectively sustained and expanded water services while addressing long-term service sustainability challenges to ensure high service levels (Tillett et al., 2020). Within India, several case studies also support the community management and their active involvement in MVS water supply system (Hutchings et al., 2020).

Establishing a dedicated committee for each MVS will provide a platform for communities to voice concerns related to the MVS drinking water supply. The committee could ensure that these issues are effectively addressed by the relevant agencies or departments, fostering better coordination and improved outcomes.

Conclusion

In conclusion, integrating community management and participation into the MVS framework for rural drinking water supply presents a significant opportunity to enhance system efficiency and sustainability. Strengthening the role of community representatives in MVS operations could lead to improved financial management, efficient O&M, and greater institutional sustainability, ultimately enhancing the overall performance of the water supply system. The committee can also play a crucial role in strengthening bulk water supply systems in rural areas by improving financial accountability, enhancing O&M efficiency, and addressing human resource constraints.

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Appendix I.

Objectives of the Monitoring Committee

The monitoring committee aims to evaluate Key Performance Indicators (KPIs) related to various aspects of the MVS system. These include:

- **Quality and quantity of the drinking water supply**
- **Water wastage and Non-Revenue Water (NRW) management**
- **Energy consumption monitoring**
- **Infrastructure performance and efficiency**
- **Operation and Maintenance (O&M) effectiveness**
- **Financial management for cost control and accountability**
- **Institutional sustainability to strengthen governance and community engagement**
- **Source sustainability to ensure long-term water availability**

Appendix-II

Key Performance Indicators based on objectives at MVS level

List of possible key performance indicators (KPIs) for monitoring and evaluating rural drinking water supply in the MVS by the committee

Broad objectives/components	KPIs	Measurable indicators
I. Quality and quantity of the drinking water supply	• Quantity of water supplied- 55 LPCD • Quality of water supplied as per BIS-10500, 2012	• % of households covered in each IVDN • Average LPCD supplied in a month • % of water samples passing the benchmark from each IVDN for a particular month
II. Water wastage and Non-Revenue Water (NRW) management III. Energy consumption monitoring	a. Water wastage b. Non-revenue water c. Energy consumption per KI of water d. Electricity bills at WTP level	• % of water wastage/NRW between jack well inlet to WTP • % of water wastage/NRW between the WTP to different OHTs • % of NRW in the total water supplied to habitations • Energy consumption per kl of water supplied to households • Monthly Electricity bills
IV. Infrastructure performance and efficiency	a. Non-revenue water b. Repair of the infrastructure	• % of water wastage during transit • Repair cost per year in MVS and IVDN
V. O & M Effectiveness	• Repairing and maintenance of infrastructure (damage/leakages repair by Contractors in MVS)	• Repairing cost per year in MVS • Maintenance cost per year in MVS • Repair cost per year at IVDN

	• Salary Cost • O&M Cost per households	• Maintenance cost per year at IVDN • Monthly salary cost per household at MVS bulk supply • Monthly salary cost per household at IVDN • O&M (MVS+IVDN) cost per household
VI. Financial management	• Water Tarriff (IVDS+MVS) • Cost recovery	• Monthly water bill charged • % of water bills collected out of the total bills per month • % of households contributed to the total community contribution in IVDN
VII. Institutional sustainability to strengthen governance and community engagement A. Grievance Redressal Mechanism B. User Feedback	a. Minor complaints (Leakages, Inadequate water supply, no timely water supply) b. Major complaints (Restricted water supply, degraded water quality, major pipe leakage/brokage) a. Minutes and meetings	• Total no. of minor complaints registered by each IVDN in a month • % of grievance pending for more than 2 days • Total number of major complaints registered in a year • % of complaints resolved within a week. • No. of meetings conducted in a year • % of the total members of the committee attended the meeting • No. of times the minutes are written
VIII. Source Sustainability	a. Ground water level b. Availability of surface water c. Extent of contamination	• Monthly average water table • Surface water shortage, if any • Average contamination level in the water received at the inlet

Note: IVDN: Individual Village Distribution Network, MVS: Multi Village Schemes, LPCD: Liters Per Capita Per Day.

- Water quality parameters are referred to as per 2012, BIS-10500 standards (provided by JJM guidelines)

- i) *Audit*: To check the functionalities of the schemes water audit can be conducted by the Committee to check for the infrastructure efficiency, leakages, faults, water budgeting, NRW, wastage, O&M and financial management of MVS.
- ii) The Committee should monthly/quarterly check these indicators. There could be also an annual checkup of these indicators.
- iii) *Application* of KPIs is useful in terms of monitoring and evaluation of MVS system.
- iv) Minutes of the meetings should be displayed to all the stakeholders.