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From ARWSP to Jal Jeevan Mission: Tracing the Policy Evolution of Rural Drinking Water Supply in India (1972-2024)

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Abstract

Access to safe and adequate drinking water is a fundamental public health requirement and a critical determinant of rural well-being in India. Despite possessing extensive surface and groundwater resources, spatial inequality, seasonal variability, groundwater depletion, and institutional fragmentation have historically constrained universal access to potable water in rural areas. In the early decades after Independence, rural water supply interventions were largely ad hoc, infrastructure-driven, and relief-oriented, offering limited long-term sustainability. Recognizing the strong interlinkages between drinking water access, sanitation, health outcomes, and rural livelihoods, the Government of India gradually evolved from supply-centric schemes to integrated, service-delivery-oriented water governance frameworks.

This review paper traces the historical evolution of rural drinking water policies in India, beginning with the Accelerated Rural Water Supply Programme (ARWSP, 1972), which focused on rapid coverage through handpumps and borewells, followed by the Sector Reform and Technology Mission (1990) that introduced principles of decentralisation, community participation, and cost sharing. The establishment of the Rajiv Gandhi National Drinking Water Mission (1991) further institutionalised planning, quality monitoring, and technology adoption at the national level. These efforts were consolidated under the National Rural Drinking Water Programme (NRDWP, 2009), which emphasised service sustainability, source protection, water quality surveillance, and convergence with sanitation and health initiatives.

The paper further examines the transformative shift introduced by the Jal Jeevan Mission (JJM, 2019), which redefined rural water supply through a household tap connection (Har Ghar Jal) approach, lifecycle service delivery, and decentralised governance via Village Water and Sanitation Committees. Special emphasis is placed on the role of the Integrated Management Information System (IMIS) under JJM in enabling real-time monitoring, transparency, and performance-based planning. The review contributes to a comprehensive understanding of how rural water supply schemes have evolved from infrastructure provision to integrated, community-driven, and data-enabled service delivery systems.

KEYWORDS: Rural drinking water supply, Sanitation in India, Government water policies, ARWSP, Rajiv Gandhi National Drinking Water Mission, National Rural Drinking Water Programme (NRDWP), Jal Jeevan Mission (JJM), Integrated Management Information System (IMIS), Community participation, Sustainable water governance

Introduction

Access to safe and adequate drinking water is a fundamental prerequisite for public health, sanitation, and socio-economic development. In India, water scarcity, spatial inequality, groundwater depletion, and contamination have historically posed significant challenges to rural water supply systems. A large proportion of rural households remained dependent on unsafe surface sources such as ponds, rivers, and open wells well into the post-independence period, leading to high incidences of waterborne diseases, poor sanitation outcomes, and adverse impacts on productivity and quality of life (World Bank, 2014; WHO/UNICEF, 2020). The interlinkages between drinking water availability, sanitation practices, and public health outcomes necessitated a systematic policy response by the Government of India.

Recognizing drinking water as a critical component of rural development, the Government of India initiated structured interventions beginning in the early 1970s. The Accelerated Rural Water Supply Programme (ARWSP), launched in 1972, marked the first nationwide effort to provide basic drinking water infrastructure in rural areas. The programme focused primarily on source creation through hand pumps and bore wells, emphasizing coverage rather than service quality or sustainability. While ARWSP significantly expanded access to drinking water, its supply-driven approach and limited community participation resulted in issues related to operation, maintenance, and long-term functionality (Government of India, 1991).

During the late 1980s and early 1990s, it became evident that technological interventions alone were insufficient to address rural water challenges. This led to the introduction of the Sector Reform and Technology Mission in 1990, which emphasized institutional reforms, decentralized planning, and the adoption of appropriate technologies. Building upon these principles, the Rajiv Gandhi National Drinking Water Mission (RGNDWM) was launched in 1991 to provide a more coordinated and mission-mode approach to rural water supply. The RGNDWM introduced norms for per capita water supply, water quality monitoring, and convergence with health and sanitation programs, marking a shift from infrastructure creation to service delivery (Ministry of Rural Development, 2001).

The growing recognition of sustainability concerns, groundwater depletion, and regional disparities led to further restructuring of rural water policies. In 2009, the National Rural Drinking Water Programme (NRDWP) replaced earlier schemes, adopting a demand-driven and decentralized framework. NRDWP emphasized source sustainability, water quality management, community ownership, and capacity building of Panchayati Raj Institutions. It also acknowledged emerging challenges such as arsenic, fluoride, and salinity contamination, particularly in eastern and semi-arid regions of India (Planning Commission, 2014).

Despite these reforms, gaps in household-level access, inequitable service delivery, and weak monitoring mechanisms persisted. To address these challenges comprehensively, the Government of India launched the Jal Jeevan Mission (JJM) in 2019, with the ambitious objective of providing Functional Household Tap Connections (FHTCs) to every rural household. JJM represents a paradigm shift from habitation-based coverage to household-level service delivery, with a strong focus on water quality, sustainability, community participation, and institutional accountability. A key innovation under JJM is the use of the Integrated Management Information System (IMIS), which enables real-time monitoring of physical and financial progress, water quality testing, and service functionality, thereby enhancing transparency and evidence-based governance (Ministry of Jal Shakti, 2021).

The evolution of rural water supply schemes in India reflects a gradual transition from supply-oriented, centrally driven programs to decentralized, technology-enabled, and sustainability-focused missions.

Understanding this policy trajectory is essential for evaluating the effectiveness of current interventions and identifying pathways for achieving long-term water security and improved sanitation outcomes in rural India.

Objectives of the Study

The primary objective of this review paper is to critically examine the evolution of government-led rural water supply schemes in India and assess their changing policy orientations over time. The specific objectives are:

1. To trace the historical progression of rural drinking water supply initiatives in India from the Accelerated Rural Water Supply Programme (ARWSP), 1972, to the Jal Jeevan Mission (JJM), 2019.
2. To analyze the shift in policy focus from infrastructure creation and coverage-based approaches to service delivery, sustainability, and household-level access.
3. To evaluate the institutional, technological, and governance reforms introduced under successive programs, including the Sector Reform and Technology Mission and the Rajiv Gandhi National Drinking Water Mission.
4. To assess the role of decentralization, community participation, and monitoring mechanisms, particularly under NRDWP and JJM.
5. To examine the significance of the Integrated Management Information System (IMIS) under JJM in strengthening transparency, accountability, and real-time performance monitoring.

Evolution of Rural Water Supply in India

The evolution of rural water supply in India reflects a gradual transition from relief-oriented infrastructure provision to a rights-based, service-delivery-driven governance framework. Historically, access to safe drinking water in rural India was limited and highly dependent on traditional sources such as open wells, tanks, rivers, and seasonal streams. These sources were often unreliable, contaminated, and unevenly distributed, leading to persistent public health challenges including waterborne diseases, high infant mortality, and gendered burdens associated with water collection (World Bank, 2006; WHO/UNICEF JMP, 2021).

In the post-independence period, the Government of India initially approached rural water supply as a welfare and infrastructure deficit issue. Early interventions emphasized source creation—handpumps, tube wells, and piped schemes—without sufficient attention to sustainability, water quality, or institutional accountability. Over time, increasing groundwater depletion, fluoride and arsenic contamination, climate variability, and rural population growth exposed the limitations of coverage-based planning. These challenges necessitated a shift toward decentralized governance, community participation, technology integration, and outcome-based monitoring (Planning Commission of India, 2011).

The results of this policy evolution are best understood through a chronological assessment of major rural water supply schemes implemented between 1972 and 2019, culminating in the Jal Jeevan Mission.

a) Accelerated Rural Water Supply Programme (ARWSP), 1972

The Accelerated Rural Water Supply Programme (ARWSP), launched in 1972, marked India's first nationwide, centrally sponsored initiative dedicated exclusively to rural drinking water supply. The program aimed to accelerate the provision of safe drinking water to rural habitations through capital-

intensive infrastructure development, particularly in drought-prone and water-scarce regions (Government of India, 1972).

Under ARWSP, priority was given to the identification of "problem villages," defined by inadequate water availability or excessive distance from water sources. The program focused primarily on source creation—such as handpumps, borewells, and piped water schemes—funded and implemented through state public health engineering departments. While ARWSP significantly expanded physical access to drinking water, its results revealed critical shortcomings. The scheme lacked provisions for operation and maintenance, community ownership, water quality monitoring, and sustainability planning. As a result, many assets became defunct over time, and regional inequalities persisted (World Bank, 2006).

b) Sector Reform and Technology Mission, 1990

The Sector Reform and Technology Mission, introduced in 1990, represented a conceptual shift in rural water governance. Rather than viewing water supply solely as a government responsibility, the reform agenda emphasized decentralization, user participation, and cost-sharing. This initiative promoted the involvement of Panchayati Raj Institutions (PRIs) and local communities in planning, implementation, and maintenance of water supply systems (Government of India, 1990).

Technological innovation and institutional reform were central to this phase. Pilot projects tested demand-responsive approaches, water user committees, and community-managed systems. Although limited in scale, the Sector Reform Mission laid the groundwork for later reforms by demonstrating that sustainability improved when communities were involved in decision-making and financial contributions. However, uneven institutional capacity at the local level constrained its broader impact.

c) Rajiv Gandhi National Drinking Water Mission (RGNDWM), 1991

The Rajiv Gandhi National Drinking Water Mission (RGNDWM), launched in 1991, integrated rural water supply into a mission-mode framework with clearly defined objectives and targets. The mission expanded the scope of intervention beyond coverage to include water quality, technological standardization, and inter-sectoral coordination (Government of India, 1991).

RGNDWM institutionalized habitation-level norms for water quantity and accessibility and introduced a more systematic approach to planning and monitoring. The mission also acknowledged emerging water quality challenges, particularly fluoride, arsenic, salinity, and iron contamination. Despite these advances, evaluations indicated that the mission remained largely supply-driven, with limited success in ensuring long-term service reliability and equitable access (Planning Commission of India, 2011).

d) National Rural Drinking Water Programme (NRDWP), 2009

The National Rural Drinking Water Programme (NRDWP), launched in 2009, marked a decisive shift from infrastructure creation to service delivery. The program explicitly recognized drinking water as a public service rather than a one-time asset. It emphasized sustainability, water source protection, conjunctive use of surface and groundwater, and decentralized planning through Village Water and Sanitation Committees (VWSCs) (Government of India, 2009).

NRDWP introduced a classification system for habitations based on service levels, water quality status, and sustainability indicators. Dedicated funding components were allocated for operation and maintenance, water quality monitoring, and capacity building. While NRDWP improved planning frameworks and institutional clarity, implementation outcomes varied significantly across states due to differences in governance capacity, financing, and technical expertise (World Bank, 2018).

e) Jal Jeevan Mission (JJM), 2019

The launch of the Jal Jeevan Mission (JJM) in 2019 represents the most comprehensive reform in India's

rural water supply sector. JJM aims to provide Functional Household Tap Connections (FHTCs) to every rural household, ensuring adequate quantity, prescribed quality, and regular supply of drinking water by 2024 (Government of India, 2019).

Unlike earlier schemes, JJM adopts a household-centric and outcome-based approach. The mission integrates source sustainability, infrastructure development, institutional strengthening, and real-time monitoring through the Integrated Management Information System (IMIS). The IMIS enables transparent tracking of physical and financial progress, water quality parameters, and service delivery indicators at the village level (Ministry of Jal Shakti, 2021).

Results indicate a substantial increase in tap water coverage within a short time span, alongside improved coordination between central, state, and local governments. However, the discussion also reveals emerging challenges related to groundwater dependence, climate resilience, and long-term operation and maintenance responsibilities. Nevertheless, JJM signifies a paradigm shift from access-based metrics to service assurance and governance accountability.

Achievements in Rural Water Supply Programs

India's rural water supply sector has witnessed substantial progress over the past five decades due to sustained policy interventions and institutional reforms. The Accelerated Rural Water Supply Programme (ARWSP, 1972) laid the foundational infrastructure by prioritizing coverage of problem villages through hand pumps and piped water schemes. By the late 1980s, a significant proportion of rural habitations had at least one safe drinking water source, marking a critical shift from ad hoc relief-based interventions to planned service provision (Planning Commission of India, 2011).

The introduction of the Sector Reform and Technology Mission (1990) and the Rajiv Gandhi National Drinking Water Mission (RGNDWM, 1991) marked a transition towards sustainability, water quality monitoring, and institutional capacity building. These programs emphasized appropriate technology selection, groundwater quality surveillance, and inter-sectoral coordination. By the early 2000s, water quality laboratories were established in most states, and fluoride- and arsenic-affected habitations began receiving targeted interventions (World Bank, 2006).

The National Rural Drinking Water Programme (NRDWP, 2009) further strengthened the sector by adopting a service delivery approach rather than mere infrastructure creation. Achievements under NRDWP included improved focus on source sustainability, equity for marginalized communities, and decentralised planning through Panchayati Raj Institutions (Ministry of Drinking Water and Sanitation, 2017).

The launch of the Jal Jeevan Mission (JJM, 2019) represents the most transformative phase in rural water supply. By shifting the goal to Functional Household Tap Connections (FHTCs), JJM significantly enhanced service quality, reliability, and user convenience. As of recent progress reports, millions of rural households have received piped drinking water connections, with improved monitoring through the Integrated Management Information System (IMIS) ensuring transparency, real-time tracking, and performance-based governance (Ministry of Jal Shakti, 2021). Collectively, these achievements reflect India's transition from access-based targets to service-level benchmarks.

Challenges across Rural Water Supply Schemes

Despite notable achievements, several challenges have persisted across different phases of rural water supply programs. Early schemes such as ARWSP faced limitations due to an overemphasis on

infrastructure coverage without adequate attention to operation, maintenance, and long-term sustainability. Many water sources became defunct due to groundwater depletion, poor quality, or lack of institutional responsibility (Planning Commission of India, 2011).

Programs introduced during the reform phase, including RGNDWM and NRDWP, encountered challenges related to uneven state capacity, weak decentralization, and limited community ownership. Water quality contamination—particularly fluoride, arsenic, iron, and salinity—remained a major concern in several regions, undermining the reliability of drinking water sources (WHO/UNICEF JMP, 2021).

Under JJM, while the scale and speed of implementation have been unprecedented, challenges persist in ensuring source sustainability, especially in water-scarce and climate-vulnerable regions. Operation and maintenance of piped water schemes, availability of skilled manpower at the village level, and financial sustainability of service delivery systems continue to pose risks to long-term success (World Bank, 2018). Additionally, disparities in progress across states highlight governance and capacity gaps that require continued policy attention.

Public Awareness and Behaviour Change in Rural Water Supply

Public awareness and behavioral change have increasingly been recognized as critical components of successful rural water supply programs. Early schemes largely treated beneficiaries as passive recipients, resulting in limited community engagement and poor maintenance of assets. This approach gradually evolved under the Sector Reform initiatives, which promoted community contribution, demand-driven planning, and participatory management (UNICEF, 2010).

Under NRDWP and JJM, behavior change communication (BCC) became an integral strategy, focusing on safe water handling practices, household-level responsibility, and willingness to pay for services. The involvement of women's self-help groups, village water and sanitation committees (VWSCs), and local institutions has improved awareness regarding water conservation, source protection, and hygiene practices (UNICEF, 2019).

The use of digital platforms under JJM, including IMIS dashboards and mobile-based reporting, has further enhanced transparency and community monitoring. However, behavioral challenges remain, particularly in encouraging water conservation, regular tariff collection, and community-led operation and maintenance. Sustained awareness campaigns, capacity building, and institutional support are therefore essential to ensure that behavioral change complements infrastructure development and leads to long-term water security.

Conclusion

Access to safe and adequate drinking water has long been a critical development challenge in rural India, directly influencing public health, livelihoods, gender equity, and overall quality of life. Historically, rural communities faced persistent water scarcity, poor water quality, and heavy dependence on unsafe and unreliable sources. These conditions underscored the urgent need for a structured, policy-driven approach to rural water supply that could move beyond short-term relief measures toward sustainable service delivery systems.

The evolution of government schemes for rural drinking water supply in India reflects a gradual yet significant transformation in policy thinking and implementation strategies. The Accelerated Rural Water Supply Programme (ARWSP), launched in 1972, marked the first nationwide effort to systematically

address drinking water shortages by focusing on infrastructure creation and coverage of problem habitations. While ARWSP succeeded in expanding access to basic water sources, its limitations highlighted the need for sustainability, community involvement, and water quality management.

These lessons informed subsequent reforms under the Sector Reform and Technology Mission (1990) and the Rajiv Gandhi National Drinking Water Mission (1991), which introduced technological innovation, water quality surveillance, and institutional coordination into rural water supply planning. The shift toward decentralization and community participation gained further momentum under the National Rural Drinking Water Programme (NRDWP, 2009), which emphasized service delivery, equity, source sustainability, and integration with local governance structures.

The launch of the Jal Jeevan Mission (JJM) in 2019 represents the most comprehensive and ambitious phase in this evolutionary trajectory. By prioritizing Functional Household Tap Connections (FHTCs), service-level benchmarks, and real-time monitoring through the Integrated Management Information System (IMIS), JJM has redefined rural water supply as a household-level public service rather than a basic infrastructure provision. The mission's focus on transparency, accountability, and sustainability signifies a mature policy framework aligned with long-term water security goals.

Overall, the progression of rural drinking water schemes in India demonstrates a clear shift from access-oriented, supply-driven programs to inclusive, service-based, and technology-enabled governance models. While challenges related to source sustainability, climate variability, and operation and maintenance persist, the cumulative policy experience provides a strong foundation for addressing future water security concerns. Sustained institutional support, community engagement, and adaptive governance will be crucial to ensuring that the gains achieved under Jal Jeevan Mission translate into lasting and equitable rural water access across India.

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