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विज्ञान एवं प्रौद्योगिकी विभाग  
DEPARTMENT OF  
**SCIENCE & TECHNOLOGY**

## Policy Brief 1

# Digital Governance: A Jal Jeevan Mission study

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## Introduction

The increasing significance of digitisation is evident with governments worldwide recognising the role of digital technologies in enhancing processes, practice and service delivery of projects/programmes. The UNDP (2023) report emphasises the inherent nature of digitalisation as having a significant impact on results and highlights how accessible information can benefit the broader public. This perspective frames digitalisation as creating "digital public goods and infrastructure." Furthermore, the surge in research publications<sup>1</sup> on digital governance underscore the expanding importance of digital technology across various domains. The Government of India (GoI) has also put a significant thrust on digitisation by creating dashboards in all its flagship programmes viz Aadhaar, Swachh Bharat Mission, Atal Bhujal Yojana, Pradhan Mantri Krishi Sinchai Yojana, Jal Jeevan Mission. Our study commences with the fundamental premise that digitisation is widely acknowledged as instrumental in strengthening effectiveness and refining monitoring within government programmes. This policy brief focuses on the digital governance aspect of the GoI's biggest flagship programme, also recognised as the largest rural drinking water (RDW) supply programme globally - Jal Jeevan Mission (JJM) that aims to provide "functional household tap connections (FHTC) to all rural households in India by 2024" (Government of India, 2019).

Monitoring is one of the critical activities of any government-run programme, yet it is a significant challenge across different programmes. The RDW sector in India is no exception to this task. Monitoring challenges in the water sector entail "self-reporting, data sampling, data consistency and quality, and sufficient frequency to assess the sustainability of water systems" (Wescoast Jr. et al., 2016). Monitoring in RDW sector can play a crucial role in ensuring sustainable drinking water services to households, aligning with the objectives of JJM to provide the functionality of tap connections. JJM Database is capable of monitoring the data on the progress and status of RDW service provision.

Rural drinking water (RDW) supply programmes have emerged as one of the most significant challenges globally, especially for developing countries. Governments, funding agencies, and practitioners have a widely shared consensus on the governance of RDW supply programmes (Hutchings et al., 2016). Some widely adopted models include: community-based approach, public utility, local self-government, supported self-supply, and private sector-based (World Bank, 2017). Among these, the first three models have been experimented with, adopted, and practised for a period in India. According to the Constitution of India, water is a state subject entrusted to panchayats<sup>2</sup>. Increasingly, the Government of India (GoI) supplements state efforts to address water challenges at the grassroots level through financial, institutional, and technical assistance under various drinking water schemes and flagship programmes. Additionally, while the central government can issue guidelines, states maintain autonomy in adopting suitable

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<sup>1</sup> In the year 2000, SCOPUS recorded just 3 articles, compared to a substantial increase to 2106 in 2023. Similarly, in Web of Science, the proportion of articles on digital governance within the total pool rose from 0.02% to 28.9% during the same period.

<sup>2</sup> The Eleventh Schedule of the Constitution was added by the 73rd Constitutional Amendment Act of 1992. It contains 29 functional items that pertain to rural and urban local governance and empowers Panchayats to manage various aspects of local administration, including rural water supply. Specifically, "drinking water" is listed as the 24th item in the Eleventh Schedule

approaches (Sangameswaran, 2010). This autonomy leads to diverse governance models nationwide, and understanding the governance aspect is crucial for the drinking water programme. Therefore, this policy brief aims to understand the scope and challenges of digital governance in the water sector by analysing JJM MIS. This is an effort to bring better transparency and accountability in the drinking water governance.

This policy brief comprises three sections. The initial section elucidates the history of governance strategy and examines monitoring aspects within the Rural Drinking Water (RDW) sector. Subsequent sections explain the historical timeline of datasets, providing an overview of the JJM database and contrasting it with its predecessor database. The brief concludes with a summary of findings and proposes future directions

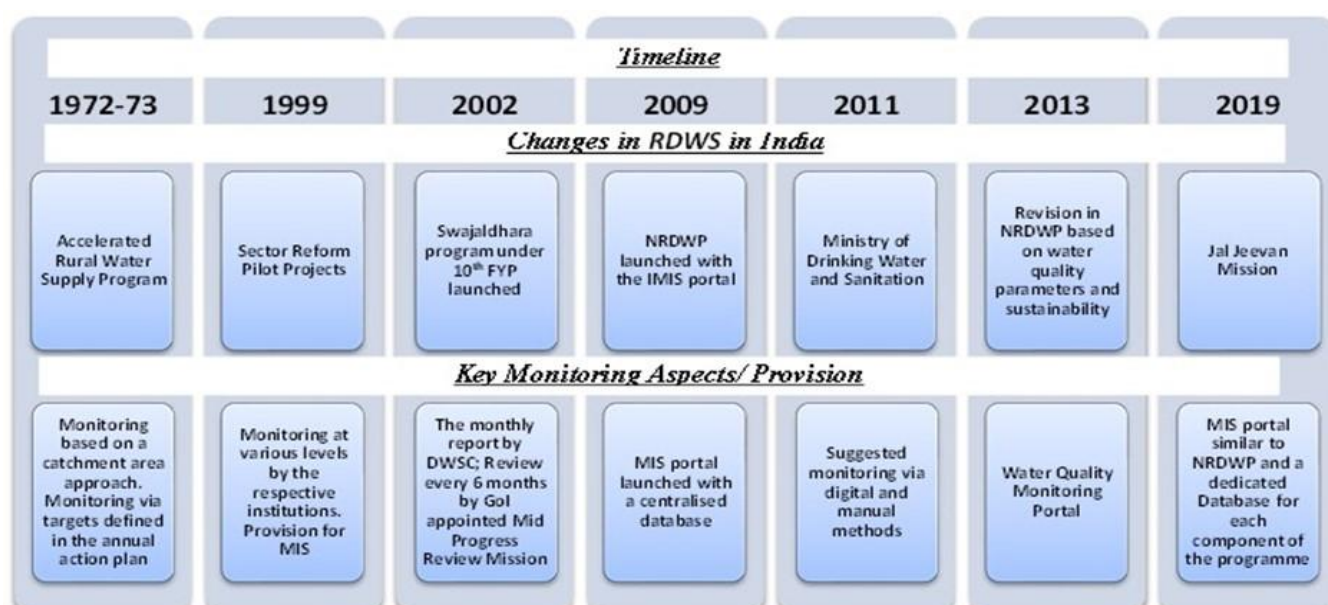
## **RDW Programmes and Data Availability in India**

India has a rich history of designing and implementing RDW programmes integrated within the Five-Year Plans (FYPs), and initially aimed to mitigate health risks associated with unimproved water sources. The focus was on providing improved water supply to rural communities to combat water-borne diseases. Over time, guidelines governing water supply parameters were established, leading to the establishment of specialised agencies such as the Central Public Health and Environmental Engineering Organisation (CPHEEO) and the Public Health Engineering Department (PHED) in the 1960s. The first dedicated program was launched in 1972-73 named the Accelerated Rural Water Supply Program (ARWSP). Since then, various missions, sub-missions, pilot projects and special drives have been introduced in this sector (Narayanan et al., 2023). The revamped National Rural Drinking Water Programme (NRDWP), which was launched in 2009, is the predecessor of JJM and has many features similar to the present-day programme. While monitoring remained a common focal point in all programmes, its importance has been recognised recently. The previous RDW water programmes had provision for monitoring, as mentioned in Figure 1, but lacked a systematic assessment approach. The working group on drinking water and sanitation acknowledged the relevance of monitoring in the post-implementation phase during the 12<sup>th</sup> FYP (Government of India, 2012). Subsequently 2013, based on this recommendation, water quality monitoring commenced with a revision in NRDWP Guidelines (Government of India, 2013). Furthermore, the status of RDW scenarios in the country could be understood through various data sets provided in census reports, National Sample Survey Organisation (NSSO) reports Comptroller and Auditor General (CAG) reports, and several other state or national-level studies. Apart from these, some global organisations<sup>3</sup> have also attempted to develop specific indicators and dashboards for monitoring rural water supply scenarios across the globe. Although these portals provided a set of indicators based on case studies, they could not be used to represent all the key aspects of RDW programmes at the pan-India level.

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<sup>3</sup> UNICEF, WHO Joint Monitoring Programme, WaterAid, and IRC

The first dedicated database for the RDW sector was established under the NRDWP in 2009 that provided data for overall program monitoring at which provided data for overall program monitoring at the pan-India level. The portal provided data periodically for physical and financial progress and details about habitations, water sources and schemes. A study by Wescoat Jr. et al. (2016) on the NRDWP MIS database found that it was a well organised database for monitoring RDW programmes. However, the portal could provide only the status of coverage up to the habitation level and did not help monitor the socio-economic variables and conduct policy analysis. While programme guidelines have consistently emphasised the significance of monitoring, the focus has predominantly been on programme implementation and not on post-implementation monitoring (Narayanan et al., 2023). This imbalance has failed to capture challenges emerging during the post-implementation phase of these programmes. Hence, it is imperative to recognise that monitoring programme progress and post-programme implementation are equally critical aspects that demand attention and resources.



*Figure 1 A timeline of RDW Programs in India*

Since its commencement in 2019, JJM has also put impetus on monitoring via a centralised database where data is updated by every state daily. This extensive database presents an opportunity previously lacking, enabling a thorough analysis of monitoring data and furnishing robust information to ensure program functionality post-implementation. The following section delves into the JJM programme, accompanied by an analysis of the JJM database. This analysis involves a comparison with the NRDWP MIS and an assessment against key service delivery indicators.

## Understanding the data in JJM

The JJM has brought all the states to a uniform platform regarding specific parameters in RDW service delivery. The JJM database is available in the public domain via an IMIS and a dashboard. The present form of JJM can be seen as a successor of NRDWP IMIS. The JJM database, at prima facia, appears to provide a much more nuanced and widened set of data, but its utility in drinking water governance is yet to be explored. The vision of adopting digitalisation under JJM includes several activities such as designing schemes that are cost-effective, continuous monitoring, maintaining transparency, enabling Gram Panchayats to become local water utilities to run their respective systems, and integrating databases on quality and quantity. Eight broad digital platforms are being implemented under the JJM shown in Figure 2.

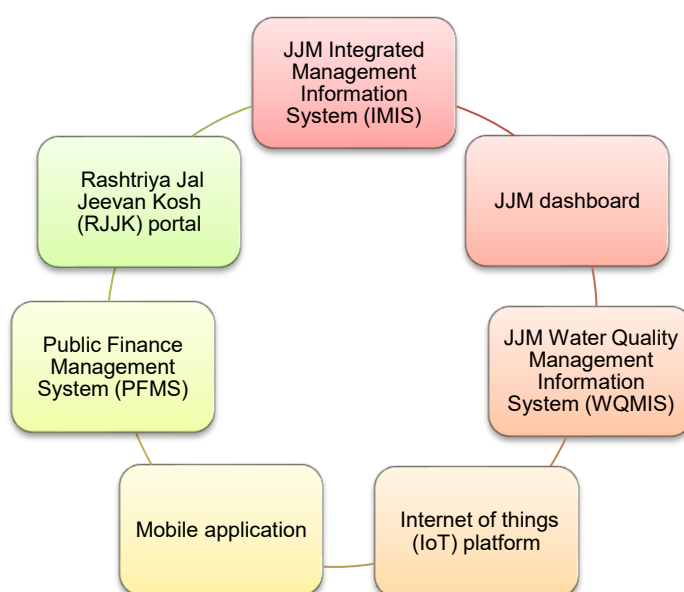


Figure 2 Digital Platforms under JJM

The states have been provided 50% of the total costs (excluding the Himalayan and North-Eastern states, which get 90% of the funds) from the central government based on the conditionality to adhere to the guidelines issued by the central government via the Ministry of Jal Shakti (MoJS) (the nodal ministry for all water related departments in India).

|                                                                                                           |                                                                                                    |
|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| An <b>action plan</b> at village, district and state levels                                               | A <b>common data format</b> for physical coverage and financial progress across various components |
| <b>Data Uniformity in JJM</b>                                                                             |                                                                                                    |
| <b>Village information</b> includes geotagging, details of households, village resolution and declaration | <b>Details</b> about the VWSCs, its members, operators and water quality monitoring team members   |

Figure 3 Data uniformity in JJM

The PFMS platform is used across all programmes and departments for financial transparency. The remaining seven platforms are exclusively dedicated to JJM. Out of these platforms, JJM IMIS, Dashboard and JJM WQMIS are the three key portals that can provide all the necessary

datasets required for the digital governance of JJM. These portals have also helped bring uniformity in datasets maintained by the respective states. Figure 3 highlights some of the key aspects that have brought uniformity in JJM across the states. All states in India have provided this information, as per the JJM operational guidelines, which are available in the JJM database.

The uniformity in the datasets collected from the states has helped in somewhat comprehensive data collection within JJM. The large number of portals within JJM did not exist prior to its commencement in any of the previous RDW programs. JJM database, therefore, require an analysis: both comparative to the previous database and within the existing database to find what all progress has been made in this dimension. The next section is based on a comparative analysis of JJM and NRDWP IMIS to trace the significant changes in the database.

### **JJM MIS: A Quantum Jump from Previous Programme?**

The NRDWP MIS was the first attempt in India to monitor the RDW programme digitally at the national level. JJM MIS has drawn several datasets and formats for representation from NRDWP MIS. These databases become more critical in the present time because of the lack of census data that provides a complete scenario of HHs and their water supply status along with their socio-economic profiles. Table 1 draws a comparison between the two databases.

Referring to Table 1, the JJM MIS encompasses a broader array of formats, capturing a wide spectrum of parameters crucial for comprehending programme implementation. In contrast, the NRDWP portal offers a limited range of MIS formats. Unlike NRDWP, JJM has separate formats for capacity-building parameters. These formats also indicate data regarding fund utilisation and the number of meetings. However, using such formats for dashboard visualisation and improving service delivery is highly limited.

*Table 1 Comparison of NRDWP and JJM MIS*

| Key Parameter      | NRDWP MIS                                                                                                                   | JJM MIS                                                                                                                                                                                       |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Source             | Provides source information at pan India as well as scheme level.                                                           | Provides source information at pan India as well as scheme level.                                                                                                                             |
| Physical Progress  | Information available at the habitation and household levels along with the water supply via both handpump and piped water. | Comprehensive data provides information about the household's water supply status, habitation, village, and panchayat levels. JJM data is entirely based on FHTC coverage.                    |
| Financial Progress | Dataset includes allocated, released, and utilised funds allocated annually to the states.                                  | Comprehensive dataset, including expenditure information on several components, like water quality monitoring, capacity building, and skilling activities.                                    |
| VWSCs              | No data available                                                                                                           | Detailed datasets about VWSCs are available, including the names and contact details of the VWSC members. Further, the details of Mukhiya, the declaration form, and the video by the VWSC in |

|                                 |                                                                                                    |                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
|                                 |                                                                                                    | Mukhiya's presence are also available at the village level.                                                                      |
| Year-wise coverage statues      | The available data can be used to identify the habitations that slipped back in a particular year. | The available coverage status data mentions only the tap coverage and no information on slip-back and non-functionality of taps. |
| O&M Issues                      | No data available                                                                                  | Information about the operator and VWSC members is available                                                                     |
| Household Tap connection status | Only the number of tap connections provided up to the village and habitation level is provided     | Highly detailed information about tap connections is provided, including the names of the households in a particular village.    |
| Community contribution          | It is mandated in NRDWP guidelines, but data is not available                                      | Community contribution is not mandatory but is suggested                                                                         |

*Source: Authors*

JJM adopts a format akin to NRDWP, presenting percentages of households with varying FHTC ranges. Although both IMIS explicitly talk about coverage, NRDWP's coverage indicators allow for analysing year-wise progress and identifying setbacks. At the same time, JJM's FHTC data lacks this capability for analysis, suggesting a focus on infrastructure rather than addressing shortcomings. Further, NRDWP IMIS identified data on slip-backs of habitations, which is the most critical indicator for assessing water source sustainability and infrastructure improvement. However, JJM has solely focused on functionality and not slip-back, making it impossible to infer further course corrections based on these datasets. Hence, exploring JJM's functionality is crucial for sustainable rural service delivery. The JJM functionality report by the Ministry of Jal Shakti helps understand the status of RDW service delivery, but functionality needs to be captured on a regular interval and not on an yearly basis. Details on non-technical aspects of water supply, particularly capacity building and presence of supporting agencies are new to the database that makes it easier to comprehend the overall governance aspect of JJM within any state in India.

## Way Forward and Future Scope

The impetus on digital governance can be seen across all government policies and programs in India. While it has eased the data availability, the scope of such data in governance can help improve the efficacy of the programme and bring accountability and transparency. This policy brief looked at the digital governance aspects of JJM programme. The JJM database presents an extensive dataset, contrasting previous data scarcity. The JJM database is a highly upgraded version of its predecessor and has provided data across most of the key parameters associated with RDW service provision. The abundance of data presents opportunities, such as vast research potential and challenges, including data complexity and variety, for effective analysis. However, the JJM database offers a unique opportunity to extract valuable insights such as analysing for tap functionality and drawing policy inferences for improving FHTC service delivery. The subsequent policy brief will further analyse the JJM database focusing on data collection mechanism, understanding the types of dataset, source sustainability and capacity

building, aiming to enhance the understanding of the entire programme and its implementation and post-implementation challenges. Through this analysis, gaps could be identified that may require immediate attention by policymakers.

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