



## **An Assessment of the Enabling Environment for Climate-Resilient Community-Managed WASH Systems in Nepal**

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### **Abstract**

**Background:** Climate change exacerbates hydro-meteorological hazards that impact water availability, infrastructure, and water quality in rural Nepal, where Water Users and Sanitation Committees (WUSCs) are responsible for the operation and management of most of the water supply systems, in which local governments are the primary service delivery authority as well as regulatory body.



**Objective:** This research aims to evaluate the current status of the enabling environment for climate-resilient and community-managed WASH services in Nepal by analyzing existing policies and readiness gaps in six interrelated pillars: governance, policy and legal operationalization, institutional and technical capacity, financing systems, coordination and information systems, and equity and inclusion.

**Methods:** A qualitative policy analysis was performed through a systematic document analysis of 16 national policy documents related to WASH and climate change. Thematic analysis, qualitative content analysis, discourse analysis, and comparative gap analysis were employed through an analytical framework of six interrelated pillars with an adequacy scale (Strong, Moderate, Limited, Weak) for policy readiness assessment.

**Findings:** The enabling environment has moderate adequacy in terms of governance and policy operationalization, but limited adequacy in terms of institutional capacity, financial support, and coordination mechanisms, and limited to moderate adequacy in terms of equity and inclusion. Although there is a clear mandate for decentralization and a clear intention for climate policies, there are still important gaps: climate resilience is not integrated into binding service standards; municipal human resources and technical support for WUSCs are inadequate; financial support prioritizes capital spending over life-cycle and shock-responsive approaches; climate information is inadequately integrated into WASH operational guidelines; and equity measures lack implementation tools.

**Conclusion:** The policy intention for climate-resilient WASH in Nepal is strong, but operationalization is fragmentary among the interrelated pillars. Without filling these systemic gaps, adaptation will continue to be a set of reactive coping measures, rather than institutionalized, preventive, and sustainable resilience actions.

**Implementation:** The research identified an integrated climate-resilient framework to institutionalize resilience through: municipal service monitoring with standardized criteria; WASH units; climate risk screening in technical approval processes; provincial technical support pools; separate O&M and resilience budgets; simplified access to climate finance; cross-sectoral coordination tools; and enhanced equity criteria with clear grievance handling.

**Keywords:** adaptation, climate resilience, community-managed WASH, enabling environment, federalism, policy

## **1. Introduction**

Hydro-meteorological disasters that directly impact rural water availability, infrastructural stability, and water quality are becoming more frequent and intense due to climate change (IPCC, 2023). Because climate threats exacerbate pre-existing service shortcomings, including fragile sources, inadequate maintenance capacity, and unequal access, the water, sanitation, and hygiene (WASH) sector in South Asia is especially vulnerable (Suneja et al., 2019). Therefore, an enabling environment, which includes institutional structures, rules and standards, funding, monitoring and learning, and accountability mechanisms that support service delivery functions throughout time, is just as important to WASH results as infrastructure (UNICEF, 2016). Research that focuses on participation also demonstrates that,



without enabling conditions that promote meaningful engagement, information availability, and protections against inequality and elite capture, community management cannot produce durable and equitable results (Jiménez et al., 2019).

In Nepal's federal governance structure, local governments are primarily responsible for WASH service delivery, and rural water services are primarily managed by the community through WUSCs (Nijhawan et al., 2022; Singh et al., 2025). In addition to regular operation and maintenance (O&M), climate resilience necessitates preventive risk management, technical backstopping for complex failures, dependable lifecycle and shock-responsive financing, usable climate and service information, and coordination across sectors and governance tiers (Nepal et al., 2025; Poudel et al., 2024). Community management, on the other hand, supports local ownership and day-to-day operation (Singh et al., 2025). Opportunities for locally responsive planning are presented by Nepal's federal transition, but if mandates are not linked with human resources, support networks, and funding agreements, there is a risk of uneven capacity and fragmented roles (Khadka et al., 2023).

This study evaluates Nepal's climate-resilient community-managed WASH systems' enabling environment. It analyzes cross-pillar gaps that limit the institutionalization of adaptation methods and looks at the national policy and legislative framework pertinent to climate-resilient WASH under federalism (Khadka et al., 2023; Nijhawan et al., 2022). To determine whether adaptation is reactive or planned and sustained, the study summarizes how governance, policy, and legal operationalization, institutional capacity, financial mechanisms, coordination and information systems, and equity and inclusion conditions interact (Nepal et al., 2025; Poudel et al., 2024).

## **2. Methodology**

### **2.1 Research design and approach**

The design of the study followed a qualitative policy analysis design in assessing the enabling environment for climate adaptation in community-managed WASH systems in Nepal (Khadka et al., 2023; Manandhar-Sherpa et al., 2024). This approach is a desk-based review and interpretative in nature, and focuses on understanding how national policy instruments translate or fail to translate into operational conditions for local governments and WUSCs under federal governance structures (Khadka et al., 2023; Rajouria et al., 2022). Instead of using a systematic review protocol, the study followed a qualitative systematic review framework in assessing policy documents and relevant journal articles. To enhance validity in assessing policy documents and their findings, data collected from the field were triangulated with findings from the study sites, results from household surveys, and inputs from WUSC members and caretakers (Rajouria et al., 2022).

### **2.2 Key concept: adaptation adoption**

In the present work, the concept of adapting to climate change does not merely involve the existence of some plans or infrastructure development initiatives. Rather, it involves the local government and community engagement, ongoing, and preventative activities in managing and reducing the impacts of climate change risks to WASH services. Therefore, the concept of “adaptation adoption” refers to the extent to which local governments and community-managed



services integrate climate risks in the day-to-day execution, operation, and maintenance of activities, as opposed to the reliance of local governments and community-managed services on coping strategies that may be reactive in nature, such as rationing, alternative sources, reactive maintenance, and waiting for external assistance (Dahal et al., 2025; Karki et al., 2021; Reid & Huq, 2014; UNICEF, 2016).

**2.3 Assessment focus and analytical lens**

The assessment of the enabling environment examined the fundamental elements that impact the way in which communities approach WASH adaptation (Manandhar-Sherpa et. al., 2024; Singh et al., 2025). It asked, for example, whether the way in which the setup of the government, the policy and laws, the way in which people work together, the flow of money, and the knowledge and expertise all add up to climate resilience becoming second nature, rather than the community trying to survive in the short term (Khadka et al., 2023; Nepal et al., 2025; Poudel et al., 2024).

To elaborate, the assessment used the following six pillars (Table 1) to determine integration of climate resilience into various WASH and water resources policies (Howard et al., 2021; Karmacharya et al., 2025; Manandhar-Sherpa et al., 2024; Nepal et al., 2025; Nijhawan et al., 2022; Poudel et al., 2024; Rajouria et al., 2022).

*Table 1 Six pillars of an enabling environment*

<b>Pillar No.</b>	<b>Pillar</b>	<b>Key Focus Areas</b>
1	Governance and Federal Structure	Mandates, roles and responsibilities, oversight, accountability, escalation, and support pathways
2	Policy and Legal Framework	Operational standards and enforceable tools for delivering climate-resilient WASH
3	Institutional Arrangements and Technical Capacity	Backstopping support, capacity building, institutional staffing, and continuity mechanisms
4	Financing System	Long-term funding and resources aligned with resilience objectives
5	Coordination and Information System	Vertical and horizontal coordination, climate and WASH monitoring, and learning systems
6	Equity and Inclusion	Participation, fairness, and grievance handling mechanisms

The study also examined the inter-relationship between the pillars. For example, a strong policy intent might not become routine risk screening without enforcement, standards might not be used effectively without sufficient human resources at the municipal level, and systems might not work effectively without the means to pay for maintenance, etc.



#### **2.4 Structured qualitative document review process**

The research design adopted a staged, desk-based approach to the selection and analysis of the documents, drawing on established qualitative research methodology for the analysis of documents (Lim, 2025; Taylor et al., 2024). The research design involved the following steps related to the selection of the documents: the identification of the key policy areas, such as climate adaptation, climate change, enabling environment, resilience, WASH, governance, finance, and technical standards; the identification of the relevant policy documents from the federal level, along with legal instruments, strategies, plans, and technical guidelines; the screening of the identified documents to check for relevance to the issue of climate-resilient community-managed WASH services; the structured coding, theming, and interpretive synthesis of the data; and the triangulation of the findings to assess the implementation of the policies, using field-based evidence to check the implementation gap related climate adaptation practices. During the screening of the identified documents, the research design focused on the relevance of the documents to the issue of climate-resilient, community-managed WASH services, including the clear reference to climate risks, adaptation, decentralized service delivery, enabling environment, community management, service standards, financing, monitoring, accountability, and equity/GESI considerations.

A template for policy review was developed in Ms. Excel, and the reviewed information has been documented in four columns is of instrument or policy, the second for key WASH and climate-related provisions, the third for enabling environment, key gaps or implementation challenges related to WASH and climate, and the last column is recorded as implications for WUSCs and local governments (see Supplementary Materials 2).

#### **2.5 Sources of documents and review**

A total of 35 policy documents were collected for the study, which includes the constitution of Nepal, the local government operation act, the water resources act, rules, WASH and climate rules, regulations, plans, and policies (see Supplementary Materials 1), soft copies of those polices collected through online web links from various governmental and non-governmental organizations. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework was adopted for policy screening and reviewing (Manandhar-Sherpa et al., 2024; Page et al., 2021). The overall policy review process based on the PRISMA framework has been specified in Figure 1.



*Figure 1 PRISMA Flow Diagram: Policy Screening Process*

**Identification**

35 policies identified through document review (1992–2025)



**Screening**

19 policies excluded:

- Focused only on water supply rules/technical standards
- Repealed/replaced by newer acts/policies
  - Indirect sanitation focus
  - Drafts not finalized
- Limited climate resilience relevance



**Eligibility**

16 policies assessed in detail for relevance to the enabling environment for climate-resilient community-managed WASH



**Included**

16 policies selected for final review

The policy's inclusion and exclusion criteria were developed for the screening process as specified below.

**Inclusion criteria**

- ✓ Policies explicitly mentioning WASH systems/services
- ✓ Integration of climate resilience/adaptation in WASH
- ✓ Legal/policy frameworks enabling local government/WUSC roles
- ✓ Financing or governance provisions linked to climate resilience/WASH

**Exclusion criteria**

- ✓ Policies focused only on water resources, water supply rules/technical standards
- ✓ Repealed/replaced by newer acts/policies
- ✓ Addressed sanitation only indirectly (e.g., hygiene/environmental pollution)
- ✓ Drafts not finalized or outdated versions
- ✓ Limited/no climate resilience relevance

A total of 16 policies (see Table 2) were selected for the review process after carefully assessing the PRISMA screening process, followed by identification, screening, eligibility, and inclusion

process. The analysis covered national policies that collectively shape mandates, standards, financing pathways, and implementation guidance for climate-resilient community-managed WASH (Table 2).

*Table 2 Policy and legal instruments reviewed*

SN	Policy Name	Source
1	Constitution of Nepal, 2015	<a href="https://ag.gov.np/files/Constitution-of-Nepal_2072_Eng_www.moljpa.gov_.npDate-72_11_16.pdf">https://ag.gov.np/files/Constitution-of-Nepal_2072_Eng_www.moljpa.gov_.npDate-72_11_16.pdf</a>
2	Local Government Operation Act 2017	<a href="https://mofaga.gov.np/notice-file/Notices-20200210094733703.pdf">https://mofaga.gov.np/notice-file/Notices-20200210094733703.pdf</a>
3	The Sixteenth Plan (2024-2028) 2024	<a href="https://npc.gov.np/content/6462/the-sixteenth-plan--fical-year-2024-25-2028-29-/">https://npc.gov.np/content/6462/the-sixteenth-plan--fical-year-2024-25-2028-29-/</a>
<b>WASH Related Policies</b>		
4	Water Resource Act, 1992	<a href="https://lawcommission.gov.np/content/12564/12564-water-resources-act-1992/">https://lawcommission.gov.np/content/12564/12564-water-resources-act-1992/</a>
5	Water Resources Rules, 1993	<a href="https://dwssm.gov.np/content/7/water-resources-rules--2050--1993/">https://dwssm.gov.np/content/7/water-resources-rules--2050--1993/</a>
6	Water Supply and Sanitation Act 2022	<a href="https://dwssm.gov.np/content/11/water-supply-and-sanitation-act-2079/">https://dwssm.gov.np/content/11/water-supply-and-sanitation-act-2079/</a>
7	National Water Supply, Sanitation and Hygiene (WASH) Policy 2023	<a href="https://giwmscdntwo.gov.np/media/pdf_upload/wash-policy-approved_18sdomk.pdf">https://giwmscdntwo.gov.np/media/pdf_upload/wash-policy-approved_18sdomk.pdf</a>
8	WASH Regulation 2024	<a href="https://dwssm.gov.np/content/168/drinking-water-and-sanitation-rules--2081/">https://dwssm.gov.np/content/168/drinking-water-and-sanitation-rules--2081/</a>
<b>Climate-Related Policies</b>		
9	National Adaptation Program of Action (NAPA) 2010	<a href="https://unfccc.int/resource/docs/napa/npl01.pdf">https://unfccc.int/resource/docs/napa/npl01.pdf</a>
10	National Framework on Local Adaptation Plan of Action (LAPA) 2011	<a href="http://climate.mohp.gov.np/downloads/National_Framework_Local_Adaptation_Plan.pdf">http://climate.mohp.gov.np/downloads/National_Framework_Local_Adaptation_Plan.pdf</a>
11	National Adaptation Plan (NAP) Process 2015/ 2018	<a href="https://napglobalnetwork.org/wp-content/uploads/2018/07/napgn-en-2018-nepal-nap-process.pdf">https://napglobalnetwork.org/wp-content/uploads/2018/07/napgn-en-2018-nepal-nap-process.pdf</a>
12	Local Adaptation Plan of Action (LAPA) 2076	 स्थानीय-अनुकूलन-कार्य योजना-खाका-२०७६-२८
13	National Climate Change Policy 2019	<a href="https://www.icimod.org/wp-content/uploads/2021/07/National-Climate-Change-Policy_english_2019_compressed.pdf">https://www.icimod.org/wp-content/uploads/2021/07/National-Climate-Change-Policy_english_2019_compressed.pdf</a>
14	National Adaptation Plan 2021-2050 (2021)	<a href="https://unfccc.int/sites/default/files/resource/NAP_Nepal_2021.pdf">https://unfccc.int/sites/default/files/resource/NAP_Nepal_2021.pdf</a>



15	Climate Change Mitigation Implementation Plan 2080–2087 (2023/24)	<a href="https://dpnet.org.np/uploads/files/जलवायु-परिव-न्यूनीक-कार्यान्व-योजना2080-2087-1700841939%202024-06-26%2008-14-12.pdf">https://dpnet.org.np/uploads/files/जलवायु-परिव-न्यूनीक-कार्यान्व-योजना2080-2087-1700841939%202024-06-26%2008-14-12.pdf</a>
16	Nationally Determined Contribution (NDC) 3.0 2025	<a href="https://unfccc.int/sites/default/files/2025-05/Nepal%20NDC3.pdf">https://unfccc.int/sites/default/files/2025-05/Nepal%20NDC3.pdf</a>

## 2.6 Document analysis methods

The document analysis combined four complementary qualitative methods to strengthen consistency and interpretive depth.

**Thematic analysis (pillar-based coding).** Documents were coded using the six enabling environment pillars to identify patterns, institutional emphasis, and omissions across policy texts (Ahmed et al., 2025; Polat, 2025). Coding captured both explicit provisions (for example, mandates, procedures, funding arrangements) and implied gaps (for example, weak enforcement, unclear increase pathways).

**Qualitative content analysis.** A structured content analysis was used to systematically extract clear references to climate risk, adaptation measures, service delivery mandates, financing provisions, monitoring systems, and accountability mechanisms. This enabled comparison across documents and identification of operational clarity versus verbal commitment (Alyaqoub et al., 2024; Özden, 2024).

**Discourse analysis.** A focused discourse analysis examined how policy texts frame climate-resilient WASH, such as rights-based language, decentralization and local responsibility, technical resilience framing, community responsibility, or state support obligations. This helped explain gaps between policy intent and implementation under the federal transition (Iqbal et al., 2025; McLeod, 2024).

**Comparative and gap analysis.** Climate and WASH policies were compared to assess alignment (Manandhar-Sherpa et al., 2024). Documents were evaluated to determine whether they provide: (i) operational climate risk screening tools; (ii) lifecycle and resilience financing mechanisms; (iii) clear accountability pathways across governance tiers; and (iv) practical instruments usable at the municipal and WUSC level (Khadka et al., 2023; Poudel et al., 2024). This gap analysis supported the synthesis of cross-pillar constraints on sustained adaptation adoption (Nepal et al., 2025; Nijhawan et al., 2022).

## 2.7 Coding template and adequacy scale for readiness

Each of these policies was assessed in four aspects: (i) the clarity of the policy in spelling out roles and mandates for climate-resilient WASH service delivery; (ii) the tools provided for operational implementation, which could be standards, procedures, and templates; (iii) the mechanisms for implementation, which could be financing, accountability, and monitoring mechanisms; and (iv) the operational implications for local government and WUSCs (Manandhar-Sherpa et al., 2024; Rajouria et al., 2022).

To communicate the level of readiness of each of the pillars for operational implementation, a qualitative scale of adequacy was used, as mentioned in Table 3:



*Figure 3 Level of readiness adequacy*

<b>Level of adequacy</b>	<b>Indicators</b>
Strong	Clear mandates with tools and well-defined mechanisms for implementation
Moderate	Clear intentions with tools available, but incomplete tools, and some, but not complete, enforcement and mechanisms available
Limited	Broad intentions with weak operational guidance, incomplete tools, and mechanisms
Weak	Very little is available for operational implementation

**2.8 Coding consistency, triangulation, and credibility**

To enhance methodological accuracy, the study ensured that the coding rules remained the same for all the documents, and the thematic categories were accurately checked, as well as aligning our interpretations with the actual evidence from the study sites (Adimasu & Debela, 2025; Lim, 2025). Triangulation was also used to assess the appropriateness of the provisions in the policy and the constraints at WUSC and household levels, such as the financial, institutional, environmental, technical, and social (FIETS) aspects of the WUSCs, adaptation practices, and coping mechanisms with the households (Singh et al., 2025).

**3. Results**

**3.1 Policy mapping and implementation implications**

Nepal has a broad range of policies prepared for federal and local governments, touching on WASH, climate change, and decentralized governance. While the Constitution of Nepal bases services in the country on a system of citizens’ fundamental rights, the translation of these rights to actions requires the development of service standards, funding guidelines, and accountability mechanisms (Government of Nepal, 2015). While the Local Government Operation Act specifies the actors responsible for local service delivery, it underpins local-level planning, implementation, and monitoring of WASH services (Government of Nepal, 2017). While the Water Resources Act and rules recognize the role of water user groups and associations and the processes of allocation, older legislation does not entirely conform to climate change management, inclusion, and equity, and has a limited operational link to WASH (Government of Nepal, 1992, 2007).

Nepal’s climate policy 2019 guides the overall country’s climate change context and pathways. While the National Climate Change Policy requires the mainstreaming of climate change considerations in sectoral policy and plan processes, including water resources, WASH, and disasters. The policy is broad and strategic, but does not specify how the actions need to be carried out. However, it suggests climate adaptation activities like water source protection, rainwater harvesting, water efficient technologies, and focuses on early warning systems, watershed management, and climate finance, but the policy lacks specific actions for local government and service delivery actors. Moreover, it specified the roles of three tiers of government in its implementation. However, there is a capacity gap, limited data, and challenges in mobilizing finance and its implementation (Government of Nepal, 2019b).



While the National Adaptation Plan 2021-2050 provides long-term guidance for climate change management, it requires translation to local actors for the development of day-to-day WASH policy (Government of Nepal, 2021). While the LAPA framework 2019 specifies a process for local government planning, the lack of funding and monitoring mechanisms may cause the failure of these plans (Government of Nepal, 2019/2020). The National Framework for Local Adaptation Plan 2011 provides a framework for local climate adaptation planning, including WASH-related risks and community engagement. However, while conducting this study, the local households and WUSCs members were asked about the LAPA; the majority of the responded unaware of the LAPA. There is a need to make necessary arrangements to support municipalities in LAPA implementation and ensure WUSC participation in its implementation.

Policies in the WASH sector influence the policy and legal framework in the WASH sector. The Water Supply and Sanitation Act, for example, presents a broad policy framework, which, however, requires further guidance on how to operationalize the policy and stronger intergovernmental coordination in enforcing policy and incorporating climate change considerations in the work (Government of Nepal, 2022). The National WASH Policy, for example, seeks to ensure universal access to WASH services and puts a high premium on the principles of sustainability and equity, which, however, could be further strengthened in linking with climate change standards and climate change financing mechanisms (Government of Nepal, 2023b). Planning documents such as the Sixteenth Five-Year Plan outline policy goals and targets, which, however, vary in the level of detail provided in operationalizing the policy and the climate-resilient budgeting, whereas WASH regulation specifies the roles and regulatory procedures (Government of Nepal, 2024a, 2024b). This NDC 3.0 outlines the climate change goals and international commitment of the country; however, the mechanisms for the WASH sector adaptation and local access to climate change financing could be further strengthened (Government of Nepal, 2025).

**3.2 Readiness adequacy across six pillars**

This section provides a brief overview of the current readiness of the climate-resilient WASH approach in the six pillars (Manandhar-Sherpa et al., 2024; Khadka et al., 2023) after assessing the above-mentioned (Table 3) climate and WASH-related 16 polices. It also assesses the effectiveness of the current systems, highlighting the major strengths and, at the same time, the major gaps in the current systems of operation in Table 4.

*Table 4 Summary assessment of enabling environment adequacy*

<b>Pillar</b>	<b>Adequacy</b>	<b>Main strengths</b>	<b>Main operational gap</b>
1. Governance and federalism	Moderate	Clear decentralization intent; local service delivery responsibilities recognized in the Constitution, Local Government Operation Act, National Climate Change Policy 2019, and WASH Regulation 2024	Role clarity and oversight routines are uneven; referral and support pathways are not consistently institutionalized



2. Policy and legal operationalization	Moderate	Comprehensive frameworks (e.g., National Climate Change Policy 2019, Water Supply and Sanitation Act 2022, WASH Policy 2023, WASH Regulation 2024); growing alignment with climate adaptation	legal Climate resilience is not consistently embedded in enforceable service standards, implementation, and O&M protocols
3. Institutional and technical capacity	Limited	Recognition of capacity needs in national policies (e.g., NAP 2021–2050, LAPA); some provisions for WUSC support and municipal roles. The institutional framework is specified in the National Climate Change Policy 2019.	Municipal staffing gaps, limited technical backstopping, and a lack of continuous support and training systems for WUSCs.
4. Financing systems	Limited	Multiple public financing channels exist; climate finance is referenced in the National Climate Change Policy 2019, NDC 3.0, and the Climate Change Mitigation Plan	Capital-expenditure bias (building new projects like pipes, tanks, or structures) rather than maintaining or improving what already exists.; weak lifecycle and shock-responsive financing; climate finance access barriers
5. Coordination and information systems	Limited	National-level climate and DRR systems exist; coordination mechanisms are outlined in the NAP Process (2015/2018), LAPA, and Climate Change Policy 2019	Weak translation into WASH operational protocols; limited-service monitoring and feedback systems at the local level
6. Equity and inclusion	Moderate to Limited	Inclusion principles present: representation provisions in the constitution, WASH Policy 2023, and LAPA frameworks	Limited enforcement of equity criteria in budgeting and service delivery; weak grievance handling mechanisms

**3.2.1 Pillar 1: Governance and federalism (Moderate)**

Federalism has redefined the transfer of power and authority between different levels of government. Local governments are increasingly becoming local-level service authorities and are involved in planning, regulating, supervising service providers, and monitoring service performance (Government of Nepal, 2017; Manandhar-Sherpa et al, 2024). Various policies clearly specified the decentralization intent and local service delivery responsibilities. Devolution is expected to enhance resilience through localized risk management and quicker decision-making. In practice, however, governance effectiveness varies considerably. In areas



where WASH services are not well developed or have fewer human resources, supervising WUSCs and monitoring their performance are areas of weakness. This creates a structural risk where authority is delegated faster than support systems are developed to deliver (Nepal et al., 2025).

One of the governance gaps in practice is the lack of standardization in measuring service performance. While information is collected and reported in terms of infrastructure performance and not service performance in terms of continuity, safety, and recovery time, motivation is more directed towards infrastructure and reactive maintenance rather than proactive management (Poudel et al., 2024; Nijhawan et al., 2022).

### **3.2.2 Pillar 2: Policy and legal operationalization (Moderate)**

Nepal's policy environment recognizes the risks of climate change and the importance of local adaptation (Government of Nepal, 2010, 2011, 2019b, 2021). However, implementing these policies into action remains limited, as climate resilience is not always integrated into enforceable service standards and decision-making processes (State Restructuring and WASH in Nepal, 2023). Three interrelated gaps are at the heart of the problem:

1. **Operationalization gap:** climate risk assessment is not consistently implemented in scheme selection, design approval, implementation, or O&M procedures (Government of Nepal, 2022, 2023, 2024; Nepal et al., 2025; Nijhawan et al., 2022; Poudel et al., 2024; Rajouria et al., 2022).
2. **Accountability gap:** compliance mechanisms and routine performance monitoring requirements are limited, reducing incentives for preventive resilience upgrades (Kathmandu Declaration, 2023; Khadka et al., 2023).
3. **Equity implementation gap:** inclusion is recognized, but implementation instruments such as equity-weighted allocation, monitoring requirements, and enforceable grievance mechanisms remain uneven (Khadka et al., 2023; Nepal et al., 2025).

These gaps mean that climate resilience can remain an add-on implemented through projects rather than a normalized practice across service delivery systems.

### **3.2.3 Pillar 3: Institutional and technical capacity (Limited)**

As mentioned in Table 4, there are various institutional setups provided in various policies, i.e., the National Climate Change Policy 2019. While communities are responsible for the day-to-day tasks at the local level, especially for WASH. Climate resilience demands skills, resources, and the capacity for making the climate-induced hazard-proof, ensuring safe water (free from turbidity and microbial contamination risks), and making speedy functional recovery after landslides and floods. The lessons from the evidence on the building of good systems, while delivering the services, require support structures such as regulation, technical support, monitoring, and access to reliable financing options (UNICEF, 2016; World Bank, 2022). When the climate shock arises, these support systems are the lifeline to the communities.

There are two sides to capacity constraints. Firstly, municipalities face the challenge of having insufficient engineers or technical personnel to scrutinize designs and monitor the implementation of the plans (Nepal et al., 2025; Rajouria et al., 2022). On the other hand, the capacity of the WUSCs is constrained by the lack of access to experts for troubleshooting,



reliable supply chains, and speedy response teams (Nijhawan et al., 2022; Poudel et al., 2024). These capacity constraints are, in turn, related to the policy gaps because, even where there is a policy, the implementation is hampered by the lack of capacity (Government of Nepal, 2022; Karmacharya et al., 2025).

**3.2.4 Pillar 4: Financing systems (Limited)**

Climate-resilient WASH programs demand investment that includes the full functioning of lifecycle activities, such as routine O&M, major maintenance, rehabilitation, renewal, and enhancements that make systems more resilient to climate change events. In the face of climate-related events, the cost of maintaining water systems will increase, as climate change events negatively impact infrastructure and accelerate degradation (Nijhawan et al., 2022). In reality, capital expenditures dominate investment in water systems. Tariffs may be available for routine O&M, but may be inadequate for higher expenditures; municipal budgets may be constrained by multiple demands and priorities; and contingency funds may be slow to materialize, with a bias toward relief rather than preparedness. The importance of climate finance is recognized in the country’s planning documents (Government of Nepal, 2019b, 2025; Manandhar-Sherpa et al., 2024), although the pathways through which local governments and service providers can access it are complex (Khadka et al., 2023). After reviewing the various policies and literature, the key gaps identified for climate-resilient community-managed WASH and financing pathways are listed in Table 5.

*Table 5 Financing pathways and key gaps for climate-resilient community-managed WASH*

<b>Financing pathway</b>	<b>Main Focus</b>	<b>Key gap</b>	<b>Priority improvement</b>
Federal/provincial grants and transfers	New schemes, expansion, and limited rehabilitation	Capital-expenditure bias; limited O&M and resilience windows	Create O&M and rehabilitation/resilience windows; link to risk screening and service performance
Municipal own-source revenue and annual budgets	Co-financing, minor works, local repairs	Weak lifecycle planning; O&M underfunding	Allocate lifecycle lines; multi-year asset management plans; limited O&M funds
WUSC tariffs and user fees	Routine O&M, operator/caretaker costs, minor repairs	Insufficient for major repairs; weak reserves; affordability constraints	Tariff guidance and transparency; minimum reserves; targeted subsidies for vulnerable households
Disaster/contingency funds	Emergency repair, temporary supply	Relief-oriented; slow procurement; limited preparedness	WASH continuity protocols; rapid repair funds; pre-approved suppliers and spare-part systems



Development partner/NGO projects	Infrastructure, pilots, capacity	Project cycles; sustainability risk after exit	Align with government systems; require post-project O&M plans and integration into municipal budgets
Climate (national/international)	finance Adaptation and resilience upgrades	Complex access procedures; limited proposal capacity; slow disbursement	Simplified WASH adaptation window; templates and technical support facilities

**3.2.5 Pillar 5: Coordination and information systems (Limited)**

Climate Resilient WASH requires both vertical and horizontal coordination between different levels of governments, government authorities, and stakeholders (IWMI, 2024; Nepal et al., 2025). Linking source protection, watershed management, and risk reduction with environmental management, forestry management, land use planning, and disaster risk reduction and health is essential. While there are systems for climate and DRR information in place in Nepal at the national level, making use of these information systems for WASH in the field is currently limited (Nepal et al., 2025). One of the gaps is in formalizing systems that enable information from early warnings and forecasts to inform actions on the ground, for example, pre-monsoon inspections, turbidity management, adjusting chlorination levels, regulating, and scheduling maintenance (IWMI, 2024).

Another gap is in monitoring and learning systems. Without monitoring systems in place for downtime, seasonal changes, water quality trends, and recovery rates from hazards, municipalities and water service providers cannot make use of information for adjusting their budgets and making investments in water sector resilience (Singh et al, 2025).

**3.2.6 Pillar 6: Equity and inclusion (Moderate to Limited)**

The effects of climate are more pronounced on women, disadvantaged groups of society, and remote areas (Khadka et al., 2023; Wilbur et al., 2021). There is a gradual recognition of inclusion and participation in Nepal's policy framework. However, enabling conditions for empowerment and participatory processes are not always robust. The enabling conditions for empowerment and participation for disadvantaged groups are normally weak. Without empowerment and transparency, communities' meaningful participation cannot be ensured in the decision-making process (Wilbur et al., 2021). Equity is not just optional; it is about trust, compliance, and collective action, which are important for the sustainability of basic services (Khadka et al, 2023).



#### **4. Discussion**

The results from the enabling environment assessment reveal that the policy intent and the legal foundation for decentralized WASH services delivery are strong but have yet to be effectively operationalized across the interrelating six pillars. National policy and legislative frameworks have been developed for establishing rights and mandates for WASH and decentralizing WASH service delivery mandates to local governments. This provides a foundation for local planning and oversight. (Government of Nepal, 2015, 2017, 2022; WaterAid, 2024). Concurrently, the policy and legislative frameworks have also communicated the need to mainstream climate adaptation across sectors and the importance of local-level action through national-level climate policy, the National Adaptation Plan, and the LAPA framework (Government of Nepal, 2010, 2011, 2019a, 2021; Manandhar-Sherpa et al., 2024). However, the results across the six pillars of the enabling environment suggest that the system remains only partially supportive and that adaptation within community-managed WASH systems remains largely reactive rather than proactive (IPCC, 2023; Nepal et al., 2025; UNICEF, 2016). Thus, adaptation efforts remain largely in a reactive mode, limited by a set of reinforcing barriers. First, policy intentions are not automatically enforceable, although there is recognition of the need for climate resilience in national level. Essential policies such as mandatory screening for climate risks, resilience-based planning and construction, and climate-responsive operation & maintenance are not consistently integrated into operational WASH service delivery (Government of Nepal 2021; Suneja et al., 2019; UNICEF, 2016; WaterAid, 2024). Resilience becomes voluntary and project-driven, rather than a systemic approach.

Second, policy mandates exceed capacities. Local governments are at the forefront of service delivery and governance in a newly established federalism system, but there is a lack of capacity due to uneven levels of technical support and human resources at local governments (Adhikari et al., 2018; Government of Nepal, 2017; UNICEF, 2016; World Bank, 2022).

Third, there is a lack of financing that matches service delivery and resilience needs. Public resources continue to favor new construction, whereas resources for lifecycle costs, such as routine O&M, major maintenance, rehabilitation, and resilience upgrades, remain constrained. This is particularly concerning under a changing climate where damage to infrastructure increases, necessitating responsive financing (Government of Nepal 2024a, 2024b; IPCC 2023, Manandhar-Sherpa et al., 2024; UNICEF 2016).

Fourth, climate information is not translated into WASH planning and decision-making processes. In fact, the national policy on climate change emphasizes the importance of early warnings and mainstreaming, but in practice, forecasts are not integrated into concrete rules or protocols that guide local governments and WUSCs. This manifests as the absence of triggers that would guide rationing, water quality management strategies, pre-monsoon prevention strategies, and emergency repair mobilization (Government of Nepal, 2019b, 2021; IWMI, 2024; UNICEF, 2016).

Fifth, equity and inclusion matters are not fully addressed by the various policies. In fact, legal instruments and policy frameworks recognize the importance of inclusion and rights, but who gets to participate in decision-making processes, budget allocation, and response strategies is



not explicitly mentioned. This means that resilience investments may inadvertently entrench existing inequities in remote areas and among marginalized groups (Adhikari et al., 2018; Government of Nepal, 2015, 2023b; Jiménez et al., 2019b; UNICEF, 2016).

All of these issues are interrelated, capacities are limited to apply norms and translate climate information into action, but at the same time, fragmented funding undermines the ability of WUSCs to maintain their systems, leading to coping behaviors like rationing, switching, and repairs instead of more effective resilience strategies that reduce long-term risks (IPCC, 2023; Nepal et al., 2025; UNICEF, 2016).

From an assessment of the enabling environment, it is evident that Nepal has an effective policy and legal framework that enables decentralized WASH service delivery; however, gaps exist in the FIETS dimensions. As a part of this research, Singh et al. (2025) identify gaps in financing, institutional roles and responsibilities, environmental protection, technical backstopping, and social inclusion, which affect WASH service delivery and limit its sustainability and resilience.

In the context of an institutionalization of resilience pathway, which incorporates elements of an enabling environment and incorporates resilience-based practice and service delivery outcomes. When monitoring, budgeting, and coordination support are provided regularly, WUSCs build their capacity to manage operations and maintenance, hazard preparedness, water safety management, and social inclusion. Collectively, these capacities enable resilience-based practice, which incorporates climate risk screening, preventive maintenance, safeguarding water sources, water safety management, and rapid recovery (IPCC, 2023; Nepal et al., 2025; UNICEF, 2016; World Bank, 2022). The institutionalization of resilience, as measured by the FIETS framework, enables fragmented efforts towards building more effective and climate-resilient WASH service delivery pathways (Singh et al., 2025).

Institutionalization of the solution also requires a feedback loop for learning. An essential minimum for the feedback loop may be an annual municipal “service performance and climate risk review” involving WUSCs and relevant stakeholders. This review may use lessons from hazards and service performance data to update the risk priorities, maintenance, and investment strategies, and budgets to support ongoing improvements, as opposed to simply coping (Government of Nepal, 2017, 2019b/2025; IPCC, 2023; IWMI, 2024; UNICEF, 2016).

#### **4.1 Enabling Environment for Climate-Resilient Community-Managed WASH Systems**

This study identified areas for intervention to consolidate six pillars of an enabling environment for making the climate-resilient community-managed WASH Systems (Figure 2).

**First, governance and accountability:** It is necessary to define and standardize the roles and responsibilities of the municipal service authority for rural WASH, including WUSC management, regular monitoring, and a clear mechanism for complex failure. Municipalities should establish dedicated WASH units and designate clear WASH focal points with clear authority.



**Second, policy execution:** As suggested by the National Climate Change Policy 2019, need to develop related policies at the provincial and local levels to implement it. It is necessary to incorporate climate risk assessment in WASH planning, design, and implementation. It is necessary to update technical rules and standards to incorporate climate-resilient design, implementation, and maintenance, and to link these to risk screening and resilience standards for fund eligibility and technical approvals.

**Third, institutional capacity and technical backstopping:** establish technical support pools at the provincial level in collaboration with provincial governments for technical support such as design review and troubleshooting; conduct scheduled technical audits and mentoring for WUSCs; and establish pre-approved lists of suppliers and emergency repair systems.

**Fourth, financing:** secure dedicated government budget lines for operation and maintenance, rehabilitation, and resilience upgrades, not just new constructions; support WUSCs in developing a minimum reserve fund, including transparent rules and subsidies for vulnerable households; and simplify climate finance access for WUSCs using standardized templates and proposal support systems.

**Fifth, coordination and information systems:** establish cross-sector coordination systems within three tiers of government. That links WASH, disaster risk reduction, forestry and environment, land use planning, and health; incorporates WASH asset hazard mapping into the planning cycle; and translates early warning systems into WASH operation protocols.

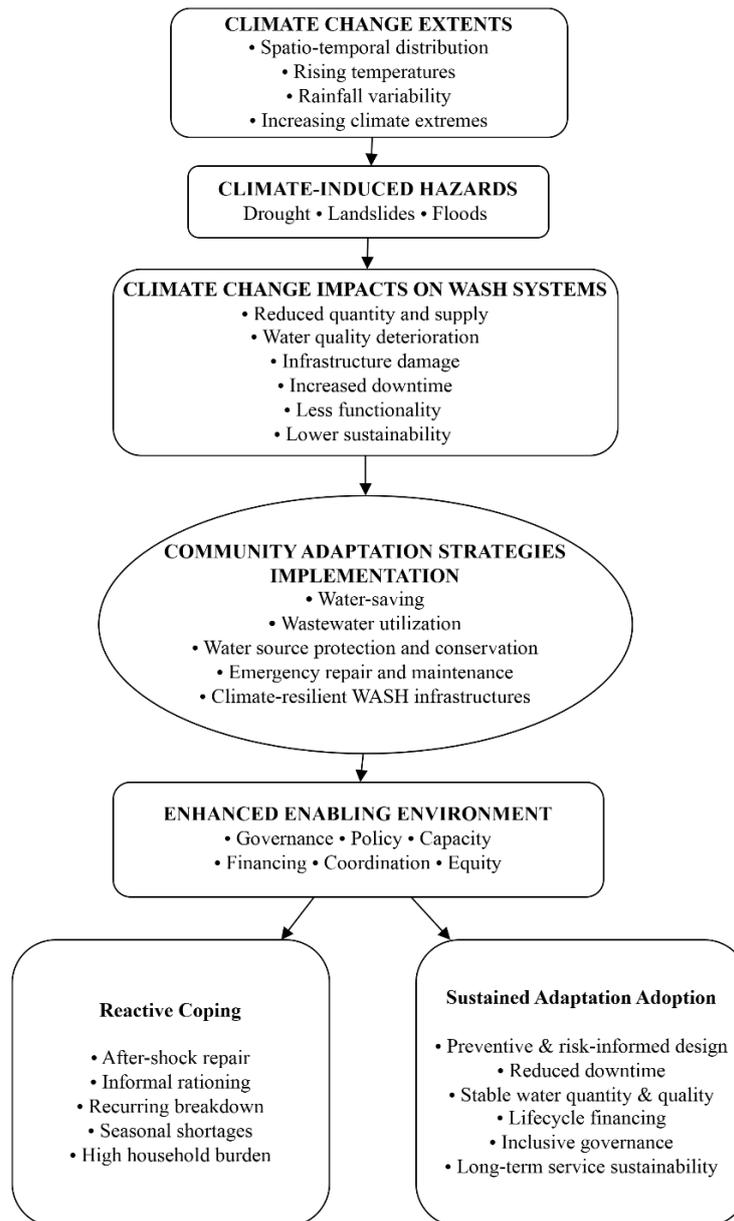
**Equity and inclusion:** prioritize equity criteria in the evaluation and resource allocation process to target remote and vulnerable settlements. Enhance transparency and grievance handling mechanisms, proper budget allocation, and maintain decision records. Moreover, invest in effective leadership development and capacity building to support meaningful participation by women and marginalized groups.

### **Consolidated Framework for the Climate Resilient Community-Managed WASH Systems:**

The framework (see Figure 2) summarizes the essential findings on the enabling environment for climate-resilient, community-managed WASH systems in Nepal. Climate change is increasing hazards like higher temperatures, unpredictable rainfall, and extreme events like droughts, floods, and landslides. This affects the quantity, supply, and quality of water services provided in community-managed systems.

Communities take measures like coping and adaptation strategies that protect their water resources, conserve water, and rehabilitate their systems. However, the effectiveness of their measures depends on the effectiveness of the enabling environment. This includes effective governance, policy, and standards, institutions, financing, coordination, and equity.

The assessment shows that resilience cannot be achieved only through upgrading the infrastructure of the system. In order to achieve resilience, the system as a whole must be strengthened in all six pillars to transition from coping to enduring services.



*Figure 2 Framework for Climate Resilient Community Managed WASH System*

## 5. Conclusion

Nepal's current status for climate-resilient community-managed WASH services has some positive aspects. First, the policy situation for climate resilience in WASH services in Nepal is good in terms of purpose. Decentralization has ensured that the local government bears the responsibility for implementing WASH services. In addition, several policy instruments recognize climate change adaptation and local actions. However, the system lacks the aspect of resilience in WASH services and needs enhancement in readiness adequacy. In some instances, the capacity of the local government and WUSCs, as well as technical support, may be available. However, need to focus on policy operationalization, enhance the



institutionalization, establish better coordination and collaboration, and build capacity. In other cases, the financing system still focuses more on large capital than on service delivery, costs, and recovery. In some cases, climate information and alerts may not integrate into WASH services in operations. Moreover, the system may somehow lack the aspect of equity and inclusion. All these aspects contribute to the fact that the system may end up being reactive in nature rather than rationing services.

To build a climate-resilient community-led WASH service, there are several parts to address, including governance, policy and policy execution, capacity development, financing models, coordination and sharing of information, and equity. All of these need a learning-driven system with reactive coping and a sustained adaptation mechanism.

**Transparency Statement:** The authors confirm that this study has been conducted with honesty and in full adherence to ethical guidelines.

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**Appendices**

**Supplementary Materials 1**

**35 Policies Undertaken for Preliminary Review:**

SN	Policy Name	Online Source Link
1	Constitution of Nepal, 2015	<a href="https://ag.gov.np/files/Constitution-of-Nepal-2072_Eng_www.moljpa.gov.npDate-72_11_16.pdf">https://ag.gov.np/files/Constitution-of-Nepal-2072_Eng_www.moljpa.gov.npDate-72_11_16.pdf</a>
2	Local Government Operation Act 2017	<a href="https://mofaga.gov.np/notice-file/Notices-20200210094733703.pdf">https://mofaga.gov.np/notice-file/Notices-20200210094733703.pdf</a>
3	The Fifteenth plan 2020	<a href="https://www.icimod.org/wp-content/uploads/2021/07/15th-Periodic-Plan2019-2020_2023-24_English_Version.pdf">https://www.icimod.org/wp-content/uploads/2021/07/15th-Periodic-Plan2019-2020_2023-24_English_Version.pdf</a>
4	The Sixteenth Plan (2024-2028) 2024	<a href="https://npc.gov.np/content/6462/the-sixteenth-plan--fical-year-2024-25-2028-29-/">https://npc.gov.np/content/6462/the-sixteenth-plan--fical-year-2024-25-2028-29-/</a>
<b>WASH Related Policies</b>		
1	Water Supply Rules 1953	<a href="https://dwssm.gov.np/content/30/water-supply-rules/">https://dwssm.gov.np/content/30/water-supply-rules/</a>
2	Water Resource Act, 1992	<a href="https://lawcommission.gov.np/content/12564/12564-water-resources-act-1992/">https://lawcommission.gov.np/content/12564/12564-water-resources-act-1992/</a>
3	Water Resources Rules, 1993	<a href="https://dwssm.gov.np/content/7/water-resources-rules--2050--1993/">https://dwssm.gov.np/content/7/water-resources-rules--2050--1993/</a>
4	Nepal Water Supply Corporation Act 2046	<a href="https://dwssm.gov.np/content/10/nepal-drinking-water-corporation-act--2046/">https://dwssm.gov.np/content/10/nepal-drinking-water-corporation-act--2046/</a>
5	Rural Water Supply and Sanitation National Policy, 2004	<a href="https://dwssm.gov.np/content/42/rural-water-supply-and-sanitation-national-policy/">https://dwssm.gov.np/content/42/rural-water-supply-and-sanitation-national-policy/</a>
6	Rural Water Supply and Sanitation Strategy, 2004	
7	Water Supply Rules 2055	<a href="https://dwssm.gov.np/content/29/water-supply-rules--2055/">https://dwssm.gov.np/content/29/water-supply-rules--2055/</a>
8	Water Supply Management Board Act 2063	<a href="https://dwssm.gov.np/content/32/water-supply-management-board-act/">https://dwssm.gov.np/content/32/water-supply-management-board-act/</a>
9	Water Tariff Fixation Commission Act, 2063 (2006)	<a href="https://faolex.fao.org/docs/pdf/nep100341.pdf">https://faolex.fao.org/docs/pdf/nep100341.pdf</a>
10	Solid Waste Management Act 2068	<a href="https://dwssm.gov.np/content/9/sewerage-management-act--2068/">https://dwssm.gov.np/content/9/sewerage-management-act--2068/</a>
11	Sanitation Master Plan 2068	<a href="https://dwssm.gov.np/content/39/sanitation-guruyojana--2068/">https://dwssm.gov.np/content/39/sanitation-guruyojana--2068/</a>
12	Water Safety Plan 2013	<a href="https://giwmcdnone.gov.np/media/pdf_upload/water-safety-plan-hand-book-english_2ozvf8l.pdf">https://giwmcdnone.gov.np/media/pdf_upload/water-safety-plan-hand-book-english_2ozvf8l.pdf</a>
13	National Water Supply & Sanitation Policy (2014)	<a href="https://dwssm.gov.np/content/44/national-water-supply-and-sanitation-policy-2014/">https://dwssm.gov.np/content/44/national-water-supply-and-sanitation-policy-2014/</a>
14	Sector Development Plan (Draft) 2016	<a href="https://www.fsmttoolbox.com/assets/pdf/25._SDP_-_Final_Eng.pdf">https://www.fsmttoolbox.com/assets/pdf/25._SDP_-_Final_Eng.pdf</a>
15	Climate Resilient Water Safety Plans Guideline 2017	<a href="http://climate.mohp.gov.np/downloads/Climate_Resilient_Water_Safety_Plan_Guideline_2017.pdf">http://climate.mohp.gov.np/downloads/Climate_Resilient_Water_Safety_Plan_Guideline_2017.pdf</a>

16	Water Supply and Sanitation Act 2022	<a href="https://dwssm.gov.np/content/11/water-supply-and-sanitation-act-2079/">https://dwssm.gov.np/content/11/water-supply-and-sanitation-act-2079/</a>
17	National Water Supply, Sanitation and Hygiene (WASH) Policy 2023	<a href="https://giwmscdntwo.gov.np/media/pdf_upload/wash-policy-approved_18sdomk.pdf">https://giwmscdntwo.gov.np/media/pdf_upload/wash-policy-approved_18sdomk.pdf</a>
18	Sector Development Plan (SDP) 2024-2050	<a href="https://giwmscdnone.gov.np/media/pdf_upload/Draft_WASH_SDP_PS.pdf">https://giwmscdnone.gov.np/media/pdf_upload/Draft_WASH_SDP_PS.pdf</a>
19	WASH Regulation 2024	<a href="https://dwssm.gov.np/content/168/drinking-water-and-sanitation-rules--2081/">https://dwssm.gov.np/content/168/drinking-water-and-sanitation-rules--2081/</a>
<b>Climate Related Policies</b>		
1	Environment Protection Act and its Rules, 1996, 1997	
2	National Adaptation Program of Action (NAPA) 2010	<a href="https://unfccc.int/resource/docs/napa/npl01.pdf">https://unfccc.int/resource/docs/napa/npl01.pdf</a>
3	National Framework on Local Adaptation Plan of Action (LAPA) 2011	<a href="http://climate.mohp.gov.np/downloads/National_Framework_Local_Adaptation_Plan.pdf">http://climate.mohp.gov.np/downloads/National_Framework_Local_Adaptation_Plan.pdf</a>
4	National Adaptation Plan (NAP) Process 2015/ 2018	<a href="https://napglobalnetwork.org/wp-content/uploads/2018/07/napgn-en-2018-nepal-nap-process.pdf">https://napglobalnetwork.org/wp-content/uploads/2018/07/napgn-en-2018-nepal-nap-process.pdf</a>
5	Local Adaptation Plan of Action (LAPA) 2076	 स्थानीय-अनुकूलन-कार्य योजना-खाका-२०७६-२२
6	National Climate Change Policy 2019	<a href="https://www.icimod.org/wp-content/uploads/2021/07/National-Climate-Change-Policy_english_2019_compressed.pdf">https://www.icimod.org/wp-content/uploads/2021/07/National-Climate-Change-Policy_english_2019_compressed.pdf</a>
7	Nationally Determined Contribution (NDC) 2.0, 2020	<a href="http://climate.mohp.gov.np/attachments/article/167/Second%20Nationally%20Determined%20Contribution%20(NDC)%20-%202020.pdf">http://climate.mohp.gov.np/attachments/article/167/Second%20Nationally%20Determined%20Contribution%20(NDC)%20-%202020.pdf</a>
8	National Adaptation Plan 2021-2050 (2021)	<a href="https://unfccc.int/sites/default/files/resource/NAP_Nepal_2021.pdf">https://unfccc.int/sites/default/files/resource/NAP_Nepal_2021.pdf</a>
9	Climate Change Mitigation Implementation Plan 2080–2087 (2023/24)	<a href="https://dpnet.org.np/uploads/files/जलवायु-परिव-न्यूनीक-कार्यान्व-योजना2080-2087-1700841939%202024-06-26%2008-14-12.pdf">https://dpnet.org.np/uploads/files/जलवायु-परिव-न्यूनीक-कार्यान्व-योजना2080-2087-1700841939%202024-06-26%2008-14-12.pdf</a>
10	Nationally Determined Contribution (NDC) 3.0 2025	<a href="https://unfccc.int/sites/default/files/2025-05/Nepal%20NDC3.pdf">https://unfccc.int/sites/default/files/2025-05/Nepal%20NDC3.pdf</a>
11	National Policy for Disaster Risk Reduction 2018	<a href="http://drrportal.gov.np/uploads/document/1476.pdf">http://drrportal.gov.np/uploads/document/1476.pdf</a>
12	Disaster Risk Reduction National Strategic Plan of Action (2018-2030) 2018	<a href="https://zcralliance.org/resources/item/disaster-risk-reduction-national-strategic-plan-of-action-2018-2030/">https://zcralliance.org/resources/item/disaster-risk-reduction-national-strategic-plan-of-action-2018-2030/</a>

**Supplementary Materials 2**

**Detailed Policy Review of 16 Selected Policies:**

S N	Instrument	Key WASH / climate-relevant provisions (what it enables)	Enabling environment pillar(s)	Key gaps/ implementation challenges (problem)	Implications for WUSCs & local governments (requirements)
1	Nationally Determined Contribution (NDC) 3.0 (Government of Nepal, 2025)	Nepal's climate commitment under the Paris Agreement includes adaptation actions for climate-vulnerable sectors, establishes national climate targets, and financing needs	Policy & legal; Financing; Coordination & information	Conditional targets dependent on international climate finance; limited WASH-specific adaptation measures; weak linkages to sector-level implementation	Mobilize international climate finance for WASH resilience investments, establish WASH-specific adaptation targets, and create financing mechanisms for community-managed systems
2	Sixteenth Five-Year Plan 2024–2029 (Government of Nepal, 2024a)	National development plan with WASH sector targets; allocates resources and sets priorities for WASH development; establishes linkages with SDG targets	Financing; Coordination & information; Governance	May not fully integrate climate resilience into planning; limited allocation for climate adaptation; weak coordination with climate change policies	Mainstream climate resilience criteria into sector planning and budgeting, establish dedicated budget lines for climate-resilient WASH, and strengthen inter-sectoral coordination
3	WASH Regulation 2024 (Government of Nepal, 2024b)	Defines roles, responsibilities, and regulatory procedures for drinking water and sanitation services; includes licensing, service standards, and compliance mechanisms for local bodies and service providers	Policy & legal; Governance; Coordination & information	Implementation mechanisms and enforcement capacity at the local level remain limited; clarity is needed on compliance monitoring and penalties	WUSCs and municipalities must align operations with regulatory standards, establish reporting systems, and build capacity for compliance and enforcement

4	National WASH Policy 2080 (Government of Nepal, 2023b)	Establishes vision for universal access to WASH services; emphasizes community-managed systems and local governance; promotes sustainability and equity	Policy & legal; Governance; Equity & inclusion; Coordination & information	May not fully address climate resilience and adaptation needs; limited integration with climate change policies; weak linkages to financing mechanisms	Integrate climate risk screening and resilience criteria into WASH planning, establish dedicated financing for climate-resilient WASH, and strengthen coordination with climate adaptation frameworks
5	Climate Change Mitigation Implementation Plan, 2080–2087 (Government of Nepal, 2023a)	Turns Nepal’s climate commitments into concrete actions with timelines and responsible agencies. It can indirectly support rural WASH by promoting climate-risk-informed public investment, improving coordination, and creating entry points for climate finance that could fund resilience measures (e.g., source protection, disaster preparedness).	Policy & legal; Financing; Governance & federalism; Coordination & information	While the plan covers both mitigation and adaptation, implementation attention is stronger on mitigation. It does not clearly explain how basic services like rural WASH can access climate funds. Pathways for municipalities/ WUSCs are not well defined, local capacity to prepare proposals is limited, and service-level outcomes (reliability, safety, inclusion) are not strongly tracked.	Municipalities and WUSCs need to align WASH plans with climate priorities, build skills to prepare climate-linked proposals, and strengthen coordination with provincial/federal climate units. They also need better service data (continuity, water quality, downtime, recovery after shocks) to demonstrate resilience results and qualify for funding.
6	Water Supply and Sanitation Act (Government of Nepal, 2022)	Provides a comprehensive legal framework for the WASH sector; establishes rights and responsibilities for water supply and	Policy & legal; Governance; Coordination & information	Implementation capacity gaps; coordination challenges between federal, provincial, and local levels; limited climate resilience provisions	Strengthen enforcement mechanisms, establish inter-governmental coordination mechanisms, and integrate climate resilience standards into implementation guidelines

		sanitation services			
7	National Adaptation Plan 2021–2050 (Government of Nepal, 2021)	Long-term adaptation direction: justification for integrating climate risk into sector planning and investment	Policy & legal; Financing; Coordination & information	Broad direction may not translate into WASH-specific operational standards, budget triggers, or accountability	Create WASH-specific adaptation pathways: mandatory risk screening, resilience investment windows, integration into municipal planning/budget cycles
8	National Climate Change Policy, 2076 (Government of Nepal, 2019b)	Sets the overall direction for building a climate-resilient Nepal. It requires climate issues to be integrated into sector plans, including water resources, drinking water and sanitation, disaster risk reduction, and local development. It promotes water source protection, rainwater harvesting, water-efficient technologies, early warning systems, and climate finance mobilization (with a strong emphasis on channeling funds to the local level).	Policy & legal; Institutional Arrangement; Financing; Governance & federalism; Coordination & information; Capacity development	The policy is broad and strategic, but not very specific about how actions will be carried out in practice. It does not clearly explain how municipalities or WUSCs can access climate finance. Implementation depends heavily on coordination across federal, provincial, and local levels, which can be complex. Capacity gaps, limited data, and challenges in mobilizing finance are recognized risks.	Local governments need to integrate climate considerations into local WASH plans, land use plans, and infrastructure standards. They are expected to establish climate focal points, strengthen monitoring and documentation, and ensure inclusive participation (GESI). WUSCs and municipalities need stronger technical and financial capacity to design climate-resilient WASH projects and access available climate funds.

9	Local Adaptation Plan of Action (LAPA) Framework / Template, 2076 (Government of Nepal, 2019a)	Provides a structured local process to identify climate risks, prioritize adaptation actions, and integrate them into local planning cycles; enables identification of WASH-related adaptation needs (water source protection, drought preparedness, disaster risk reduction linkages, inclusion of vulnerable groups).	Governance & federalism; Coordination & information; Equity & inclusion; Planning linkage	Often treated as a “planning document” without stable financing, variable technical quality across municipalities, limited translation into enforceable WASH standards or O&M budgets, and weak monitoring/learning after plan approval.	Local governments should integrate LAPA priorities into annual plans/budgets, assign a lead unit/person for WASH adaptation, and set simple monitoring indicators; WUSCs should be formally included in risk mapping, source protection plans, and contingency planning.
10	National Adaptation Plan (NAP) Process 2018 (MoFE, 2018)	Outlines Nepal’s phased approach to NAP formulation; includes institutional and policy context, key issues, and integration of climate adaptation into sectoral planning including WASH	Policy & legal; Coordination & information; Planning linkage	Limited operational clarity for WASH-specific implementation; lacks detailed financing and accountability mechanisms	Use NAP process to align WASH planning with national adaptation priorities; develop sector-specific implementation tools and financing strategies
11	Local Government Operation Act (Government of Nepal, 2017)	Assigns service delivery and local governance functions; provides a basis for municipal planning, budgeting, and	Governance & federalism; Coordination & information	Uneven capacity and staffing; fragmented coordination; risk of 'unfunded mandates.'	Define/strengthen municipal WASH units, clarify WUSC oversight procedures, establish monitoring/reporting and grievance processes

		oversight of local institutions			
12	Constitution of Nepal (Government of Nepal, 2015)	Establishes fundamental rights and state responsibilities relevant to basic services; provides a legal basis for public service obligations and inclusion	Governance & federalism; Policy & legal; Equity & inclusion	Rights require operational standards, financing rules, and accountability systems; otherwise, 'rights' remain aspirational	Translate constitutional intent into enforceable WASH service standards, municipal service authority functions, and equitable financing mechanisms
13	National Framework on Local Adaptation Plan of Action (LAPA) (Government of Nepal, 2011)	Provides a framework for local climate adaptation planning; includes WASH-related risks and community engagement	Governance & federalism; Planning linkage; Equity & inclusion	Inconsistent implementation, limited technical support, and financing	Support municipalities in LAPA implementation, ensure WUSC participation in planning and monitoring
14	National Adaptation Program of Action (NAPA) (Government of Nepal, 2010)	Identifies priority adaptation needs; includes water and sanitation as vulnerable sectors; proposes community-based adaptation	Policy & legal; Coordination & information; Financing	High-level strategy; lacks operational detail for WASH; limited implementation follow-up	Use NAPA priorities to guide local WASH adaptation projects and funding proposals
15	Water Resources Rules 1993 (Government of Nepal, 1993)	Provides operational guidelines for water resource management; supports implementation of the Water Resources Act; establishes procedures for water allocation and use	Policy & legal; Governance; Technical	May not adequately address climate variability and extreme events; limited provisions for ecosystem protection; weak integration with the WASH sector needs	Update regulations to include climate risk management procedures, establish environmental flow requirements, and strengthen coordination between water resources and WASH management



16	Water Resources Act 1992 (Government of Nepal, 1992)	Provides legal recognition for water use and user groups; supports institutional arrangements for local water management	Policy & legal; Governance	Older water governance arrangements may not fully embed GESI and climate risk; limited operational links to WASH resilience	Update operational tools for climate risk, source protection, equity safeguards; align WUSC/WUA roles with municipal service authority
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