



Empowering the Marginalized: The Transformative Impact of Jal Jeevan Mission on India's Vulnerable Communities

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Abstract: The Jal Jeevan Mission (JJM), launched in 2019 by the Government of India, represents a paradigm shift in rural water governance, aiming to provide Functional Household Tap Connections (FHTCs) to every rural household by 2024, with a focus on sustainable and inclusive access to safe drinking water. This paper examines the mission's profound impact on Particularly Vulnerable Tribal Groups (PVTGs), persons with disabilities, and women in marginalised communities, drawing from secondary sources such as government reports, academic studies, and success narratives. Through decentralised community-led implementation, JJM has alleviated drudgery, enhanced health outcomes, and fostered gender empowerment, transforming water from a scarce resource into a catalyst for social equity. Key findings highlight over 81 per cent national coverage as of 2024, with targeted interventions in tribal areas reducing waterborne diseases by up to 40 per cent and enabling women's participation in livelihoods. Success stories from regions like Bankura (West Bengal), Jorhat (Assam), and Chhattisgarh illustrate tangible changes, including reduced medical expenses and increased school attendance. The policy framework emphasises source sustainability and behavioural change; however, challenges such as uneven state-wise progress persist. Recommendations call for enhanced monitoring, climate-resilient infrastructure, and integration with sanitation missions to support holistic development. Ultimately, JJM not only quenches thirst but ignites hope, aligning with SDG 6 and paving the way for inclusive rural India.

Keywords: Jal Jeevan Mission, Vulnerable Communities, Water Security, Gender Empowerment

Introduction

India's rural landscape, home to over 65 per cent of its population, has long grappled with water insecurity, particularly among marginalised groups. Particularly Vulnerable Tribal Groups (PVTGs), comprising 2.8 per cent of the tribal population or about 3 million people across 75 groups, inhabit remote, forested regions where access to clean water remains a perennial challenge. Persons with disabilities (PwDs), estimated at 2.21 per cent of the population or 26.8 million, face compounded barriers due to mobility constraints and inadequate infrastructure. Women and girls, who bear the brunt of water collection, spend up to 5 hours daily and endure physical exhaustion and lost opportunities for education and income generation.

The Jal Jeevan Mission (JJM), a flagship program under the Ministry of Jal Shakti, was launched on August 15, 2019, with a vision of "Har Ghar Jal" (water in every home). Allocating ₹3.5 lakh crore, it targets 55 litres per capita per day (lpcd) through individual household taps, shifting from communal standposts to personalised delivery. By emphasising sustainability via rainwater harvesting, greywater reuse, and community ownership, JJM addresses not just quantity but quality and equity.

This paper explores JJM's transformative role, weaving in success stories that humanise data. From PVTG hamlets in Odisha to disability-inclusive schemes in West Bengal, and women-led committees in Assam, these narratives underscore dignity restored and barriers dismantled. Grounded in secondary sources, the analysis reveals JJM's multiplier effects on health, economy, and gender dynamics, while critiquing policy gaps and charting a forward path.

Literature Review

Earlier studies on rural drinking water supply in India have largely focused either on water quality assessment or on the socioeconomic challenges affecting access to drinking water, with relatively limited attention given to evaluating the developmental impacts of major drinking water programmes (Suthar, 2011; Johri et al., 2019; Karunanidhi et al., 2021; Huang et al., 2020; Basu et al., 2021; Choudhuri & Desai, 2021). A few studies have examined determinants of access and community participation in rural water supply systems, but systematic evaluations of program outcomes remain scarce (Prokopy, 2009; Hutchings et al., 2017). There are studies which highlight the significance of watershed development as an integrated approach for improving natural resource management, rural livelihoods,

and community participation. Tripathy (2013) shows that rural women play a crucial but often under-recognised role in watershed activities such as resource conservation and agricultural management, though their involvement in decision-making remains limited. Further studies emphasise that participatory watershed programmes can empower women and enhance livelihood opportunities when institutional mechanisms encourage their participation (Tripathy, 2015a; Tripathy, 2015b). In tribal regions, watershed-based interventions help address water scarcity, enhance agricultural productivity, and strengthen the socio-economic resilience of vulnerable communities (Tripathy, 2020). These studies collectively underscore the importance of gender-inclusive, community-driven watershed management for sustainable rural development.

The study by Singh and Naik (2024) examines the early implementation impact of India's Jal Jeevan Mission (JJM) on rural drinking water access and associated social outcomes. The analysis focuses on intermediate effects, particularly the reduction in the burden and time required to collect water from distant sources.

The study's findings (Singh and Naik, 2024) reveal that household tap connections were significantly more prevalent among wealthier households in both the pre-JJM and early-JJM periods, reflecting persistent pro-rich inequalities. At the same time, women and female children in disadvantaged households continued to bear a greater burden of water collection. Although Scheduled Caste households showed relatively higher access to tap connections, larger household sizes were associated with lower access and longer water-fetching durations. The findings indicate a moderate early-stage impact of JJM, primarily reflected in improved household access to potable water. However, significant pro-rich inequalities persist in the distribution of household tap connections, consistent with the inverse equity hypothesis, where wealthier households benefit first from large public programmes. At the same time, relatively higher coverage among Scheduled Caste (SC) households and households with no formal education suggests some inclusive outreach. Overall, the study highlights moderate early impacts of JJM while emphasising persistent socioeconomic disparities in water accessibility. However, marginalised households continue to rely on distant or traditional water sources, indicating that infrastructure provision alone does not ensure behavioural adoption. Strengthening community awareness, participation, and equitable implementation is therefore essential for ensuring the long-term sustainability and social impact of the JJM.

Scholarly discourse on rural water access predates JJM, highlighting inequities in programs like the National Rural Drinking Water Programme (NRDWP). Studies by the Centre for Policy Research (CPR) noted that pre-2019 coverage hovered at 17 per cent, with tribal areas at a dismal 10 per cent. Post-JJM, evaluations affirm accelerated progress: a 2023 WHO report quantifies health savings at ₹1,000 per household annually through reduced diarrheal diseases.

On PVTGs, the “Stories of Change” compendium documents interventions in Andhra Pradesh and Chhattisgarh, where solar-powered schemes in Tusel village (Chhattisgarh) achieved 100 per cent coverage, slashing water-fetching time by 80 per cent. For PwDs, inclusive designs—ramps, low-height taps—align with Universal Design principles, as per a Shanlax Journals study showing 25 per cent improved independence.

Gender empowerment literature, including CEEW analyses, links JJM to a 15-20 per cent rise in women’s agricultural participation, freeing 2-3 hours daily for skill-building. Tata Trusts’ 2025 survey across six states corroborates community engagement boosting female leadership in Village Water Committees (VWSCs) by 50 per cent. Challenges persist in uneven implementation in low-coverage states like Jharkhand (55 per cent), which risks exacerbating disparities. This review synthesises these insights, framing JJM as a socio-technical intervention with equity at its core.

Objectives

To evaluate the implementation and socio-economic impacts of the Jal Jeevan Mission on Particularly Vulnerable Tribal Groups (PVTGs) and persons with disabilities in rural India, focusing on health, dignity, and accessibility improvements.

To analyse the role of community-driven governance under JJM in empowering women, breaking gender barriers, and ensuring the long-term sustainability of water resources.

Methodology

This research employs a secondary-source methodology, drawing on existing literature, official government reports, academic publications, and media narratives to synthesise evidence on the Jal Jeevan Mission’s impacts. Data were drawn from sources including the Ministry of Jal Shakti’s annual reports (2022-2025), Jal Jeevan Samvad publications, WHO studies on health multipliers, and peer-reviewed

articles from journals like the Journal of Rural Affairs. Web-based searches targeted progress statistics, success stories in tribal and marginalised areas, and policy analyses, ensuring a comprehensive review of over 50 documents from 2019-2025. Qualitative narratives were integrated with quantitative metrics, such as coverage rates and impact indicators, to provide a balanced, evidence-based assessment. Limitations include reliance on reported data, which may underrepresent on-ground variations, but triangulation across multiple sources enhances reliability.

PVTGs: From Seclusion to Sustainability

In remote PVTG hamlets like those in Odisha's Mayurbhanj district, clean water was once a mirage, intensifying malnutrition and isolation. JJM's targeted rollout, prioritising 75 PVTG groups, installed FHTCs in 64 homes of a Koraput village, symbolising "freedom." Women, relieved from 4-5 km forest treks, now nurture kitchen gardens, boosting nutrition. Health metrics show a 35 per cent drop in waterborne illnesses, per 2023 Samvad reports. Children's school attendance rose 25 per cent, their laughter replacing drudgery.

In remote, Particularly Vulnerable Tribal Group (PVTG) hamlets of Odisha, such as those in Mayurbhanj and Koraput districts, access to clean drinking water was historically a distant dream. These isolated communities, often nestled deep in forests or hilly terrains, relied on distant streams, ponds, or handpumps that were prone to contamination and seasonal scarcity. Women and girls bore the brunt, trekking 4-5 km daily through dense forests to fetch water, a task that consumed hours and exposed them to risks such as wildlife encounters and fatigue. This drudgery exacerbated malnutrition, as time constraints limited household activities like farming or childcare, while poor water quality contributed to frequent waterborne diseases such as diarrhoea, cholera, and dysentery.

The Jal Jeevan Mission (JJM), launched nationwide in 2019, prioritised 75 PVTG groups across India, including Odisha's vulnerable tribes such as the Korwa, Bonda, and Saora in remote pockets. In Odisha, JJM's targeted rollout-often in convergence with schemes like PM-JANMAN-has installed Functional Household Tap Connections (FHTCs) in these underserved areas. A notable example is a Koraput village where 64 homes received individual taps, symbolising liberation from age-old hardships. Similar progress occurred in Mayurbhanj's tribal hamlets, where coverage rose from minimal levels (e.g., only 4% in Mayurbhanj overall in 2019) to substantial gains through piped systems.

The impacts have been transformative. Freed from long treks, women now devote time to kitchen gardens, cultivating vegetables and other nutritious crops that directly combat the malnutrition prevalent among PVTGs. Improved water access has reduced reliance on unsafe sources, leading to better hygiene and fewer infections. Health improvements are evident: reports indicate declines in waterborne illnesses, aligning with broader JJM trends where safe tap water correlates with reduced disease incidence. Children's school attendance has surged, as girls no longer miss classes for water collection, allowing them to focus on education amid the replacement of drudgery with play and learning.

Odisha's overall JJM progress supports these gains. From just 3.51 per cent rural household coverage in 2019, the state reached over 77 per cent by late 2025, with millions of additional FHTCs provided despite challenges in remote PVTG areas.

Table 1: Key Impacts of JJM in Remote PVTG Hamlets (Examples from Odisha)

<i>Impact Area</i>	<i>Pre-JJM Situation</i>	<i>Post-JJM Changes (Reported/Observed)</i>	<i>Approximate Improvement</i>
Daily Water Fetching Distance	4-5 km forest treks for women/girls	Tap water at household doorstep	Elimination of treks
Time Saved per Household	4-6 hours daily on water collection	Redirected to productive activities (gardening, childcare)	+4-6 hours/day
Nutrition Enhancement	Limited kitchen gardens due to time scarcity	Increased vegetable cultivation for family consumption	Boost in dietary diversity
Waterborne Illnesses	High incidence (diarrhea, etc.)	Notable reduction	35 per cent drop (per reports)
Children's School Attendance	Low, especially girls due to water duties	Higher regular attendance	25 per cent rise

The implementation of the Jal Jeevan Mission (JJM) in remote, Particularly Vulnerable Tribal Group (PVTG) hamlets of Odisha has produced transformative socio-economic outcomes. The elimination of 4–5 km daily forest treks for women and girls signifies not merely physical relief but a structural shift in gendered labour burdens. Saving 4–6 hours daily per household has enabled greater time allocation to productive and care activities, strengthening household resilience. Improved water access has enabled kitchen gardening, thereby diversified diets and addressing micronutrient deficiencies. A reported 35 per cent reduction in waterborne diseases reflects improved public health outcomes, while a 25 per cent rise in school

attendance, especially among girls, indicates progress toward educational equity and intergenerational empowerment (Table 1)

Table 2: JJM Coverage Progress in Odisha (State-Level, Supporting PVTG Focus)

<i>Year/Period</i>	<i>Rural Households with Tap Connections</i>	<i>Coverage Percentage</i>	<i>Additional FHTCs Provided (Approx.)</i>	<i>Notes on PVTG Priority</i>
August 2019 (Launch)	3.11 lakh	3.51%	Baseline	Minimal in remote hamlets
2023 End	Significant gains	70-75% range	Millions statewide	Targeted PVTG rollout accelerated
Late 2025	68.38 lakh	77.14%	65.27 lakh since launch	Koraput/Mayurbhanj gains; PM-JANMAN convergence

The Jal Jeevan Mission's progress trajectory in Odisha demonstrates rapid infrastructure scaling combined with targeted social inclusion. From a modest baseline of 3.51 per cent rural coverage in August 2019, the state expanded to over 77 per cent by late 2025, providing approximately 65 lakh additional Functional Household Tap Connections (FHTCs). The accelerated rollout in tribal-dominated districts such as Koraput and Mayurbhanj highlights a deliberate equity-oriented strategy, further strengthened through convergence with PM-JANMAN. The data indicate a shift from minimal outreach in remote hamlets to inclusive service delivery, suggesting that infrastructure expansion, when socially prioritised, can substantially reduce regional disparities and enhance human development outcomes (Table 2).

Likewise, in Chhattisgarh's Tusel, a tribal bastion, solar-powered pumps under JJM delivered taps to 200 households, conserving forests and empowering locals in maintenance. These stories highlight JJM's ecological integration, which has revived springs and reduced migration.

Persons with Disabilities: Dignity in Access

Sunil Kundu's odyssey in Bankura, West Bengal, epitomises relief for PwDs. A 45-year-old with mobility impairment, Sunil's pre-JJM days involved agonising treks to contaminated wells, fueling chronic ailments. JJM's inclusive retrofitting, wheelchair-accessible taps brought water home, slashing medical costs by 50 per cent and restoring autonomy. Village-wide, 300 PwD households gained connections, fostering community support networks.

In Gujarat's Navsari, the Swachh Bharat Mission (SBM) and JJM synergies yielded Divyang-friendly complexes with ramps, Braille signage, and grab bars, serving 3,000+ users. Sultanpur village's CSC near Jogeshwar Temple, handling 5,000 Shivratri pilgrims, represents foresight, ensuring hygiene without exclusion.

Women Empowerment: Leadership and Livelihoods

Azadnagar in Haryana's Jhajjar, a Gram Panchayat of 657 households, transitioned from scarcity to self-reliance via women-led VWSCs. Post-JJM, 100 per cent coverage freed women for tailoring cooperatives, increasing incomes by 30 per cent.

The Koraikhowa Sokolani scheme in Assam's Jorhat district stands out: Led by Bina and Joshoda Kurmi of the tea tribe, the WUC extended pipes to 150 homes, combating iron contamination. Regular IEC sessions curbed wastage, while saved time spurred economic ventures-women's SHGs now generate ₹50,000 monthly. In Maharashtra's Mhapan, a women's group manages O&M, achieving zero leakages. These tales, from Bundelkhand's ODF villages to Arunachal's 75 per cent coverage milestone, reveal JJM as a gender revolution.

Quantitative Impacts: Data-Driven Insights

The Jal Jeevan Mission (JJM), launched in August 2019 as a flagship initiative of the Government of India under the Ministry of Jal Shakti, represents one of the world's largest rural water supply programs. Aimed at providing Functional Household Tap Connections (FHTCs) to every rural household by 2024, originally extended to 2026, JJM has transformed access to safe drinking water, particularly in underserved areas. Its scale, targeting over 19 crore rural households, necessitates rigorous empirical analysis to quantify not just coverage but also the cascading socio-economic benefits. As of the latest data from the JJM Dashboard in early 2026, national coverage stands at 81.71 per cent, a remarkable leap from a mere 16.74 per cent (3.23 crore households) at launch. This equates to over 15.82 crore households now connected, with an additional 11.87 crore FHTCs installed since inception. These figures highlight JJM's momentum, but the true measure lies in its equity focus, especially for vulnerable groups like Particularly Vulnerable Tribal Groups (PVTGs), persons with disabilities (PwDs), and women-headed households.

A key pillar of JJM's inclusivity is its tribal sub-plan, which allocates dedicated funds up to 8.2 per cent of the total budget for Scheduled Tribe (ST) areas, including

PVTGs. Audits from 2023 reveal that 70 per cent coverage has been achieved in PVTG-dominated habitations, surpassing the national average in select regions like Jharkhand's Saranda Forest and Odisha's tribal blocks. This progress is vital, as PVTGs, comprising over 10 lakh households across 75 communities, historically faced acute water scarcity, leading to migration and health vulnerabilities. In Jharkhand alone, JJM's Jhar-Jal Portal has extended benefits to 62 lakh families in PVTG and Left-Wing Extremism-affected districts, using drone mapping for remote terrains. However, challenges persist in ultra-remote PVTG pockets, where geological barriers require innovative sourcing, such as rainwater harvesting.

The health dividends of JJM are profound, directly addressing waterborne diseases that claim thousands of lives each year. A meta-analysis of water access interventions, including JJM's early phases, projects a 20-40 per cent reduction in diarrhoeal infections nationwide, potentially averting 3 lakh deaths per year, down from 4 lakh pre-JJM. This translates to annual healthcare savings of approximately ₹2,500 crore, factoring in reduced hospitalisation and treatment costs for rural populations. In fluoride-affected areas like Rajasthan's Sambhar Salt Lake region, safe piped water has curbed skeletal fluorosis, slashing medical expenses by 40-50 per cent for affected families. WHO-aligned studies emphasise that JJM's 55 litres per capita per day (lpcd) norm ensures "safely managed" water under SDG 6.1, correlating with a 25-30 per cent drop in child stunting rates in high-coverage districts. Case in point: In Karnataka's Chikballapur, safe water access rose from 30 per cent in 2019 to 87 per cent in 2023, leading to fewer outbreaks of cholera and typhoid, and community health workers reported a 35 per cent decline in clinic visits for water-related ailments.

Educationally, JJM liberates time for learning, particularly for girls burdened by water-fetching duties. In high-coverage districts like those in Gujarat and Haryana, girls' school enrollment has surged by 15 per cent, with attendance rates climbing 12-18 per cent as families no longer send children (especially girls aged 10-14) on 2-3-hour daily treks. The Jaldoot Programme, engaging over 35,000 students in Jalshala workshops, fosters WASH awareness and has indirectly boosted retention by integrating water education into curricula. At Rajasthan's Roshanpura Primary School, rooftop harvesting saves 10-15 minutes per child per day, enhancing focus and reducing dropout risk during the summer. Longitudinal data from Bundelkhand districts show a 20 per cent increase in proxies of female literacy, as mothers prioritise education over drudgery.

Economically, JJM catalyses productivity by reallocating labour. Women's workforce participation in agriculture has grown by 18 per cent in JJM-saturated villages, per an SBI Research report analysed by Times of India, as time saved from fetching (averaging 150 minutes daily) shifts to farm work or income-generating activities. In West Bengal, this manifests as a 15.2 percentage-point increase in female labour force participation, enabling diversified livelihoods such as sewing or running small enterprises. For PVTGs, income gains are amplified: In Bihar's Bhusaula Danapur, user charges collected (up to ₹3,000/month) fund maintenance while fostering economic ownership. Nationally, CEEW estimates a 10-15 per cent uplift in household income through health savings and productivity, with ripple effects on GDP via reduced absenteeism.

Table 3: Status of Households with Tap Water Connection (February 2026)

<i>State/UT</i>	<i>Total Households</i>	<i>Households with Tap Water Supply</i>	<i>Tap Water Supply (%)</i>
Goa	2,63,922	2,63,922	100.00
A & N Islands	62,037	62,037	100.00
D&NH and D&D	85,156	85,156	100.00
Haryana	30,41,314	30,41,314	100.00
Telangana	53,98,219	53,98,219	100.00
Puducherry	1,14,969	1,14,969	100.00
Gujarat	91,18,415	91,18,415	100.00
Punjab	34,26,808	34,26,808	100.00
Himachal Pradesh	17,08,727	17,08,727	100.00
Arunachal Pradesh	2,28,566	2,28,566	100.00
Mizoram	1,33,060	1,33,060	100.00
Ladakh	40,602	39,776	97.97
Uttarakhand	14,48,312	14,18,919	97.97
Bihar	1,67,55,041	1,60,36,454	95.71
Nagaland	3,63,829	3,44,088	94.57
Sikkim	1,32,790	1,22,288	92.09
Lakshadweep	13,370	12,227	91.45
Uttar Pradesh	2,67,20,015	2,43,73,963	91.22
Maharashtra	1,46,77,681	1,32,75,222	90.44
Tamil Nadu	1,25,25,988	1,12,21,025	89.58
Karnataka	1,01,30,702	87,84,386	86.71
Tripura	7,50,849	6,48,177	86.33
Meghalaya	6,50,854	5,43,411	83.49
Chhattisgarh	49,96,818	41,20,450	82.46

State/UT	Total Households	Households with Tap Water Supply	Tap Water Supply (%)
Assam	72,24,239	59,02,704	81.71
Jammu & Kashmir	19,25,535	15,64,272	81.24
Manipur	4,51,619	3,59,496	79.60
Odisha	88,64,271	68,47,752	77.25
Andhra Pradesh	95,53,169	71,72,961	75.08
Madhya Pradesh	1,11,28,904	82,28,791	73.94
Rajasthan	1,07,69,040	63,00,060	58.50
West Bengal	1,75,51,180	99,48,567	56.68
Jharkhand	62,53,187	34,50,844	55.19
Kerala	70,77,273	38,84,224	54.88
Total	19,35,86,461	15,81,81,250	81.71

Source: <https://ejalshakti.gov.in/jjmreport/JJMIndia.aspx>

The data reveal significant inter-state disparities in household tap water coverage across India. Several States and Union Territories, such as Goa, Haryana, Gujarat, Punjab, Telangana, and others, have achieved universal (100%) tap water connectivity, reflecting strong infrastructure implementation and administrative efficiency. Smaller UTs and hilly states also demonstrate near-complete coverage, indicating successful targeted interventions. At the national level, 81.71 per cent of households have tap water connections, marking substantial progress in drinking water access in both rural and urban areas. Large states like Uttar Pradesh, Maharashtra, and Tamil Nadu have crossed 85 per cent coverage, though the absolute number of uncovered people remains high due to their large populations.

However, major developmental concerns persist in states such as Kerala (54.88%), Jharkhand (55.19%), West Bengal (56.68%), and Rajasthan (58.50%), where nearly half of households lack access to tap water. Eastern and central Indian states show relatively lower performance, suggesting structural constraints including geographical challenges, fiscal limitations, and administrative bottlenecks. For Odisha (77.25%), while progress is notable, a considerable gap remains, especially given its rural and tribal population distribution. Bridging these disparities requires focused investment, decentralised planning, and sustained monitoring to ensure universal and equitable access to safe drinking water across regions.

Despite these gains, state-wise disparities highlight implementation variances. High performers like Gujarat leverage integrated pipelines from the Narmada, while laggards grapple with topography and funding delays. Table 2 below, adapted from

the JJM Dashboard and Jal Jeevan Samvad reports, illustrates coverage and the focus on vulnerable groups as of early 2026.

Table 4: State-Wise JJM Coverage and Vulnerable Group Focus (2026)

State	FHTC Coverage (%)	PVTG/ST Focus (% Allocated Funds)	Key Vulnerable Interventions
Gujarat	100.00	8.5	100% PwD ramps; tribal springsheds
Chhattisgarh	82.46	10.2	Drone surveys in forested PVTG areas
West Bengal	56.68	7.8	Flood-resilient sources for SC/ST
Assam	81.71	9.5	IoT monitoring in tea garden tribes
Jharkhand	55.19	11.0	Jhar-Jal Portal for LWE/PVTG blocks
National Avg.	81.71	8.2	5% dedicated for PVTGs nationwide

Source: Adapted from JJM Dashboard and Jal Jeevan Samvad August 2024

These disparities stem from factors like groundwater depletion in eastern states and ethnic conflicts in the northeast, but targeted audits show a 20% faster progress in vulnerable-focused blocks.

JJM's alignment with Sustainable Development Goals (SDGs) amplifies its global relevance. It propels SDG 6 (Clean Water and Sanitation) to 88 per cent progress toward universal access, six years ahead of 2030 targets, through verifiable FHTCs and water quality testing via 24.65 lakh Field Testing Kits (FTKs). Intersections abound: SDG 3 (Good Health) benefits from disease aversion; SDG 4 (Quality Education) from enrollment boosts; SDG 5 (Gender Equality) via women's leadership in 5.14 lakh Village Water & Sanitation Committees (VWSCs), mandating 50 per cent female membership. Quantitative metrics across vulnerable groups further illuminate these synergies, as per WHO and CEEW analyses.

Table 5: Socio-Economic Impact Metrics Across Vulnerable Groups

Indicator	PVTGs (%)	PwDs (Hours/Days)	Women-Headed HHs (%)	Overall Rural Avg.
Time Saved (Hours/Day)	2.5	3.0	2.2	2.0
Disease Reduction (%)	35	28	32	30
Income Increase (%)	12	8	15	10
Leadership Roles Gained	45 (VWSC)	20 (Committees)	55 (SHG Linkages)	40

Source: WHO Report on WASH Impacts and CEEW Studies on Rural Water Equity

These metrics, derived from 2023-2024 surveys, reveal JJM's "equity dividend": for every rupee invested, returns of ₹3-4 are generated in health and productivity. In PVTG areas, time savings enable cultural preservation activities, while PwDs gain autonomy through accessible taps. Narratives from Rajasthan's Tamlor village, where Narmada water ended tanker dependencies, quantify empowerment: Women's decision-making roles rose 25 per cent, per community logs. However, to sustain this, real-time dashboards must integrate AI for predictive analytics on slippage risks.

Policy Framework: Pillars of Inclusivity

JJM's narrative transcends statistics, embodied in stories of resilience and renewal. These vignettes, sourced from official compendiums and media, illuminate impacts on PVTGs, PwDs, and women. The documented success stories emerging from the field implementation of the Mission powerfully humanise its objectives by illustrating how policy interventions have tangibly transformed the everyday lives of vulnerable households, especially women, children, and marginalised communities. These narratives not only demonstrate measurable improvements in access, equity, dignity, and community participation but also reveal the critical importance of local leadership, participatory governance, and sustained capacity-building in ensuring long-term outcomes. In view of these positive social, economic, and institutional impacts, it is strongly recommended that the demonstrated best practices and community-driven models embedded within these success stories be systematically documented, contextualised, and replicated across similar socio-economic settings, particularly in underserved and resource-constrained regions. Such replication, supported by evidence-based monitoring, institutional convergence, and adaptive policy frameworks, would significantly strengthen the Mission's transformative potential while deepening public trust, accountability, and inclusive development outcomes.

JJM's architecture is a masterclass in blending hard infrastructure with soft governance, ensuring not just taps but sustainable ecosystems. Rooted in the National Rural Drinking Water Programme (NRDWP), it evolves through four interlocking pillars: service delivery, sustainability, community ownership, and monitoring, each tailored for inclusivity.

Service delivery forms the bedrock, mandating 55 lpcd via FHTCs in all rural habitations, with priority (up to 15 per cent of funds) for "deprived" areas such

as PVTG clusters and SC/ST settlements. This norm exceeds the WHO's basic 20 lpcd, incorporating quality parameters (e.g., BIS 10500 standards) and is tested monthly by trained locals. In practice, innovations like Gujarat's Sujalam Sufalam Yojana integrate JJM with canal networks, achieving 100 per cent coverage while addressing salinity in Kutch's tribal belts. For PwDs, guidelines enforce ramps and low-height taps, covering 95 per cent of new connections audited in 2024.

Sustainability is enshrined via mandates for greywater management (reuse in 60% schemes) and NABARD-backed spring sheds in hilly PVTG regions, reviving 5,000+ springs by 2025. Climate-proofing includes rainwater harvesting in 40 per cent of arid habitations and reducing aquifer stress by 25 per cent in Rajasthan pilots. However, vulnerabilities loom: 30% schemes face source depletion due to erratic monsoons, per 2024 assessments.

Community ownership democratizes water via VWSCs/Pani Samitis, with 50 per cent women and 33 per cent marginalised representation, empowered to collect user charges (₹10-50/month) for O&M. Over 5.14 lakh such bodies exist, generating ₹500 crore annually for repairs. In Assam's Majuli, women-led VWSCs reduced wastage by 20 per cent through IEC campaigns.

IEC (Information, Education, Communication) and monitoring drive behaviour change through the Jan Andolan Guidelines, training 5 lakh "Jaldoots" (mostly women) in FTK usage. Digital dashboards on eJalshakti track 99 per cent of grievances in 48 hours, with AI pilots in Bihar flagging contamination hotspots.

Synergies with Swachh Bharat Mission-Gramin (SBM-G) amplify impacts, as in Gujarat's model, where 80 per cent FHTCs link to IHHLs, cutting open defecation by 15 per cent. Funding sustains this: a 60:40 Centre-State split (90:10 for NE/UTs), with ₹70,000 crore disbursed by 2025, rising to a total outlay of ₹3.5 lakh crore by

Table 6: Key Policy Components and Challenges

Component	Core Features	Challenges	Mitigation Strategies
Service Norms	55 lpcd; BIS standards; PVTG priority	Source scarcity in 25% arid areas	Diversification (rain/surface)
Sustainability	Greywater reuse; springshed revival	Climate depletion (30% schemes)	NBS integration (wetlands)
Governance	50% women VWSCs; user charges	Legal inconsistencies across states	Uniform model bylaws
Monitoring	FTK testing; eJalshakti dashboards	Data gaps in remote PVTGs	AI-grievance apps; third-party audits

Source: JJM Operational Guidelines 2019

2026. However, gaps persist: Legal frameworks vary-e.g., Bihar's weak enforcement vs Maharashtra's robust bylaws, exposing 20 per cent schemes to disputes. Climate threats, like cyclones in Odisha, disrupt 10 per cent sources annually.

JJM's Panchayati Raj ethos decentralizes power, but adaptive policies-e.g., blockchain for fund tracking-are essential to fortify against emerging risks like urbanization pressures.

The Way Forward: Sustaining Momentum

With 81.71 per cent coverage, India stands at JJM's inflexion point, yet 18 per cent rural households (3.5 crore) and PVTG slippage risks demand bold reinvention. By 2030, universal sustained access will require an additional ₹1 lakh crore, with a focus on innovation, equity, and resilience.

1. **Enhanced Inclusivity:** Boost PwD audits to 10 per cent of funds, incorporating Braille signage and dialect-specific IEC in 200+ tribal languages. Pilot universal design in 1,000 habitations, targeting 95 per cent accessibility. For PVTGs, geo-fencing apps can ensure 100 per cent saturation in 500 remote clusters.
2. **Climate Resilience:** Mandate Nature-Based Solutions (NBS) like constructed wetlands in 50 per cent schemes by 2030, restoring 10,000 springs and buffering against 20 per cent rainfall variability. Integrate climate modelling in planning, as in Assam's IoT-flood alerts, to safeguard 15 per cent vulnerable sources.
3. **Gender Mainstreaming:** Enforce women-led Water User Committees (WUCs) in 80 per cent villages, linking to NRLM SHGs for skills in O&M entrepreneurship. Aim for 60 per cent female Jaldoots, amplifying leadership gains by 25 per cent.
4. **Monitoring Overhaul:** Deploy AI apps like Jhar-Jal 2.0 for predictive maintenance, achieving 99 per cent grievance resolution. Mandate annual third-party PVTG evaluations, covering 100 per cent blocks.
5. **Convergence:** Deepen MGNREGA ties for 50 lakh person-days in asset creation (pipelines, tanks); fuse with SBM for holistic WASH, targeting 90 per cent ODF+ villages. Explore public-private partnerships for solar pumps in 20 per cent schemes.

These steps, backed by ₹50,000 crore green bonds, will cement JJM's legacy: From taps to tapestries of resilient, empowered communities.

Conclusion

JJM has rewritten rural India's water saga, turning scarcity into dignity for millions. For PVTGs, it's a lifeline against displacement; for PwDs, a bridge to independence; for women, a catalyst for agency amid drudgery's end. At 81.71 per cent coverage, its ripples-3 lakh lives saved, 15 per cent enrollment surges, 18 per cent workforce leaps-affirm policy's equity alchemy. However, disparities and climate shadows persist, urging collective resolve. By 2030, JJM won't just quench thirst; it'll irrigate dreams, proving sustainable development's human core.

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