

GOVERNMENT LEADERSHIP ON WASH SYSTEMS STRENGTHENING: CORE COMPETENCIES AND ENABLERS

CASE-STUDY REPORT

GOVERNMENT LEADERSHIP FOR
NWASH-MIS, NEPAL AND THE INITIATION
OF THE LOCAL-LEVEL PLANNING
PROCESS THROUGH NWASH

MARCH 2026

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ACRONYMS

Abbreviation	Full Term
ADB	Asian Development Bank
CSOs	Civil Society Organisations
DWSSM	Department of Water Supply and Sewerage Management
FCDO	Foreign, Commonwealth & Development Office
FEDWASUN	Federation of Water and Sanitation Users' Nepal
GLAAS	Global Analysis and Assessment of Sanitation and Drinking-Water
HMIS	Health Management Information System
HCF	Healthcare Facility
IRC	International Water and Sanitation Centre
JMP	Joint Monitoring Programme
JSR	Joint Sector Review
KIIs	Key Informant Interviews
LGs	Local Governments
MoF	Ministry of Finance
MoFAGA	Ministry of Federal Affairs and General Administration
MoWS	Ministry of Water Supply
MUAN	Municipality Association of Nepal
NARMIN	National Association of Rural Municipalities in Nepal
NMIP	National Management of Information Project
NNRFC	National Natural Resources and Fiscal Commission
NPC	National Planning Commission
NSO	National Statistics Office
NWASH-MIS	National WASH Management Information System
NWSSRICDC	National Water Supply and Sanitation Research, Innovation and Capacity Development Centre
ODF	Open Defecation Free
SDG	Sustainable Development Goal
SDP	Sector Development Plan
SNV	Netherlands Development Organisation
SWA	Sanitation and Water for All
UNICEF	United Nations Children's Fund
WASH	Water, Sanitation, and Hygiene
WHO	World Health Organization

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1. INTRODUCTION

1.1. BACKGROUND AND OVERVIEW

This case-study country report examines **government leadership for the National Water Supply, Sanitation and Hygiene Management Information System (NWASH-MIS)** in Nepal. NWASH-MIS tracks the status of WASH services within local governments' jurisdictions, undertakes life-cycle cost assessments, and conducts system pillar assessments for each locality. In doing so, it is designed to support the formulation of local level WASH plans and ensures these are integrated with provincial and federal planning processes. NWASH-MIS was recently institutionalised within the country's WASH sector planning, monitoring and accountability architecture through the Water Supply and Sanitation Act (2022) and the Water Supply, Sanitation and Hygiene Policy (2023). However, its history goes back to 2019 when it was first designed as a rural water supply monitoring and evaluation tool and evolved through a number of stages before its present formation.

This report focuses on the government leadership related to the development and implementation of NWASH-MIS. Specific objectives include:

- **Analyse the forms of government leadership that enabled the development and institutionalisation of NWASH-MIS, including vision setting, coalition building, course correction, and accountability mechanisms.**
- **Identify elements of NWASH-MIS that represent globally adaptable and replicable practices for strengthening government leadership in WASH systems.**

This case study examines how government leadership—both political and technocratic—has shaped the development, institutionalisation, and operationalisation of NWASH-MIS in Nepal. The analysis situates NWASH-MIS within Nepal's federal transition, where leadership has functioned as a coordinating and enabling mechanism for data-driven planning, accountability, and service improvement. Rather than treating NWASH-MIS as a standalone digital platform, this study interprets it as a governance instrument reflecting how policy intent, institutional capacity, and inter-governmental collaboration interact within system-strengthening processes. Sixteen key informants were interviewed representing all three layers of government, development partners, civil society organisations, municipal associations and WASH experts. The analysis is structured around five interrelated leadership competencies that were identified from a desk review and are as follows:

1. **Vision Setting:** This competency explains how the government leadership translates its vision into this specific NWASH-MIS. It also assesses how the policies, legal frameworks and the sectoral reviews are translated into the monitoring agenda and creates the path of evolution of NWASH-MIS.
2. **Devolution of Leadership and Financial Autonomy:** This leadership's competency explores the ease and autonomy of financial flows for NWASH-MIS role out. The leadership facilitation in devolution to sub-national scales also falls under this competency.
3. **Coalitions and Collective Action:** Here we focus on how NWASH-MIS is supported by cross-government coordination and development partner alignment. It identifies various multi-sectoral and review mechanisms that have been supported by the leadership in this case.
4. **Accountability and Incentives:** The NWASH-MIS accountability and incentives competency parameter measures the leadership support, willingness to implement the local-level WASH plans, regular data reporting and standardisations in the platform.
5. **Diagnostics and Course Correction:** For any system to have continuous quality improvement, the feedback loops are critical. The provision for diagnosing gaps, willingness

to improve, developing action plans for improvement and managing resources are important aspects of diagnostics and course correction.

1.2. CASE-STUDY OVERVIEW

Developed through a monitoring and evaluation framework approved by the Ministry of Water Supply, **NWASH-MIS is designed to facilitate the tracking and planning of progress towards SDG 6.1 and 6.2. It incorporates a life-cycle cost assessment, an institutional capacity assessment, and financial expenditure tracking, using JMP and GLAAS indicators to enable data-driven decision-making across Nepal's WASH sector.** The system serves as a centralised repository for geo-referenced WASH data, with Geographic Information Systems (GIS) being integral in mapping water supply and sanitation services and identifying service gaps. A key feature of NWASH-MIS is its role in supporting and standardising local-level WASH planning. The process includes an inception workshop with the LGs on why planning is important. WASH plan process guidelines, endorsed by MoWS in 2020, set out major steps such as establishing baseline data, conducting prioritisation workshops in LGs for goal setting, calculating investment requirements using life-cycle cost assessments and identifying financing streams (tariff, tax, transfers and other innovative options) as key components of WASH plans. NWASH has optimised the process by modelling costs, enabling users to prioritise projects, and generating a draft report for LGs to use in final discussions.

NWASH-MIS has evolved from a rural water supply monitoring framework to a decision-support system through various frameworks and support from different stakeholders (see Figure 1).

Figure-1: Evolution of NWASH-MIS:



Key actors associated with NWASH-MIS are:

- Department of Water Supply and Sewerage Management (Ministry of Water Supply):** The operation of NWASH-MIS portal was handed over by MoWS to DWSSM in 2019, after the local-level WASH plans were compiled. The institution is responsible for standardising the indicators and building the capacity of local governments to use NWASH-MIS for formulating and implementing local-level WASH plans.
- Provincial WASH-related ministries:** The federal government has recognised that providing effective outreach and support from a single central unit to all 753 local governments presents significant operational and institutional challenges. Therefore, the role of provincial government after federalisation is critical - facilitating the LGs in creating data bases, ensuring

the WASH planning process is adopted smoothly, assuring data quality, and building the capacity of LGs.

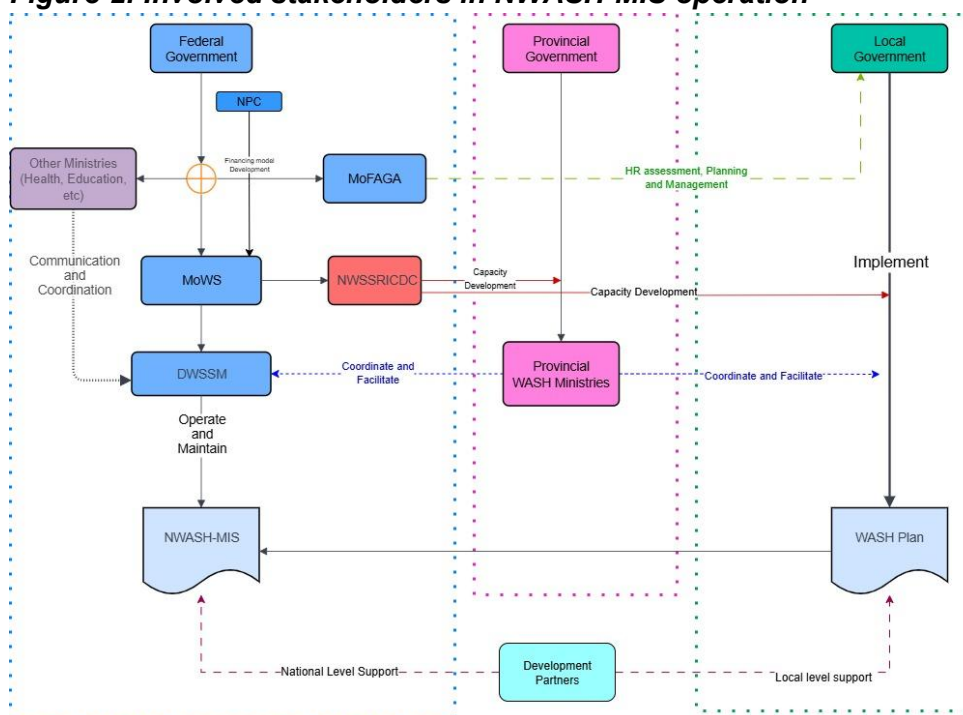
- **Local governments:** 753 Local governments are responsible for data creation and WASH plan formulation and implementation.
- **Development Partners:** Development partners have contributed to the overall effort, starting with political sensitisation, national-level initiation and review workshops, followed by provincial capacity building down to direct support for LGs in data creation, WASH plan formulation, financing strategy development.
- **Other Ministries (Health, Education, General Administration):** Despite the presence of WASH baseline data for institutions in the NWASH-MIS portal, these key stakeholders remain engaged at the communication level only. The accountability for the system has not been transferred to these actors. The Ministry of Federal Affairs and General Administration (MoFAGA) is the ministry responsible for assessing the human resources for local governments, so capacity building is closely associated with the MoFAGA.
- **National Natural Resource and Fiscal Commission (NNRFC) and National Planning Commission (NPC):** Play a critical role in developing results-based financing models.
- **National Water Supply and Sanitation Research Innovation and Capacity Development Centre (NWSSRICDC):** This institution is responsible for capacity development of the whole sector. The Sector Development Plan¹ has assigned the responsibility and accountability of the capacity building component for monitoring, planning and regulation to this institution. Dedicated capacity building programmes for LGs and other NWASH-MIS stakeholders are conducted by this institution².

The interaction between the stakeholders is elaborated in the figure-2.

¹ Draft WASH Sector Development Plan (2023-2043)

² Business plan of NWSSRICDC (2021-2026)

Figure-2: Involved stakeholders in NWASH-MIS operation



Although the Ministry of Water Supply has led the initiative, **NWASH-MIS relies on a wider ecosystem of government actors and development partners**, and progress has met with some resistance. Political and technocratic support remains uneven across federal, provincial, and local levels: about two-thirds of the 753 local governments have begun implementation, but commitment varies among provinces. While national funding has supported capacity building and system operation, financing for data creation is inconsistent—especially where development partners are absent—and initial federal and provincial contributions have not met the full costs. Sustained implementation will depend on local governments taking greater ownership and establishing their own financing mechanisms for ongoing data generation and updates.³

1.3. REPORT STRUCTURE

The remainder of this case-study report is structured as follows:

- **Section Two** presents the level of government leadership exhibited in NWASH-MIS, underscoring notable variations observed across the five leadership competencies.
- **Section Three** outlines evidence about the systemic changes brought by NWASH-MIS.
- **Section Four** explores the contextual factors that have either facilitated or hindered effective government leadership in NWASH-MIS.
- **Section Five** offers strategic recommendations aimed at enhancing and sustaining government leadership within NWASH-MIS.

³ WASH plan review workshop proceedings report DWSSM conducted in 2023.

2. GOVERNMENT LEADERSHIP COMPETENCIES

Government leadership in NWASH-MIS is strongest in vision setting and strategic alignment, which was crucial in driving the creation of a web-based, GIS-enabled decision support system to strengthen local governments' WASH planning, monitoring, and reporting. This has helped localise the SDGs and integrate JMP and GLAAS indicators to support data-driven decision-making⁴. Devolution and institutional ownership remain weakest, as WASH data units across more than 400 local governments function within a centralised system where most municipalities lack technical capacity for autonomous data management^{5,6}. Accountability mechanisms demonstrate technical progress through standardised reporting protocols yet remain donor-driven, while diagnostics and course corrections are emerging through system updates and user training; however, feedback remains episodic. A summary of the NWASH-MIS leadership competencies is given in Table 1 below, with the following sections elaborating each competency in more detail.

Table 1 Summary of NWASH-MIS Leadership Features

Competency	Degree of Leadership
Vision Setting	Government leadership established a clear long-term vision for NWASH-MIS, aligning it with national policies, federal restructuring, and global WASH commitments. This direction guided the system's evolution from a basic database into a strategic platform for planning and regulation. The vision has remained strongest at the federal level, where consistency and clarity are most evident.
Devolution of Leadership and Relative Financial Autonomy	The devolution of WASH functions positioned local governments as primary implementers of NWASH-MIS, but their leadership capacity remains uneven due to staff turnover and limited technical expertise. While federal leadership has provided standards and tools, local governments still struggle to exercise full autonomy in system management and data use. Financial autonomy is similarly constrained, with municipalities facing budget limitations and relying heavily on federal grants for data generation. Recent leadership efforts aim to shift towards performance-based financing, making regular data updates a prerequisite for future infrastructure investment.
Coalitions and Collective Action	NWASH-MIS has strengthened coalition building by bringing federal agencies, development partners, and local governments around a common evidence platform for planning and review. Joint Sector Reviews and national planning workshops have created space for collective action, helping align priorities and reduce fragmented approaches. However, coordination remains inconsistent, particularly across ministries and provinces, limiting deeper institutional collaboration. Sustaining NWASH-MIS will require stronger, continuous coalitions that extend beyond events and translate into routine, shared sector practices.
Accountability and Incentives	NWASH-MIS has introduced important accountability practices, including federal and provincial-level data validation and the use of system data in annual sector reviews. Despite these advances, incentives for regular data updates remain limited, resulting in variable compliance across municipalities. Leadership is exploring innovations such as third-party audits and technology-based validation to strengthen quality assurance. Embedding performance-based incentives and clearer enforcement mechanisms will be essential for institutionalising accountability in the long term.
Diagnostics and Course Corrections	Diagnostics in NWASH-MIS are produced through structured data inputs that identify gaps in coverage, functionality, and system performance. Although discussions on indicator definitions, sampling methods, and data-feeding processes occur, they are not held regularly due to limited M&E personnel at all levels. These ad hoc technical

⁴ Government commitments on SWA (<https://www.sanitationandwaterforall.org/partners/countries-map/nepal>, Accessed on: November 18, 2025)

⁵ WASH plan review workshop proceedings report, DWSSM conducted in 2023

⁶ WASH Sector Performance Report, 2023

reviews still function as important course-correction opportunities, helping refine measurement practices when they happen. Subsequent adjustments are incorporated into planning templates and verified through federal validation processes to maintain system alignment.

2.1. VISION SETTING

- **The WASH Policy (2023), Water Supply and Sanitation Act (2021) and, the recently updated, Sector Development Plan Draft (2023-2043) have NWASH-MIS as a core component within their agenda,** illustrating political commitment to sustaining NWASH-MIS.

The vision-setting function of government leadership in NWASH-MIS has been one of the platform's strongest and most consistent competencies. Federal leaders articulated a long-term vision for establishing NWASH-MIS as the national backbone for WASH planning, monitoring, and regulation. This vision did not emerge in isolation; it was shaped by the shift to federalism, the need for harmonised planning across 753 local governments, and growing national and global expectations for data-driven governance. Informants highlighted that the federal government clearly positioned NWASH-MIS as the institutional repository of WASH data, aligning it with the sector's major policy instruments, including the WASH Policy, Local Governance Operation Act, Sector Development Plan, JMP indicators, and national SDG commitments. This alignment has ensured that the evolution of NWASH-MIS has remained relevant, structured, and anchored in broader sector priorities.

Over time, this strategic vision catalysed the expansion of NWASH-MIS from a basic database into a more sophisticated system incorporating modules for water quality, system parameters, service standards, and planning templates. Federal leadership demonstrated adaptability in refining this vision in response to emerging sector needs—such as improved surveillance requirements, more robust risk assessments, and the integration of performance-based monitoring. Interviewees emphasised that the platforms' upgrades in 2019 and 2021 were not just technical improvements but strategic refinements to ensure NWASH-MIS supported future regulatory, financing, and planning expectations under a federal system.

While federal agencies demonstrate strong clarity and ownership of the overarching purpose of NWASH-MIS, provincial and local governments often engage with the system primarily as a compliance requirement rather than a strategic governance tool. KIIs repeatedly noted that limited technical capacity, staff turnover, and variable local prioritisation dilute the translation of the national vision into everyday practice. As a result, the system's transformative potential is stronger at the federal level than at the local level, where operational realities often overshadow strategic intent.

Leadership at the centre continues to reinforce the long-term vision through national reviews, training, and standard-setting processes. By positioning NWASH-MIS as a pre-condition for planning, resource allocation, and performance assessment, federal leadership seeks to institutionalise the system's role as the foundation of WASH governance. The durability of this vision, despite structural constraints at sub-national levels, reflects a leadership approach that is both proactive and adaptive—one that has allowed NWASH-MIS to maintain relevance across changing political, institutional, and sectoral contexts.

“A move from a traditional National Management Information Project (NMIP) to the NWASH-MIS platform is indeed a progressive move. This year a dedicated Regulation and MIS Section was established at DWSSM. This step of the government will transform database generation from a project-based enterprise into a system-based mission.”

~ WASH Specialist, Dev Partner talking about how federal government has tried to strengthen the institutional arrangements

2.2. DEVOLUTION OF LEADERSHIP AND RELATIVE FINANCIAL AUTONOMY

- The devolution agenda in Nepal has positioned **Local Governments at the core of implementation of NWASH-MIS**; they are expected to exercise leadership in planning, monitoring, and decision-making.
- **Local governments are still struggling to use NWASH-MIS with full autonomy because of financial and technical capacity related constraints. Federal Grants** have been used to create the database, limiting local governments' share. **Growth in LGs' share has been observed** in recent years, as the approach to capacity building and awareness has been adjusted as part of course correction.

The devolution agenda in Nepal has positioned **Local Governments at the core of implementation of NWASH-MIS, where local governments are expected to exercise leadership in planning, monitoring, and decision-making**⁷. KIIs with sector officials indicate that the design of the system deliberately embeds responsibilities at the municipal level—such as data entry, validation, and plan preparation—thereby making **local leadership not only desirable but structurally necessary**. Over time, this has contributed to greater visibility of municipal leadership roles in sector governance, even if variations persist across municipalities.

“WASH professionals collect field-level data and prioritise, test, and validate it in ward-level discussions in the presence of political leaders. This is the basis of evidence-based WASH plan development and system strengthening. Local leadership, both technical and political, has grown visibly during this journey.”

- Municipal WASH focal person

Despite a clear policy mandate, full autonomy in NWASH-MIS use remains constrained by the **financial, technical, and human-resource limitations faced by many local governments**. Interviews suggest that while decentralisation created opportunities for local ownership, it did not uniformly equip all municipalities with the capacity to manage sophisticated digital systems. Consequently, in the areas **without development partner assistance, the progress witnessed is generally low**. Nonetheless, the Sector Performance Report prepared during the latest Joint Sector Review has pointed out an encouraging shift: several “champion” local governments have emerged over the past six to seven years, demonstrating **proactive political leadership and sustained engagement with the MIS**⁸. Parallel to this, development partners have gradually strengthened coalitions for capacity development, contributing to a slow but steady improvement in technical competence at the sub-national level.

“Federal leadership of NWASH has aggregated the DPs’ support in an efficient way, despite of the gaps this aggregation of resources has helped the initiative to move forward.”

~ Development Partner Representative

Federal grants have historically served as the primary source of funding for establishing and maintaining the NWASH-MIS database, with local governments providing only modest contributions. On average 25 million NRs. have been injected over the past three years by the federal government. Provincial governments have contributed a similar share, but this is not uniform across the country. LGs have co-financed the initiative particularly where development partners are present. KIIs revealed a notable shift over the past few years: as capacity-building modalities evolved and awareness increased, more municipalities began allocating their own resources to data generation and system

⁷ WASH plan process guideline (<https://nwash.gov.np/Documents>, accessed on: November 18, 2025)

⁸ WASH Sector Performance Report, 2023

maintenance. This trend **signals growing local ownership and recognition of the system's planning value.**

"Federal government has kept NWASH-MIS as a priority and tried to inject sustainable financing in annual working plan. However, budget provision alone is not enough as this initiative needs to align with the capacity development, awareness of local and provincial government officials and as per my understanding the sector is already overstretched in terms of human resource."

– Federal government officials

Discussions during sector review workshops, including the Joint Sector Review, have increasingly emphasised the need for a sustainable financial ecosystem for NWASH-MIS. One emerging proposal is the introduction of **Performance-Based Grants (PBGs)**, where continued investment in the MIS would be linked to measurable improvements in data quality, timeliness, and utilisation. Evidence from comparative literature suggests that PBG mechanisms can incentivise local governments to prioritise digital systems and institutionalise data practices. Key informants echoed this view, arguing that a well-designed PBG approach could enhance financial autonomy while creating predictable incentives for maintaining high-quality WASH data at the local level.

"In some service delivery projects where our budget has been disbursed through the ministries, we have incorporated the performance-based conditions of NWASH-MIS data as the pre-condition."

- Development Partner Representative

2.3. COALITIONS AND COLLECTIVE ACTION

- The biggest success is the coalitions and collective action competency, where **almost all stakeholders have contributed to NWASH-MIS sustainability.**
- Most of the coalitions and collective actions are guided by **Joint Sector Review and other review programmes**, although the **frequency and platforms used have been inconsistent.**

The sustainability of NWASH-MIS is widely attributed to the strength of coalitions and collective action that have emerged across the sector. KIIs confirm that federal agencies, development partners, local governments, and technical organisations have each contributed to system refinement, capacity building, and resource mobilisation. This multisectoral cooperation has created shared ownership of NWASH-MIS, reduced fragmentation and enhanced its legitimacy as the national WASH information platform. Coalitions have been adaptive, and both sides have benefited. Respondents from local government associations such as MuAN and NARMIN noted that **coalitions not only supported the rollout of NWASH-MIS but also strengthened the WASH capacity of those associations.**

"The role of NWASH-MIS has been identified by each layer of government and development partner, and coalitions are formed by the necessity. Coalitions have been adaptive. I still remember when we were approached, it made the overall communication and networking easier. Support for our institution increased when impact related to WASH plan scaling up in LGs was achieved."

– WASH focal person from Local Government Association.

Stakeholders recognise that coalition building has been largely shaped by periodic review mechanisms, particularly the Joint Sector Review (JSR) and other thematic consultations. These platforms have served as critical spaces for problem identification, norm-setting, and coordinated action, though their frequency and structure have varied over time. KIIs indicate that inconsistencies in convening these forums sometimes limit the continuity of collective action and slow

down follow-through on agreed priorities. Nonetheless, even with varying regularity, these review processes continue to anchor collaborative practices and provide a strategic direction for sustaining NWASH-MIS. One of the major successes from this coalition is the updating of LGPAS (see Box 1)⁹.

“We want the frequency of these WASH plan reviews to be regular, the collaboration with associations to be guided by MoUs between the ministry and our associations, rather than some development partner assessing us for a six-month project.” - **WASH focal person from Local Government Association**

The coalition faces a gap in terms of access to data from the private sector and service providers. Initial discussions have not yet resulted in tangible outcomes. One possible improvement area is to enable the coalition to access administrative data through regulation.

“We can see a possibility of data integration and optimisation can be achieved through partnership with private sectors who are digitising the utilities, but there are some hurdles which we need to overcome.”

- **Official from Ministry of Water Supply**

2.4. ACCOUNTABILITY AND INCENTIVES

- Data validation is still a challenge in NWASH-MIS, as substantial **human resources are required for this**. However, the **use of Artificial Intelligence and machine learning** is an option to cope with the data inconsistency.
- **Performance-linked financing models in LGPAS** are a step towards making local government accountable for system sustainability.
- There is a huge **vertical accountability gap in provincial governments** due to capacity limitations and frequent government changes. Development-driven programmes are **mitigating these gaps**.

NWASH-MIS creates different accountability requirements for each tier of government. For data creation, planning and primary interventions, LGs are responsible, whereas provincial governments are accountable for data validation. Fixing the data protocols and process guidelines falls under the jurisdiction of federal government. Provincial accountability is still a grey area as it is not well reflected in legal frameworks or mandatory provisions.

“The capacity building activity associated with NWASH-MIS and facilitation to LGs has totally been driven by the personal interest of the provincial leadership as there are no legal frameworks to bind them specially for the provincial governments.”

Box 1: Establishing one criterion for NWASH-MIS

- One of the critical challenges facing NWASH-MIS after the devolution of authority across the three tiers of government was convincing LGs to use it for their planning and decision-making processes.
- With support from MuAN and NARMIN (funded by UNICEF in 2024), MoWS was able to advance its proposal to update the Local Government Performance Assessment System (LGPAS), whereby WASH data will be approved only after it is updated in NWASH-MIS (this is aligned with the conditional grant mechanism for LGs).
- Conditional Grants are expected to motivate the LGs to regularly update their status, reflect progress against the plan, and, in the long run, contribute to the sustainability of the system.

⁹ Local government performance assessment criteria. Available at: <https://www.mofaga.gov.np/detail/3610> (Accessed :22 November 2025)

~ Province government official

Horizontal accountability, however, has been exercised through regular data reviews and knowledge exchange between partners. Even in **local governments, the champion mayor concept was introduced by MuAN and NARMIN which had a positive impact.**

“During our collaboration period the champion mayor practices enhanced the LGs accountability. However, use of MuAN and NARMIN has been fund-driven and for a limited time hence MoU between MuAN/NARMIN and MoWS can create sustainable solutions for these kinds of initiatives.”

~ WASH focal person, NARMIN

Local governments’ accountability has improved through the LGPAS. This has been possible through continuous course correction and coalition development with the Ministry of Federal Affairs and General Administration. The coalition was able to create the performance-based programme approach where NWASH-MIS has been introduced as one of the pre-conditions in project selection.

“We introduced NWASH-MIS and WASH planning as precondition while selecting the project in Karnali and Sudur Paschim province and that investment modality helped create the LGs accountability in creating database and enhancing the local level planning process.”

-Development Partner Representative.

Ensuring data quality has been challenging because of the capacity constraints, impeding accountability.

Human resource requirements for data validation are substantial because of the high data volume and the diverse nature of enumerators. Building staff capacity on indicators, life-cycle costing, and understanding the implications of data costing has been a major challenge for the NWASH-MIS federal support team during its rollout. Although development partners like UNICEF, SNV, WHH have been investing time and resources, these do not appear to be sufficient from a quality assurance and quality control point of view. As a course-correction measure, the use of Artificial Intelligence and machine learning was explored for optimised data validation to save time and identify risk hotspots (see Box 2)¹⁰.

Box 2: Strengthening Data Quality through AI

The Frontier Technology Hub pilot on AI-based verification of rural water supply assets represents an important course correction for NWASH-MIS, aimed at strengthening data quality and reliability. By using machine-learning techniques to validate asset photographs and detect defects, the initiative directly addresses long-standing limitations in manual data verification. The pilot demonstrates how automation can compensate for constrained human resources while improving the accuracy of infrastructure and functionality data. This innovation signals a shift towards a more robust, decision-ready NWASH-MIS that is better suited to support evidence-based planning and sustainable service delivery.

¹⁰ Integrating AI into asset management of rural water supply schemes in Nepal (<https://www.frontiertechhub.org/pilot-portfolio/ruralwaterschemes-nepal>, accessed on: November 28,2025)

2.5. DIAGNOSTICS AND COURSE CORRECTIONS

- Discussions on indicators, sampling methods and data-feeding mechanisms occur, albeit **irregularly**.
- **Limited capacity in monitoring, evaluation, research and learning** has halted the development of proper feedback loop mechanisms.
- **CSO interventions that seek to use data as a policy tool require advocacy platforms such as civil forums, but those platforms are almost non-existent** and workshops are infrequent. CSOs mostly operate when funds are available, making the mechanism unsustainable.
- Federal government has gradually realised that financing **data collection from federal or provincial level to local government is not a sustainable mechanism**. Instead, the value of data needs to be demonstrated to LGs, and data compliance should be established as a condition for receiving grants or transfers from federal or provincial government. Also, service providers play a key role, as they generate data while delivering services.

NWASH has undergone an evolutionary process shaped by informal feedback and support from development partners. It has progressed from a rural M&E system to a platform that supports local WASH planning (Figure 1). **The Joint Sector Review 2023 established a thematic mechanism to advance work across the different system pillars, including the NWASH-MIS initiative under the monitoring and evaluation theme. Two of the resolutions state:**

- **Establish the WASH plan as the foundational framework for planning, programming, and executing all local-level WASH-related initiatives across the three tiers of government.**
- **Strengthen, optimize and scale-up NWASH MIS; establish connections with other sectoral MIS for informed actions which reflect the acceptance of NWASH-MIS as a tool for sectoral diagnostics.** ¹¹**Strengthening initiatives have focused** on indicators, sampling methods and data feeding. However, apart from the JSR, the feedback mechanisms have been irregular. Non-standardised mechanisms and less frequent course correction measures have slowed the smooth and professional development of NWASH-MIS.¹²

Data utilisation has gained momentum in few local governments. However, the non-utilisation of existing data in policy can create a vicious cycle and, in the long run, hamper the data creation and planning process¹³. Interventions of CSOs, such as FEDWASUN, MuAN, NARMIN, are imperative in addressing this. However, due to projectised approaches, systemic change has not gained the necessary momentum. There have been some good examples; however, institutionalisation of course correction practices remains a challenge. These platforms are essential for course correction and therefore need to be properly developed.

Key informants have stated that federal grants are not a sustainable measure for data creation. In the future, data generation should be financed through local funds or tariffs, using regulatory provisions to ensure sustainable data flow.

“With the presence of a regulatory regime, there is a high possibility that we can transition our data systems from survey to administrative mandatory data mechanisms. Even in the places where the service providers are weak, accountability of data creation falls under LG’s jurisdiction and hence conditional grants are important.”

- **Senior Official, MoWS**

¹¹ WASH Sector Performance Report, 2023

¹² WASH plan review workshop proceedings report, DWSSM conducted in 2023

¹³ GLAAS, 2022

One notable course correction initiative is the coalition formed between officials from the FCDO Nepal office and the Government of Nepal, through which a WASH specialist secured a frontier grant to explore the use of AI to enhance the data quality of NWASH-MIS. This pilot has now been integrated into the data checking mechanism.

3. SIGNS OF IMPACT

At the national level, NWASH-MIS has been progressively institutionalised as the official WASH information platform, in alignment with federal governance reforms. Its integration into national M&E frameworks, WASH Plan Standards, and Joint Sector Review (JSR) processes demonstrates its policy legitimacy and central role. Federal grants initially enabled the database establishment and nationwide rollout, while recent discussions on basket financing and performance-based grants indicate a shift towards long-term financial sustainability. The use of NWASH-MIS data in the JSR gap analysis and joint action planning reflects its growing influence on national sector coordination and accountability.

“We have supported the data creation for LGs through dedicated funds now, probably will be needed few more years, However, the accountability should slowly shift to LGs. In fact, some have already started doing so.”

- Planning Section, DWSSM

At the sub-national level, NWASH-MIS has slowly strengthened the role of local governments in WASH planning, monitoring, and prioritisation. Although many municipalities initially struggled with the technical and financial autonomy, the system has gradually fostered local ownership as capacity and awareness increased. A few “champion” municipalities now demonstrate proactive leadership in data use for infrastructure planning and service improvement. The progressive rise in local financial contributions to data generation and system use in recent years further indicates increasing institutional maturity and sub-national ownership of MIS.

“WASH professionals collect field-level data and prioritise, test, and validate it in ward-level discussions in the presence of political leaders. This is the basis of evidence-based WASH plan development and system strengthening.”

- WASH Focal Person, Municipal Office

NWASH-MIS has enabled systematic tracking of service access by standardising indicators in line with JMP service ladders and national WASH plan requirements. Through routine local-government reporting and national aggregation, the system now supports evidence-based identification of unserved and underserved communities. This has strengthened the targeting of rural water supply investments and enabled post-project monitoring of functionality. The integration of access indicators into planning tools has improved transparency in service coverage reporting across governance levels.

Box 3: More than 300 local-level plans developed

More than 300 local-level plans have already been developed with life-cycle cost assessments and investment options. This was one of the biggest data resources used to prepare the sector development plan (2023-2043), still in draft stage. Federal government has found the development of flagship programmes easier as a result of the ability to draw on the data embedded within these plans and escalated it to the provisional level. Recently, the National Cholera Elimination Plan (NCEP) highlighted the need for those metadata for joint action as well.

4. ENABLING GOVERNMENT LEADERSHIP

In the case of NWASH-MIS, core government institutions have provided overarching policy direction, institutional oversight, and financing frameworks. Development partners, such as UNICEF, the World Bank, SNV, FCDO, and others, have supported system design, capacity development, data generation, and digital innovation. The combined efforts of these institutions and partners have enabled NWASH-MIS to evolve from a rural monitoring tool into a nationally integrated planning, monitoring, and accountability platform for the WASH sector. Key learnings and especially impactful activities include:

1. A clear national vision anchored in policy enables long-term system institutionalisation.

Positioning NWASH-MIS within the Water Supply and Sanitation Act (2021), WASH Policy (2023), and the draft Sector Development Plan (2023–2043) ensured political legitimacy and continuity beyond individual projects. Aligning the platform with JMP and GLAAS indicators strengthened its credibility and relevance for SDG localisation. This policy anchoring transformed NWASH-MIS from a technical tool into a core instrument of WASH governance.

2. Devolution creates ownership, but only when matched with sustained capacity support.

Federalisation placed responsibility for data creation and planning on 753 local governments, making local leadership structurally essential. While many municipalities initially struggled due to capacity and fiscal constraints, the emergence of “champion” local governments demonstrates that devolved authority can generate genuine ownership when technical mentoring and facilitation are available. Ward-level data validation and participatory WASH planning have strengthened evidence-based local decision-making.

3. Coalitions and sector platforms accelerate uptake and legitimacy.

Multi-stakeholder coalitions involving federal agencies, local governments, development partners, and associations such as MUAN and NARMIN, have been critical to scaling NWASH-MIS. The Joint Sector Review (JSR) and national planning workshops functioned as key coordination spaces for collective learning, gap identification, and system refinement. The integration of NWASH-MIS into the Local Government Performance Assessment System (LGPAS) is a major outcome of these coalitions.

4. Accountability and incentives shape sustained system use.

Federal and provincial validation mechanisms, conditional grant linkages, and the gradual integration of NWASH-MIS into performance-based financing discussions have strengthened upward accountability. Using NWASH-MIS as a pre-condition in selected project financing has created tangible incentives for regular data updates. However, accountability remains uneven due to limited provincial enforcement mandates and variable local compliance.

5. Data quality and digital innovation are central to system credibility.

The AI-based asset verification pilot supported through the Frontier Technology initiative has marked a major shift towards automated data quality assurance. By reducing reliance on manual verification, NWASH-MIS is transitioning towards a more reliable, scalable, and decision-ready data ecosystem. This demonstrates that technological innovation can compensate for structural human-resource constraints in public information systems.

6. Financing models must shift from grants to performance-linked mechanisms.

Federal grants enabled the initial establishment and scaling of NWASH-MIS, while local co-financing has begun to increase in recent years. However, the experience shows that grant-based data financing is not sustainable. The growing emphasis on performance-based grants

and administrative data generation through regulatory mechanisms reflect a strategic shift towards fiscal sustainability.

7. Continuous diagnostics and adaptive learning are still not fully institutionalised.

Although periodic diagnostics occur through JSRs, thematic reviews, and federal validation exercises, systematic learning cycles remain weak due to limited M&E capacity and irregular feedback platforms. Where data have been actively used—such as in local WASH planning and national flagship programmes—system responsiveness has improved. However, the transition from episodic to institutionalised adaptive learning remains an unfinished reform.

Less effective or constrained factors that limit the full leverage of NWASH-MIS include uneven provincial accountability, persistent human-resource gaps at local levels, dependence on donor-financed data generation in remote municipalities, and the absence of a fully administrative data ecosystem. These constraints highlight that while the governance foundation of NWASH-MIS is strong, its long-term sustainability will depend on deeper fiscal integration, stronger provincial mandates, and institutionalised learning and accountability mechanisms.

5. RECOMMENDATIONS AND CONCLUSION

The NWASH-MIS experience demonstrates how strong government vision, devolved governance, coalition building, and adaptive learning can **transform a monitoring platform into a nationally integrated planning and accountability system**. Anchored in the Water Supply and Sanitation Act (2021), the WASH Policy (2023), and the draft Sector Development Plan (2023–2043), NWASH-MIS has become central to SDG localisation, sector coordination, and investment planning. Building on this momentum, future reforms should focus on deepening institutionalisation, strengthening sub-national accountability, securing long-term fiscal sustainability, and embedding continuous learning and performance management into routine governance. Consolidating these gains will ensure that NWASH-MIS remains a credible, resilient, and decision-ready public information system for Nepal's WASH sector.

To deepen long-term vision beyond project cycles, the Government of Nepal should develop a dedicated **National Digital WASH Governance Strategy** that explicitly positions NWASH-MIS as the permanent backbone for planning, regulation, financing, and performance oversight. This forward-looking strategy should integrate emerging priorities such as climate resilience, service regulation, water safety planning, and urban sanitation. Without such a strategic institutionalisation, the system risks continuing partial dependence on time-bound projects and external technical support, which could weaken sustainability over time.

While devolution has structurally empowered local governments to lead data generation and planning through NWASH-MIS, provincial accountability remains under-defined. **Clear statutory mandates should be assigned to provincial governments for data validation, performance oversight, and sub-national capacity building, supported by dedicated provincial budget lines for MIS facilitation**. Strengthening provincial ownership would reduce the operational burden on federal institutions and enable more responsive technical and administrative support to local governments, thereby strengthening the integrity of the federal WASH governance system.

A critical transition now required is the shift from grant-financed, survey-based data creation to a **mandatory administrative data ecosystem**. NWASH-MIS reporting should be **formally embedded within regulatory and fiscal systems, including utility licensing, service regulation, inter-governmental fiscal transfers, and investment approval processes**. Making data reporting a statutory obligation rather than a project activity will institutionalise data generation as a routine public function and safeguard the continuity, completeness, and credibility of national WASH information.

Discussions on performance-based grants should be translated into formal financing instruments that link fiscal transfers directly to verified NWASH-MIS indicators. Embedding performance conditions within selected conditional grants for water supply, sanitation, and climate-resilient infrastructure would strengthen incentives for timely data updates, improve accountability, and align fiscal flows more closely with sector performance. Such mechanisms would also progressively reduce reliance on discretionary federal grants for data creation and system operation.

NWASH-MIS should evolve from a retrospective monitoring tool into a **forward-looking performance management system that supports predictive planning and proactive regulatory decision-making**. This transformation requires integrating routine analytics, early-warning dashboards, and risk-tracking features that link real-time performance trends to annual and medium-term planning processes. As emphasised in performance management literature, reliance on backward-looking indicators alone limits strategic responsiveness and can constrain proactive sector management.

Diagnostics and adaptive learning mechanisms also require stronger institutionalisation. While Joint Sector Reviews, national workshops, and federal validation exercises provide important learning moments, these remain episodic. Establishing a formal national learning cycle with regular thematic diagnostics, structured indicator revisions, public dissemination of findings, and clear follow-

up actions linked to financing decisions would shift adaptive learning from an ad hoc practice to a core governance function.

The promising results of the AI-based asset verification pilot demonstrate the importance of scaling digital and automation innovations for data quality assurance. **This approach should be expanded incrementally and embedded into routine federal and provincial validation protocols.** Investment in automation is essential for overcoming long-term human-resource constraints and for maintaining NWASH-MIS as a regulatory-grade information system capable of supporting credible planning, financing, and service oversight.

Public transparency and access to performance information should be significantly strengthened. Developing a public-facing NWASH-MIS transparency portal would allow citizens, civil society, and local leaders to access information on service coverage, water quality compliance, investment patterns, and system functionality. Improved transparency would reinforce public trust, strengthen political accountability, and create social demand for sustained data quality and system performance.

Coalitions that have supported NWASH-MIS—particularly those with MUAN, NARMIN, and FEDWASUN—should be formalised through multi-year institutional Memoranda of Understanding with the Ministry of Water Supply and DWSSM. Institutionalising these partnerships would secure long-term peer-learning platforms, strengthen political advocacy for data-driven governance, and ensure sustained support for local capacity development beyond short project cycles.

Finally, the long-term sustainability of NWASH-MIS depends on its full integration within Nepal's public financial management systems. **Direct linkage with national expenditure tracking systems, medium-term expenditure frameworks, and infrastructure asset management platforms would ensure that WASH investments, operation and maintenance financing, and regulatory oversight are consistently informed by verified administrative data.** This integration would firmly embed NWASH-MIS within the core architecture of public service delivery and fiscal governance.

In conclusion, NWASH-MIS has established itself as a nationally owned digital public good for WASH governance in a federalising state. Its future success will depend not only on technological sophistication but on deeper institutional embedding, stronger provincial accountability, fiscal integration, and a sustained culture of adaptive learning. Strengthening these foundations will enable Nepal to transition NWASH-MIS fully from a development-supported initiative into a permanent pillar of national WASH governance and public service performance.