Workshop Report

From Infrastructure to Institutional Strengthening: Community-Led Operation & Maintenance under Jal Jeevan Mission/ Rural Drinking Water Supply Schemes

Organized by: IIM Bangalore
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भारतीय प्रबंध संस्थान बेंगलूर
INDIAN INSTITUTE OF MANAGEMENT
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1. Background

Under the Jal Jeevan Mission (JJM), India has achieved significant progress in expanding rural household tap connections. As infrastructure creation nears saturation in several states, the policy discourse has shifted from coverage expansion to long-term sustainability through effective Operation and Maintenance (O&M).

Sustainable rural water supply depends not only on infrastructure, but also on institutional strength, financial viability, community ownership, and behavioral change. Recognizing this transition, IIM Bangalore (under the JJM Chair) and UNICEF jointly convened a regional workshop to deliberate on community-led O&M models, institutional arrangements, financial sustainability, and Social and Behavior Change (SBC) approaches.

The workshop brought together participants from 7 states[1] and included senior administrators, engineers, academic experts, civil society partners, and development agencies to share field experiences, identify challenges, and co-create pathways for strengthening community-led O&M systems.

2. Objective of the Workshop

The workshop aimed to achieve the following objectives:

- To identify State-level experiences and challenges in operationalizing community-led O&M frameworks under JJM
- To facilitate peer learning and exchange of best practices
- To outline priority action points and technical support for States and supporting institutions to strengthen O&M

3. Key Activities and Discussions

a. **Inaugural Session** The workshop opened with remarks by Prof. Gopal Naik, who positioned the discussions within the evolving trajectory of the Jal Jeevan Mission (JJM). He noted that the Mission had made significant progress in expanding rural tap water coverage, with over 80 percent of rural households now connected. However, he emphasized that the next phase would be more demanding. The focus, he stated, must shift from infrastructure creation to ensuring long-term functionality and sustainability. With nearly 190 million households to be served and one of the largest public investments in the sector at stake, the success of JJM is

[1] Assam, Andhra Pradesh, Bihar, Madhya Pradesh, Kerala, Karnataka, Telangana,

critical for improving public health, reducing drudgery for women and children, strengthening educational outcomes, and advancing the broader vision of Viksit Bharat.

Prof. Naik underscored that infrastructure alone does not guarantee reliable service delivery. Robust Operation and Maintenance (O&M) systems are essential to sustain gains. Across states, several common challenges persist including hesitation among communities to assume O&M responsibilities, leakages and low pressure in distribution networks, high operational costs, weak tariff collection, water quality concerns, and ambiguity in institutional roles. He further noted that States operate in diverse contexts ranging from Single Village Schemes to complex Multi-Village Schemes and therefore no single model can address all situations. Context-specific approaches, supported by institutional strengthening and financial sustainability, are necessary.

Building on this perspective, Mr. Manish Wasuja from UNICEF highlighted the public health implications of reliable water supply. Safe and dependable drinking water directly influences nutrition, school attendance, and overall well-being. While acknowledging the significant expansion in access under JJM, he stressed that access alone is insufficient; systems must function consistently and safely. Community-based O&M, he noted, lies at the heart of sustainability. When communities understand the value of water and actively participate in system management, ownership strengthens accountability. Mr. Wasuja also emphasized the need for convergence across departments such as PHED, Panchayati Raj and Rural Development, particularly for source sustainability and groundwater recharge. He called for greater investment in skill development and structured community engagement as JJM moves into its extended phase. Initiatives such as “Nal Jal Mitras” and comprehensive capacity-building programmes can reinforce local institutions. Ultimately, sustainable water systems will depend not only on infrastructure, but on informed and engaged communities working in partnership with government institutions.

b. Presentation of key insights from IIMB Studies:

Following the inaugural session, Prof. Gopal Naik presented insights from a series of conceptual and empirical studies undertaken by IIM Bangalore across multiple states to assess sustainability under the Jal Jeevan Mission. The session presented findings from empirical studies undertaken across multiple states, analyzing the functioning of rural drinking water systems with particular attention to operational practices, financial performance, staffing patterns, and institutional arrangements at the grassroots level.

The studies examined rural drinking water systems across four interrelated dimensions including source sustainability, operational efficiency, financial viability, and institutional robustness. He emphasized that sustainable service delivery depends not only on engineering soundness but also on strong managerial systems at the grassroots level. From a technical standpoint, sustainability requires reliable source management, effective treatment systems, regular water quality testing, preventive maintenance, and IT-enabled monitoring. From a managerial perspective, careful physical and financial budgeting, cost computation, tariff determination, billing and collection, grievance redressal, documentation, and structured capacity building are equally critical. The presentation compared three governance approaches, notably public management, full community management, and co-management. Among the three frameworks presented, co-management was suggested as the most suitable framework. Under this model, departments handle technically intensive functions such as source sustainability, major repairs, regulatory oversight, and monitoring, while VWSCs or Panchayats manage day-to-day operations including distribution, minor maintenance, billing, and record keeping.

Findings from the studies revealed significant gaps between actual user charges and required O&M costs, particularly in smaller villages with high fixed cost burdens. Pump operator salaries constitute a major share of expenditure, and staffing optimization including shared or part-time models which can substantially reduce per-household costs. Evidence from Multi-Village Schemes demonstrated the need for clear role delineation at both Bulk Water Supply and village levels, supported by strong monitoring mechanisms. The studies also showed that transition to 24/7 supply reduces wastage and improves operational efficiency. Overall, the evidence underscores that full O&M cost recovery, role clarity, phased transition planning, and sustained community engagement are essential for long-term sustainability.

c. Presentation of Working Models of Community-led O&M

In the next session, working models of community-led O&M were presented from the four states. The details of state-wise presentation are as follows:

- **Community Managed O&M for Drinking Water Supply in Kerala:** Dr. Binu Francis (IAS), Joint Managing Director of the Kerala Water Authority (KWA), presented Kerala's experience in managing Operation and Maintenance (O&M) of rural drinking water supply systems. He explained that O&M in Kerala is largely overseen by KWA, with universal metering and systematic billing practices. All household connections are metered, and user charges are collected regularly. Households are entitled to up to 15 kiloliters (KL) of water, with tariffs applied beyond this threshold. This structured and technology-enabled approach has strengthened accountability and service monitoring.

  Alongside departmental systems, Kerala has a long-standing tradition of community-managed water supply schemes, particularly under the Jalanidhi programme launched in 2000. Under Jalanidhi Phases I and II, 5,884 schemes were implemented across 227 Gram Panchayats, primarily targeting SC, ST, and BPL households. Gram Panchayats were selected based on water scarcity, quality concerns, presence of marginalized communities, and potential for community ownership. While capital costs were largely government-supported, communities assumed responsibility for O&M. At the Panchayat level, schemes are overseen by committees chaired by the Panchayat President, with structured sub-groups handling implementation and monitoring.

  Through case studies of Nadathara and Nenmeni, the presentation highlighted how strong social capital, transparent governance structures, general body meetings, and software-

based billing systems contribute to sustained functionality. However, challenges remain. These include limited technical expertise at the community level, weak cost recovery due to subsidized supply, declining volunteer participation, climate-related source stress, and lack of strong legal mechanisms to address non-payment.

Dr. Francis emphasized replicable practices such as solar-powered systems, gravity-based schemes, water quality testing laboratories, women-managed schemes through Kudumbashree, clear by-laws, and scientific water resource assessment. Kerala's experience underscores the importance of structured governance, metering, technology, and institutionalized community participation in sustaining rural water supply systems, while recognizing the continuing need to strengthen financial and social sustainability.

- **Telangana's Post-Saturation O&M Experience under Mission Bhagiratha:** Mr. Madhubabu, Chief Engineer (O&M) presented Telangana's experience under Mission Bhagiratha, a large-scale drinking water initiative that was substantially completed prior to the launch of the Jal Jeevan Mission (JJM). The scheme sources water primarily from the Krishna and Godavari rivers, 56 TMC of water reserved exclusively for domestic supply under the scheme. The scheme has achieved nearly 100 percent household coverage, with 23,451 rural habitations with 53.14 lakh household connections. He noted that while the programme was implemented under significant pressure to achieve rapid coverage, long-term sustainability depends on infrastructure quality and adequate stabilization after commissioning.

  A key principle of Mission Bhagiratha is prioritizing sustainable source selection rather than attempting to artificially sustain unsuitable local sources. The scheme provides 100 litres per capita per day (LPCD) to rural households. Reservoir levels are monitored daily, and alerts are issued if water drops below defined thresholds. Alternate local sources are maintained to manage contingencies, and inter-state coordination has been used during extreme shortages.

  Strong monitoring systems underpin the programme. Raw and treated water quality are checked daily, and Water Treatment Plants (WTPs) undergo quarterly inspections by senior engineers. SCADA systems monitor transmission efficiency, and newer plants incorporate recycling mechanisms. Accountability mechanisms include daily teleconferences with engineers, a lock-and-log documentation system, and transparent reporting through online platforms.

From the Overhead Service Reservoir (OHSR) to the household level, Gram Panchayats manage local O&M functions such as chlorination, minor repairs, tank cleaning, new connections, and grievance handling. A dedicated monitoring cell operates helpline 1916. While tariffs are collected and industrial users are charged separately, the government currently bears a significant share of O&M costs. The presentation underscored that robust source management, continuous monitoring, structured accountability, and capacity building are central to sustaining large-scale water supply systems.

- **Operationalizing Community-led O&M of Piped Water Schemes by Aga Khan Rural Support Programme (AKRSP), Bihar:**

  The presentation by Mr. Abhijeet Kumar (Program Specialist, AKRSP) outlined AKRSP's experience of ward-level piped water supply in Bihar. AKRSP, working in Bihar since 2008, initially focused on retrofitting handpumps. However, widespread bacteriological contamination prompted a shift toward establishing community-owned mini piped water schemes. Under the Har Ghar Nal Ka Jal[2], AKRSP has been supporting Panchayati Raj Department through capacity building interventions aimed at making the scheme operations sustainable. Its operations are spread across 8,035 Gram Panchayats and nearly 1.14 lakh wards[3].

  Several O&M challenges including physical, institutional, financial and operational were discussed. Physical issues included design deviations, poor construction quality, and partial functionality of schemes. Institutionally, WIMCs faced capacity gaps, weak management systems, and limited community engagement. Financially, user fee collection was irregular, and fund flows were delayed. Operational records were poorly maintained, and routine activities such as tank cleaning and water quality testing were often neglected.

  To address these gaps, structured efforts were undertaken to strengthen institutions and community ownership. Anurakshak and WIMC members received training and ongoing handholding support. Platforms such as Jal Chaupal meetings fostered dialogue, accountability, and collective problem-solving. Digital tools, including AVNI and the

[2] Launched in 2016 by Government of Bihar

[3] Till 2023 the programme was implemented through Panchayati Raj Institutions, with Ward Implementation and Management Committees (WIMCs) responsible for grassroots-level oversight. In July 2023, all the schemes were handed over to PHED.

mGramseva portal, were introduced to track O&M activities, improve financial transparency, and strengthen record-keeping. Community Resource Persons facilitated mobilization and monitoring processes.

Over time, improvements were observed in tap coverage, water testing, operational regularity, institutional functionality, and tariff collection. The experience underscores that sustainable O&M requires continuous capacity building, timely payments to frontline workers, stronger interdepartmental coordination, and effective use of technology alongside sustained community engagement.

- **Namma Uru Namma Kere, Shri Kshethra Dharmasthala Rural Development Project (SKDRDP), Karnataka:**

  Mr. Anil S.S. (CEO, SKDRDP) shared the experience of the “Namma Uru Namma Kere” initiative, a community-led lake rejuvenation movement that originated in North Karnataka in response to acute water scarcity. He explained that ecological stress in the region had begun affecting agriculture, livelihoods, and household water security. The initiative emerged from the understanding that ecological degradation and rural distress are closely connected.

  He described the guiding principle of the movement as community ownership. Villagers themselves identify the lake for restoration. A Kere Samiti (Lake Committee) is formed to oversee the process. The committee ensures representation and transparency. Technical experts conduct surveys and feasibility assessments. SKDRDP plays a facilitative and supervisory role. Much of the physical restoration work is carried out by villagers, which strengthens accountability and ownership.

  After completion of the restoration work, the lake is formally handed over to the Kere Samiti. The committee takes responsibility for maintenance, fund management, water quality monitoring, and long-term protection.

  Mr. Anil also highlighted challenges faced during implementation, including lack of trust, declining volunteerism, and resistance to behavioral change. He noted that continuous social mobilization was necessary. He shared that the initiative has led to improved groundwater recharge, better water availability, and stronger local institutions.

d. Innovative Social and Behavior Change Approaches for Strengthening Community Engagement in O&M:

Ms. Bhawana Luthra (SBC Specialist, PriMove) focused on the behavioral dimensions of sustainability under the Jal Jeevan Mission (JJM). She emphasized that while infrastructure expansion has been significant, long-term functionality depends on meaningful community participation and ownership. Field experiences show gaps such as weak accountability, low collective responsibility, and limited engagement in O&M processes.

She noted that many communities perceive JJM infrastructure as government owned. Although people may understand their role, awareness does not always translate into action. Practices such as tariff payment, safe water storage, and active participation in village committees often remain inconsistent. These behaviors are shaped by long-standing habits and social norms.

A central message of her presentation was the need for a human-centered approach. Communities value and protect what they help create. Therefore, engagement must begin at the planning stage and treat communities as partners rather than beneficiaries. She recommended behavioral diagnostics at the Gram Panchayat level, participatory research tools, piloting and refining interventions, and strengthening VWSCs through structured engagement. She concluded that sustainable water systems depend not only on infrastructure, but on behavior, trust, and collective ownership.

e. Roundtable Discussion: State and Community – Defining Roles for Sustainable O&M under JJM

The roundtable discussion, moderated by Mr. Manish Wasuja (UNICEF), brought together senior administrators, engineers, and academic experts from multiple states to deliberate on a central question: how to balance service delivery responsibilities with community ownership to ensure sustainable Operation and Maintenance (O&M) under the Jal Jeevan Mission.

Kerala shared its experience with the Jalanidhi model of community-managed water supply. It was noted that while traditional public-sector systems often limit community engagement, fully community-managed schemes can function effectively when supported by supervisory oversight at the Gram Panchayat level. However, sustaining community ownership beyond the initial phase remains a challenge.

Bihar reflected on its rapid infrastructure expansion, achieving high coverage early on. Increasing technological complexity has made O&M more demanding. Technical training is provided, but it was acknowledged that technical capacity alone is insufficient. Behavioral and institutional strengthening is equally necessary.

Madhya Pradesh highlighted financial viability concerns, particularly in smaller habitations where tariff collection is inadequate. The state is promoting Multi-Village Schemes to reduce per capita costs and adopting digital systems for tracking revenues. Assam described a comparatively strong culture of participation and payment, supported by convergence across departments and structured training of Jal Mitras through ITIs.

Telangana outlined a hybrid model in which communities manage distribution at the village level, while technically complex functions remain with the government. Karnataka emphasized technology-driven monitoring through metering and digital dashboards. Andhra Pradesh noted fiscal constraints despite introducing an O&M policy with community participation.

Overall, the discussion underscored that sustainable O&M requires realistic decentralization, financial planning, institutional clarity, technology integration, and continuous community engagement.

4. Key Outcomes and Recommendation and Way Forward

In the concluding session, Prof. Gopal Naik outlined the way forward for strengthening community-led Operation and Maintenance (O&M) under the Jal Jeevan Mission. He reiterated that financial viability remains central to sustainability. Communities are willing to pay when they receive regular and reliable services. Improving service delivery, therefore, is essential for building ownership and strengthening accountability.

He emphasized that sustainable systems require strong infrastructure, transparent governance, assured water quality and quantity, and clear institutional roles. As rural water systems become more technically complex, decentralization must be supported by continuous capacity building and realistic financial planning. Institutionalization of processes, budgeting discipline, and structured monitoring are necessary to ensure long-term functionality.

Prof. Naik also identified specific areas where IIM Bangalore and UNICEF can support states. These include capacity building on financial management, budgeting, and accounting systems; development of contextualized tools to operationalize programme functioning at the Gram Panchayat and scheme level; and support in designing Social and Behaviors Change (SBC) strategies and action plans. He emphasized the importance of peer learning platforms and ongoing engagement with states to share evidence, best practices, and practical solutions.

The session concluded with a call for collaborative modalities through which academic institutions and development partners can work closely with states to embed financial sustainability, behavioral change, and community ownership within O&M systems.

5. Annexure:

I. Workshop Schedule

Time	Activity	Speaker/ Moderator
09:30 am – 10:00 am	Registration and Reception	
10:00 am – 10:15 am	Opening and context setting: Community-led O&M under Jal Jeevan Mission	*Prof Gopal Naik, IIM Bangalore*
10:20 am to 10:40 am	National Perspective on O&M of JJM/ Rural Drinking water supply scheme and provision for community participation	*Mr. Manish Wasuja, UNICEF Delhi*
10:45 am – 11:30 am	Presentation of Key Insights: • *Community Participation in O&M: Relevance for Sustainability and Pathways for Implementation*	*Prof. Gopal Naik, IIM Bangalore*
Tea-break (11:30 am – 11:50 am)		
12:00 – 13:00 pm	Working Models of Community-Managed O&M: State and Civil Society Experiences • *Presentation 1: Community-Managed O&M for Drinking Water Supply in Kerala* • *Presentation 2: Telangana's post-saturation O&M experience under Mission Bhagiratha* • *Presentation 3: Presentation by CSO/ NGO partner – AKRSP, Bihar*	*Moderator: UNICEF Team* *Presenters: State/ CSO representative*
Lunch Break (13:00 pm – 13:50 pm)		
14:00 pm to 14:25 pm	• *Presentation 3: Presentation by CSO/ NGO partner – SKDRDP, Karnataka*	
14:30 pm – 15:00 pm	Technical Presentation: *Innovative Social and Behavior Change Approaches for Strengthening Community Engagement in O&M*	*Ms. Bhawana Luthra, SBC Expert, PriMove*
15:10 pm – 15:50 pm	Roundtable Discussion *"State and Community: Defining roles for sustainable O&M under Jal Jeevan Mission"* Panelist: 1. *Dr Binu Francis (IAS), JMD Kerala Water Authority* 2. *Mr. Bhaskar Sharma, Additional Chief Engineer, PHED, Assam* 3. *Mr. Manoj Kumar, Chief Engineer, PHED, Bihar* 4. *Mr. Madhu Babu, Chief Engineer, PHED Telangana*	Moderator: *Mr. Manish Wasuja*

	5. *Mr. Shubham Agarwal, Executive Engineer, Shivpuri, Madhya Pradesh* 6. *Md Abdul Mateen, Superintending Engineer, Kakinada, Andhra Pradesh* 7. *Prof. Gopal Naik, JJM Chair Professor, IIM Bangalore*	
Tea Break (15:55 pm – 16:10 pm)		
16:15 pm – 16:45 pm	Way forward and action planning: • *To identify follow-up actions and collaborative modalities - support that can be provided to the states*	*Prof. Gopal Naik, IIM Bangalore*
16:45 pm – 17:00 pm	Closing Remarks	*UNICEF Team*

II. List of Participants

S. No.	Name of participant	Designation
1	Md. Abdul Mateen	SE, RWS&S Kakinada, AP
2	Prasanna Kumar P V	SE, RWS&S Chittoor, AP
3	Suresh R	SE RWS&S Anantapur, AP
4	Abhijeet Kumar	WASH Specialist, Agha Khan Rural Support Program, Bihar
5	Anil Kumar S S	C.E.O, SKDRDP
6	Santhosh	Director, Siddaganga
7	Sheenappa	Regional Director, SKDRDP
8	Pramod	Project Officer, SKDRDP
9	Bharath	Engineer, SKDRDP
10	Manoj Kumar	Chief Engineer, PH Zone, Patna
11	Binu Francis IAS	Joint Managing Director, KWA, Kerala
12	Krishnakumar V.S	Deputy Chief Engineer, KWA, Kerala
13	Madhu Babu J	Chief Engineer, Telangana
14	Bhaskar Jyoti Sarmah	Additional Chief Engineer, PHED, Assam
15	Arnav Baruah	Assistant Mission Director, JJM, Assam
16	Arsalan Aarib Imroz	State Programme Officer (ISA), Assam
17	Jolly Changmai Kalita	State Coordinator (IEC), Assam
18	Abhijit Misra	Sr. SPM (Panchayati Raj), Assam
19	Srikanth KS	Executive Engineer, Bangalore Rural
20	Manju Prasad	Assistant Executive Engineer, Sira, Tumkur
21	Sushma	District Tech Support Unit, Bangalore
22	Arpitha	District Tech Support Unit, Bangalore
23	Shubham Agarwal	Executive Engineer I/c, PHED, Shivpuri, MP
24	Rakesh Dawar	Assistant Engineer, MP
25	Bhavana Luthra	SBC Expert, PriMove
26	Manish Wasuja	WASH Specialist, UNICEF, New Delhi

27	Venkatesh Aralikatty	WASH Specialist, UNICEF, Hyd.
28	Tethal Parmar	WASH Specialist, UNICEF, Assam
29	Prabhath Matpady	Consultant, UNICEF
30	Pankaj Kumar	Manger, Programs, Arghyam
31	Gopal Naik	JJM Chair, IIMB
32	Aditya Shrinivas	Assistant Professor, IIMB
33	Rajendra M	Consultant, JJM IIMB
34	Niketa	Project Assistant, UNICEF-IIMB
35	Esha Chakraborty	Technical Assistant, JJM IIMB
36	Anjali Dominic	Technical Assistant, JJM, IIMB
37	Rishikaa Sajeev	Jr. Res. Associate, JJM, IIMB
38	Logesh A	Jr. Res. Associate, JJM, IIMB
39	Ipsita Sarkar	Sr. Res Associate, JJM, IIMB