



Professionalising rural water management in Bhutan: Steps for supporting sustainable water services

Without appropriate management systems, rural water supplies may fail to be sustainable, provide benefits for everyone in the area, or be climate-resilient. While some communities have been successful in managing water supplies on their own, global experience shows that informal community-based management through volunteers who receive little external support often leads to dysfunctional water supplies over time.

The purpose of this brief is to support the Government of Bhutan with its efforts to strengthen the planning and implementation of rural water management models, and provide enhanced support to rural water management entities, that will enable the delivery of sustainable and equitable water services.

Highlights

National and local governments in Bhutan must act to ensure the sustainability of rural water services.

- The Government of Bhutan has invested heavily in constructing rural water supplies.
- Communities are responsible for the ongoing management of these water supplies, often with only light support from local government.
- Informal community-based management through community volunteers often leads to dysfunctional water supplies over time.
- Professionalisation involves transitioning from management by unpaid, untrained volunteers to formalised management entities.
- Government can support more professional rural water management through enhanced support to Water User Associations and through exploring alternative management models.
- A series of actions that develop a vision and strategy for professional rural water management, plan and test promising rural water management models, and support learning and refinement of approaches to rural water management can be taken to strengthen water management and secure safely managed water services.



Photo: Water User Association Group formed. Photo credit: SNV/Ugyen Wangchuk.

Why focus on management?

The Royal Government of Bhutan invests significantly every year in constructing water infrastructure across the country. During the 12th Five-Year Plan (2018 – 2023), the government prioritized water and introduced the Water Flagship Program (WFP) to provide water supply and irrigation across all districts and four major municipalities (Thromdes). To ensure a holistic approach, the WFP was structured around four components: watershed management (Ministry of Agriculture and Forests), drinking water (formerly Ministry of Works and Human Settlement), irrigation (Ministry of Agriculture and Forests), and water quality (Ministry of Health). Approximately Nu 3.5 billion (approximately US\$ 40 million) has been invested in these components, with the majority allocated to drinking water and irrigation projects.

To strengthen the management of the infrastructure constructed under the WFP, the Department of Water (Ministry of Energy and Natural Resources) and the Water and Sanitation Division (Department of Infrastructure Development, Ministry of Infrastructure and Transport), with support from SNV, trialed options to strengthen rural drinking water management. This was undertaken as part of SNV's Towards Inclusive Climate Resilient Rural WASH Programme, supported by the Australian Government. The project covered 40 water schemes across Chukha, Dagana, Trashigang, and Zhemgang, with 10 schemes in each Dzongkhag.

As part of this, the Water Safety Plan Guidelines 2013 were reviewed and updated to include climate change considerations, behaviour change communications for

safe drinking water practices, and integration of Gender Equality, Disability, and Social Inclusion (GEDSI). Using the newly updated Climate-Resilient Water Safety Plan (CR-WSP) guidelines, CR-WSP processes were undertaken by government teams for the 40 rural water schemes.

Aligned with new national guidelines, Water User Associations (WUAs) were formed for all 40 schemes, with specific roles assigned to members. The WUAs also developed by-laws to ensure accountability and responsibility at the scheme level. Furthermore, at least two water caretakers were trained per scheme – including one woman – and provided toolkits for water system maintenance.

While water infrastructure now reaches nearly every corner of the country, effective management is crucial to sustain the built infrastructure and promote the judicious use of water. The development and implementation of models for professional rural water management are key to ensuring that infrastructure is well-operated and maintained. This allows government investments in water to reach everyone over the long term despite the effects of climate change. Moreover, as rural water schemes are public services, they require ongoing support from local governments beyond the initial construction phase to fulfill responsibilities that are beyond the capacity of the communities.

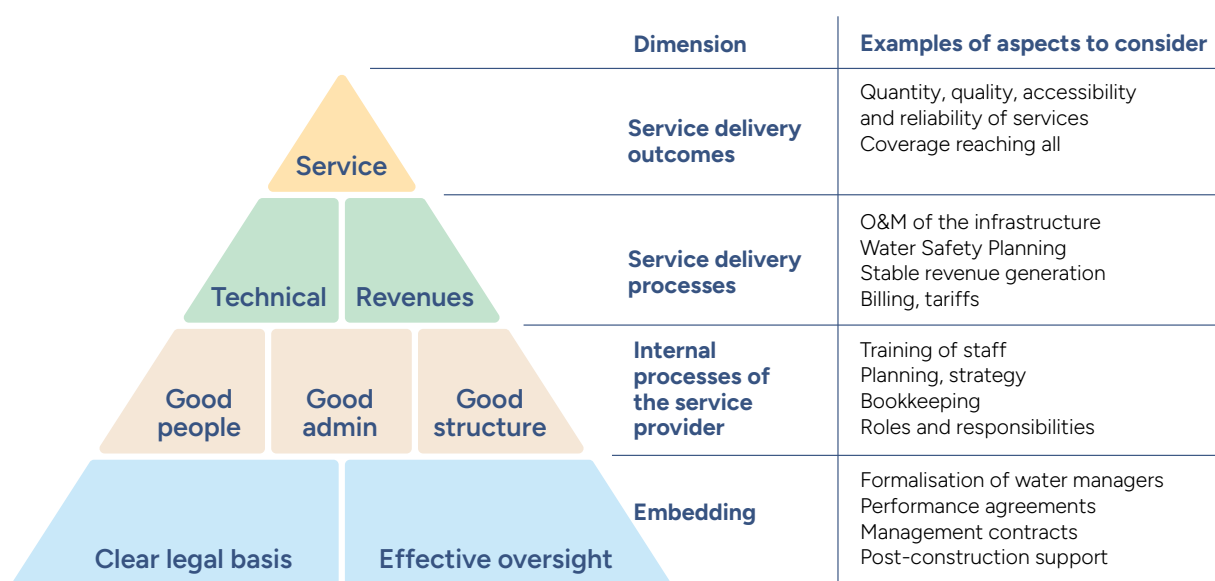


Figure 1. Core components of a successful rural water management mode

Note: Adapted from Soppe, et al., 2018.

Three common types of rural water management models in Bhutan

A rural water management model is a proposed way to organise people and processes around operating and maintaining rural water supplies. While many variations of rural water management models are possible, the following three are the most commonly found in Bhutan:

1. Basic community-based management

Basic community-based management (CBM) models are common in rural areas of Bhutan, particularly in communities located far from urban centres and in small settlements with 10 or fewer households.

Under the CBM model, a water supply is initially constructed by the government or a donor. Volunteers from the community then take over operating, maintaining, regulating, and collecting revenue for the water supply. The local government is typically only able to provide light support based on ad-hoc requests from the community.

2. Community-based management with external support

The community-based management with external support (CBM+) model tends to occur in settlements that are relatively larger and closer to urban centres.

Under the CBM+ model, a formalised Water User Association (WUA) is established to manage a water supply constructed by the government or a donor. The WUA is responsible for operating, maintaining, regulating,

and collecting revenue for the water supply. Compared to the community volunteers under the CBM model, the WUA in the CBM+ model has stronger links with the local government.

3. Aggregated community-based management

The aggregated community-based management (ACBM) model is more recently followed in Bhutan when multiple communities share a single water source.

In multi-community water supply schemes, water typically flows by gravity from the source point to a distribution point, after which it is distributed to multiple community-level water supplies in parallel. Each community has its own sub-WUA responsible for managing their respective community water supply up to the distribution point. An overall WUA, comprising of members from each sub-WUA and the village leader – the Tshogpa – is responsible for managing the source point(s) and transmission to the distribution point. The overall WUA periodically meets with the local governments to discuss the scheme's performance.

To be successful, a rural water supply must achieve good equitable service delivery outcomes, maintain robust service delivery processes, follow sound internal processes, and receive support from government authorities (Figure 1).

Table 1 describes how each of the three common types of rural water management models in Bhutan tend to perform against the components supporting overall service delivery outcomes.

Table 1. Summary of how common rural water management models in Bhutan perform against core components of a successful rural water supply

Model	Basic community-based management	Community-based management with external support	Aggregated community-based management
Technical O&M	<ul style="list-style-type: none"> •Community volunteer or a person who has been assigned as a water supply caretaker carries out routine O&M. •Small repairs made on ad-hoc basis when problems are reported by the community. •More complex repairs that are more complex/expensive need a request put to local government for support. This can take a long time to action. 	<ul style="list-style-type: none"> •Caretaker assigned by the WUA carries out routine O&M. •Community reports problems leading to small repairs being made on an ad-hoc basis. •More complex/expensive repairs need a request put to local government for support. 	<ul style="list-style-type: none"> •Caretaker from the community, assigned by the WUA carries out routine O&M. •Community reports problems leading to small repairs being made on an ad-hoc basis. •Local government arranges for repairs at the source point or in the transmission pipes.
Revenue generation	<ul style="list-style-type: none"> • A village head or volunteer from the committee may collect a flat fee from the households serviced by the water supply. Or funds may only be raised from the community on an ad-hoc basis when repairs are needed for breakdowns. •Revenue generated from the fee collection may be used to cover the costs of minor repairs but is usually insufficient for covering the costs of larger repairs. 	<ul style="list-style-type: none"> • A member of the WUA or the caretaker collects a flat fee from the households serviced by the water supply. • Revenue generated from the fee collection may be used to cover the costs of minor repairs but is usually insufficient for covering the costs of larger repairs. •The community may help pay for larger repairs on an ad-hoc basis. 	<ul style="list-style-type: none"> • A member of the sub-WUA or the caretaker collects a flat fee that is determined by the WUA from the households serviced by the water supply. • Revenue generated from the fee collection may be used to cover the costs of minor repairs but is usually insufficient for covering the costs of larger repairs. •The community – under the multi-community water supply – may pool their funds to pay for larger repairs.
Training	<ul style="list-style-type: none"> • Some members of the community may receive a one-off training on O&M • No sustained capacity-building is provided. 	<ul style="list-style-type: none"> • Some WUAs may receive a one-off training on O&M and some WUAs are trained in the Water Safety Planning. • No sustained capacity-building is provided. 	<ul style="list-style-type: none"> • Some sub-WUAs and WUAs may receive a one-off training on O&M, and some are trained in the Water Safety Planning. •No sustained capacity-building is provided.
Administration	<ul style="list-style-type: none"> • Little to no formal administrative activities. • Traditional community- based methods are used to decide on how the water system works and what is done regarding it. 	<ul style="list-style-type: none"> •The extent of administrative activities carried out varies across WUAs. Some WUAs perform basic bookkeeping on water supply finances, keeping records of the number of connections, and following local bylaws on water. 	<ul style="list-style-type: none"> • Sub-WUAs and WUAs typically perform basic administrative tasks. This includes basic bookkeeping on water supply finances, keeping records of the number of connections, and following local bylaws on water.
Legal basis	<ul style="list-style-type: none"> • There is no legal entity involved in the day-to-day management of the water supply. 	<ul style="list-style-type: none"> • WUAs can be formally registered with the local government. This facilitates strengthened links with the local government and targeted support. However, registration is not always done. 	<ul style="list-style-type: none"> • Sub-WUAs and WUAs can be formally registered with the local government. This facilitates strengthened links with the local government and targeted support. However, registration is not always done. Sub-WUAs and WUAs typically do not have a formal agreement with each other.
Oversight by local government	<ul style="list-style-type: none"> • The local government provides little oversight. • Community leaders may call the local government for ad-hoc support when assistance is needed. 	<ul style="list-style-type: none"> • The local government mainly provides oversight of water supplies through the WUA. • In some cases, the WUA delivers annual financial reports to the local government and/or signs performance agreements with the local government. 	<ul style="list-style-type: none"> • The local government mainly provides oversight of water supplies through the WUA. In some cases, the WUA delivers annual financial reports to the local government and/or signs performance agreements with the local government.

Improving upon existing rural water management models

The CBM model often faces significant limitations.

While some communities in Bhutan are effective at coordinating themselves to manage their water supply, many struggle to make complex repairs or raise sufficient funds to maintain their water supply sustainably over the long term. Experience from around the world has shown that rural water supplies closely supported by an external agency (e.g., local government, a utility, or a private sector agency) are more likely to achieve sustainability.

The CBM+ and ACBM models currently used in Bhutan are more likely to succeed when an external agency provides appropriate support to the WUAs. Such support enables the professionalisation of WUAs, which can enhance their effectiveness. WUAs require four types of support (Twyman and Motte, 2024):

1. Technical support:

- Assistance in conducting preventive maintenance (i.e., regular or planned maintenance to prevent failures rather than reacting to them)
- Implement climate risk management practices
- Address breakdowns promptly
- Procure high-quality parts and tools for repairs.

2. Financial support:

- Subsidies to cover the costs repairing and upgrading the water supply and replacing components that have reached the end of their life, when the community cannot cover these expenses independently.
- Establish cost recovery targets to identify which specific operation, maintenance, rehabilitation, and upgrade costs should be covered by user fees and which costs should be covered by government subsidies.

3. Organisational support:

- Registration of WUAs as legal entities
- Ongoing refresher training in technical and financial management
- Assistance in resolving conflicts and addressing user complaints about water access
- Support for formally documenting roles and responsibilities (e.g., through a written charter)

4. Monitoring and regulation:

- Guide WUAs on setting appropriate water fees/tariffs following government guidelines
- Monitor water quality and WUA and water supply performance through key indicators
- Produce performance reports

- Applying accountability mechanisms and incentives for good performance
- Formalising responsibilities through a performance contract (between the WUA and local government) and a management contract (between the WUA and a third party such as a private water supply technician, when appropriate)
- Enforcing government regulations
- Monitoring climate impacts on water resources.

Establishing these forms of assistance requires substantial planning. The next sections outline ongoing efforts to enhance this support and explore potential next steps for the Government of Bhutan.

Local government workshops on rural water management

On 20-21 December 2024, SNV and members of the Water and Sanitation Division of the Ministry of Infrastructure and Transport, WUA representatives, health officials, district engineers, and technicians from local governments met to discuss ways to improve rural water management based on the experience of the 2 years of technical support. The participants identified several key strategies that the government could take to make improvements in the near term:

- **Ownership and accountability:** The formation and registration of WUAs is an important mechanism for defining community responsibilities (e.g., collection fees and minor repairs) and giving the Tshogpa a formal leadership role in water service delivery.
- **Training on water management:** Providing ongoing training (e.g., Water Safety Planning training) to water caretakers and WUAs to ensure their technical and management skills are adequate, ideally through national institutions and standardised processes that issue a certificate upon completion.
- **Coordination and collaboration:** Identifying the stakeholders in an area (e.g., local communities, government agencies and non-government organisations (NGOs)), agreeing on their roles and responsibilities, and having a mechanism to coordinate amongst them.
- **Inclusion and equity:** Making plans to ensure all people have access to water in an area and including diverse people, such as women, elderly people, and people with disabilities, in decision-making.
- **Governance:** Creating bylaws and management plans to support sustainable water service delivery, improving the WUA registration process, and updating national policies relevant to rural water.



Participants from the communities exploring one of the many impacts of climate change on drinking water systems. Photo credit: SNV/Ugyen Wangchuk.

- **Water resource management:** Developing springshed management and restoration plans to address issues of drying springs and deforestation.
- **Joint technical and financial management:** Government provisioning of pipes and tanks with support from the community for installation, improving water quality monitoring, and blended financing of water supplies including community contributions, government budget allocations, and external donor support.
- **Overall ongoing support:** Continuing interventions and support to maintain momentum created by efforts such as the Water Safety Planning initiative.

The participants also discussed possible roles and responsibilities to improve rural water management for different settings in Bhutan.

Rural villages (CBM+ and ACBM)

The WUA, comprising a chairperson, treasurer, caretaker, two water users, a gewog engineer/technician, and a representative of the Ministry of Health, shall manage the water supply. The WUA shall be responsible for:

- Preparing relevant bylaws
- Registering the WUA with the gewog administration
- Preparing and implementing Water Safety Plans
- Carrying out watershed management and reporting to the gewog administration
- Routine O&M, including monitoring the system and minor repairs
- Ensuring adequate and reliable water flows to users
- Proposing major maintenance and upgrades to the gewog administration

- Collecting fees from users for O&M of the water supply
- Submitting an annual financial report to the gewog administration
- Conducting annual/biannual meetings with members of local government present

The gewog administration shall be responsible for collaborating with the community primary health centre to test water quality and report back to the water users.

Remote settlements with ten or fewer households (CBM)

Department of Water, Department of Forestry, and gewog administration: Oversee broader water catchment protection.

Gewog administration: Develop construction, maintenance, budgetary and management plans for the water supply; purchase materials and carry out repairs that are beyond the community's capacity; collaborate with the community primary health centre to test water quality and report back to the water users.

Chiwog Tshogpa: Routinely assess the water supply and organise the community to carry out needed maintenance or contact the gewog administration for repairs; Contact the children of vulnerable community members if funds are needed for their water access; Liaise with the local Health Assistant to support water quality testing. Community members: Support marginalised community members to get water piped to their home; contact the Chiwog Tshogpa about water-related emergencies.

Further steps for professionalising rural water management

National and local governments in Bhutan must take decisive action to professionalise rural water management. This will help ensure that investments in water supply construction are maximised and that rural water services become sustainable, climate resilient, and aligned with an area-wide approach that reaches all. Professionalisation involves transitioning from management by unpaid, untrained volunteers to formalised management entities. The process includes three key steps that may be taken over the long term (Twyman and Motte, 2024):

1. Vision and strategy formulation

The national government should articulate a clear vision and strategy for professionalising rural water management. Professionalisation can be achieved through:

- Strengthening WUAs to become formal, well-resourced management entities.
- Exploring and implementing alternative management models in which government, professional private, or utility actors become more involved in rural water management.

These pathways are not mutually exclusive; WUAs can be formalised and supported while other actors assume additional management responsibilities.

In terms of strengthening WUAs, the draft *Guidelines for Formation and Registration of Water Users Associations in Bhutan* document makes a significant contribution, but further strategic developments are required. As outlined earlier, four types of external support (technical, financial, organisational, and monitoring and regulation) can significantly enhance WUA effectiveness. The national government should develop detailed guidelines for providing these forms of support where none currently exist.

Pilots of alternative management models aside from the common community-based models should be trialled. There are many options available (Lockwood et al. 2018), including involving government or utility actors in management or contracting local technicians to perform preventive maintenance. Scalable pilot projects can offer valuable insights into which management models work well in Bhutan.

Undertaking these efforts will enable local governments to effectively implement professionalisation activities.

2. Management model strengthening

Once planning and resourcing are in place, local governments should adopt an **area-wide** approach to professionalising rural water management for all households and communities within a gewog. In consultation with diverse stakeholders (e.g., community leaders, rights-holder organisations, NGOs), local governments should design and implement management models that cover all households in each gewog.

Designing effective rural water management models requires substantial resources and thoughtful planning. The national government and NGOs should support local governments throughout this process.

3. Learning and refinement

Throughout the professionalisation process, national and local governments should monitor and evaluate their initiatives to identify successes and areas for improvement.

Sharing collected information widely ensures stakeholders can continuously improve their practices.

Recommendations for implementing each of these three key steps are shown on the next page.

References

Soppe, G., Janson, N. and Piantini, S. (2018). *Water utility turnaround framework: A guide for improving performance*. World Bank, WA DC. Retrieved 6 February 2025, from <http://hdl.handle.net/10986/30863>.

Twyman, B. and Motte, E. (2024). *Professionalising rural and small-town water supply management: The need to enhance external support arrangements*. Aguaconsult and WaterAid. Retrieved 15 January 2025, from <https://washmatters.wateraid.org/sites/g/files/jkxoof256/files/2024-11/Professionalising-rural-small-town-water-supply-management.pdf>.

Key recommendations

Pilot and assess management models

- Support pilots of alternative management models that can be scaled up in rural Bhutan.
- Compile information on effective and sustainable rural water management practices already in place.

Develop guidance for local governments

- Using pilot findings, guide local governments on when to strengthen existing community-based models, adopt alternative models, or transition from community-based models to alternative ones.
- Create guidelines for providing technical, financial, organisational, monitoring and regulatory support to rural water management entities.

Consider financing and resourcing

- Calculate funding requirements for information gathering, guideline development, and dissemination.
- Determine ongoing budgets for local governments to support rural water management entities.

Strategise for the long-term

- Investigate policy or legislative changes needed for effective support to rural water management entities.
- Develop a plan with SMART (specific, measurable, achievable, relevant, time-bound) goals, costed approaches, and tools for monitoring progress.

Plan the details of rural water management models

- Define roles and responsibilities for various actors, accountability mechanisms and incentives.

- Explore aggregating management entities, even when they do not share a water source, to achieve economies of scale (e.g., pooling resources across communities to manage private repair technicians) (REAL-Water 2023).
- Prioritise maintenance models, ensuring regular and preventive maintenance is conducted efficiently and sustainably funded.
- Conduct further pilots of novel management models as needed.

Establish the necessary support mechanisms

- Establish local government mechanisms for technical, financial, organisational, and monitoring and regulation support, including climate-resilient measures and GEDSI (gender equality, disability, and social inclusion) considerations.
- Develop work plans and budgets for providing ongoing support to management entities.
- Formalise management models through written agreements.

Learn and refine

- Track progress using key indicators.
- Engage local research institutes to document challenges and successes, particularly from the perspectives of diverse and vulnerable groups.
- Create platforms for local governments to share experiences and lessons learned.
- Document and disseminate key achievements to inform future practices and replicate successes.

About SNV: SNV is a global development partner, rooted in the African and Asian countries where we operate. With 60 years of experience and a team of approximately 1,600 people, it is our mission to strengthen capacities and catalyse partnerships that transform the agri-food, energy, and water systems to enable sustainable and more equitable lives for all.

About the programme: The Towards Climate-Resilient Inclusive WASH Services in Rural Bhutan project aim to accelerate progress in rural WASH in Dagana, Zhemgang and Trashigang by strengthening the adaptive capacities of stakeholders, including rights holder groups and communities, to ensure sustainable service delivery and achieve quality and equity at scale.

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Cover photo: Worker installs water storage tank. Photo credit: SNV.

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