

Chapter 9



Economic resilience in water supply service in rural Tajikistan: A case study from Oxfam

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ABSTRACT

The water utilities established by the Tajikistan Water Supply and Sanitation (TajWSS) project, which is funded by Swiss Agency for Development and Cooperation and led by Oxfam in Tajikistan in collaboration with Government of Tajikistan focussed mainly on decentralization of drinking water services and ownership of the water supply assets by local governance bodies. However, owing to the increasing demand for water and pressures on water resources as a result of climatic variability, water utilities in rural areas are facing financial, operational and environmental challenges which prevent them from responding adequately. These challenges require highly resilient considerations in the design, construction and management of water supply and sanitation facilities and access to financial resources to overcome unforeseen risks. Oxfam's experience in Tajikistan shows that a community's socio-economic status and water utilities' business operations were key factors for building the resilience of water and sanitation (WS) systems in rural areas. In this paper, the approach in building WS systems that are highly resilient to disasters or risks in rural areas is investigated along with how different factors such as demand and supply, institutional capacity, access to finance and community ownership affect the sustainability of WS services.

Keywords: water supply, sanitation and hygiene promotion (WASH), economic resilience, WS system, water utilities

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9.1 INTRODUCTION

Tajikistan is a small landlocked country in Central Asia, bordered by Afghanistan, China, the Kyrgyz Republic and Uzbekistan. The population of Tajikistan is 9 million (2018), with an annual population growth rate of 2.13%. Although Tajikistan's poverty rate declined from 47% in 2009 to 31% in 2017 ([World Bank, 2017](#)), its poverty remains the highest among the former Soviet countries and is concentrated mainly in rural areas where 76% of the poor live.

Tajikistan encompasses a territory of approximately 143,100 km², where 93% of this land is covered by mountains, glaciers and windswept plateaus. This means that only 7% of the territory is habitable, and only 5% of the land is arable. The country is heavily shaped by its physical geography, such as high mountain ranges, scarce arable land and uneven distribution of natural resources (especially water), which determines its agricultural practices, industrial development, transportation routes and infrastructure perspectives ([Marveeva, 2009](#)).

Tajikistan's economic development is quite complex, which is characterized by poverty, unemployment, underdeveloped real economic sectors and high remittance inflows caused by the outflow of labour migrants abroad (31% of GDP in 2018) ([Tajikistan-World Bank Group Country Partnership Framework 2019–2023, 2019](#); [World Bank, 2019](#)). The agricultural sector is the largest employer (particularly in rural areas), although it provides the lowest wages. Deteriorating infrastructure and services, degradation caused by over-exploitation of arable lands and water resources, use of outdated technologies and other factors limit opportunities for economic diversification and employment opportunities. Tajikistan's social characteristics are primarily driven by its rapidly growing population, particularly in rural areas. Tajikistan has the youngest population in Central Asia (35% of the population is between 14 and 30 years of age). However, more than one in three young people – including nine in ten young women – are either unemployed or not pursuing education ([World Bank, 2019](#)) (*ibid.*). Despite increasing budget allocations towards social protection, the overall health status of the population remains poor.

9.2 ACCESS TO DRINKING WATER AND WATER GOVERNANCE COMPLEXITY

9.2.1 Water resources

The glaciers and snowfields of Tajikistan are the main water towers for the whole region in Central Asia and are thus critical for economic development of downstream countries. Those glaciers contribute 10–20% to the total runoff of all major rivers in the region, which make up 40–60% of all water resources in Central Asia ([Mustaeva et al., 2015](#)). Being water-rich with huge reserves of hydrological resources, Tajikistan has strong hydropower potential from extensive mountain and water resources, but it uses only 5% of its hydropower

potential, which is the source of over 90% of its electricity (*ibid.*, p. 12). Therefore, water resources play a critical role in the economic development of Tajikistan, especially for agriculture and energy. Moreover, its dependence on hydropower makes the country vulnerable to fluctuations in rainfall and climate change, which have adverse effects on energy and food security, poverty and human health.

9.2.2 Access to water supply and sanitation (WSS) services

Since the collapse of the Soviet Union, there has been very little investment into basic infrastructure and social services in Tajikistan. Moreover, the civil war in Tajikistan from 1992 to 1997 left the economy in ruins. This has significantly delayed the establishment of public services and investment in the country, which culminated in adverse effects on people's economic and social lives. Most of the WS and sewerage systems built during the Soviet period have rapidly deteriorated across the country, and lack of public maintenance and investment has led to serious infrastructure degradation and service deficiencies.

Although Tajikistan enjoys abundant freshwater, access to improved drinking water sources and sewerage systems remains significantly low compared with other Central Asian countries. Rural areas are particularly badly affected, and progress in achieving sustainable WS services has been frustratingly slow for the rural population.

As of 2017, only 48% of the population of Tajikistan have access to a safely managed drinking water service, but access to basic water services in rural areas in Tajikistan is 76% (Figure 9.1). This is mainly driven by the replacement of surface water with water from public standpipes and 'the neighbour's tap'. Figure 9.1 also illustrates the fact that rural areas are predominantly devoid of service providers. Sanitation is a particularly neglected area in Tajikistan. Only 18.2% of the population in small towns has access to sewerage systems, while this

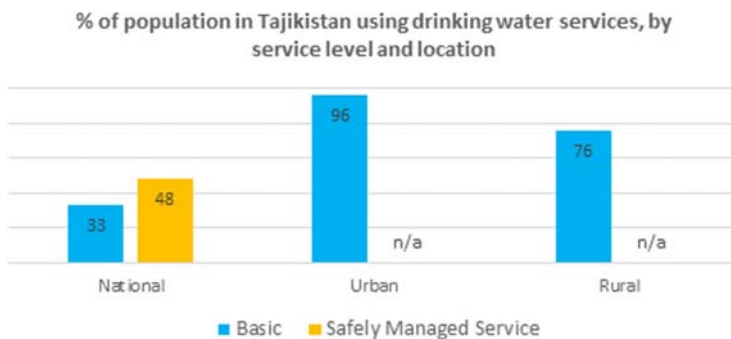


Figure 9.1 UN Water, SDG 6 in Tajikistan (2017) (UN Water, 2021).

is represented by only 0.2% of the rural population (World Bank, 2017). Many are reliant on pit latrines in peri-urban and rural areas, and the wastewater produced by households and industries is discharged into the soil and environment without treatment.

9.2.3 Water governance issue

The key drivers of change for water supply, sanitation and hygiene promotion (WASH) sector reform in Tajikistan are population growth, increased water demands from agriculture and industry, climatic variability and climate change. These growing pressures mean that Tajikistan must continue to invest and develop its water, sanitation and hygiene services for social and economic growth. However, the institutional structure of the water and sanitation (WS) sector is so complex and fragmented that the establishment of service provision poses significant bureaucratic challenges to the sector development. The State Unitary Enterprise (SUE KMK) is both the regulator and operator of drinking water and sanitation services in Tajikistan, but the Ministry of Energy and Water Resources (MEWR) acts as the water sector policy regulator. There is a huge uncertainty regarding the relationship between these two state bodies, which has exacerbated the problem even further in rural areas with insufficient capital investments. This shows that the low access to drinking water and sanitation is clearly not due to absolute water scarcity but to the lack of good governance, contradictory legislation and blurred state responsibilities.

Since most of the rural areas are deprived of water services, the WS service delivery in those geographical areas is being implemented by a 'TojikObiDekhot' (a rural subsidiary of SUE KMK). However, most TojikObiDekhorts are located in district centres and serve mostly peri-urban areas, if there is an existing WS system. If there is no existing WS system, TojikObiDekhorts rarely provide any service, let alone investment. Moreover, given the mountainous landscape and challenging accessibility to remote villages, the state subsidiary organizations are not in a financial and operational position to provide services, which means that water services are not within the reach of the population who were accustomed to getting those services from the government during the Soviet period. However, people still hoped that those services would be established by the government, although their hopes have waned through generations. For that reason, the communities have nurtured a feeling of non-ownership over their assets and do not possess a shared responsibility (or feeling) for any assets or infrastructure ever built in their areas.

At the global level, Tajikistan is a member of the High-level Panel on Water launched by the World Bank and the UN, and, on the initiative of the President of the Republic of Tajikistan, the UN General Assembly adopted a resolution titled International Decade for Action 'Water for Sustainable Development' (2018–2028), where the government has reiterated its commitment to the availability and

sustainable management of WS for all as part of the UN's Sustainable Development Goals, that is SDG 6, by 2030.

9.2.4 Market challenges and local realities

In Tajikistan, water resources belong to the state, and the law on 'Drinking Water and Wastewater' ([Law of the Republic of Tajikistan N1633 2019](#)) mandates that the government is the guarantor of access to drinking water for the population and institutions. A separate government resolution 'On Approval of the Procedure of State Control and Supervision of Drinking Water' ([Resolution # 679 of the Government of Republic of Tajikistan, 2011](#)) stipulates that SUE KMK is the agency responsible for the management of drinking water and wastewater treatment. It clearly states that KMK is the implementer of state policies and MEWR is the policy watchdog to enforce control and regulation over the implementing bodies; however, in reality, the exact boundary of responsibilities between MEWR and SUE KMK has not been precisely outlined to mobilize state funding appropriately.

Despite this, the WS sector in Tajikistan is characterized by an uneven distribution of state roles at the national, regional and district levels. For rural areas in particular, a WASH strategy appears to be non-existent, and no institution seems to be clearly responsible for such challenges. Ultimately, all WASH-related responsibilities are given to the local government (Hukumat, Jamoat), but the local government institutions lack sufficient financial and institutional resources for reform implementation.

Developing and expanding market-based WASH products and services in this environment are the other challenges for donors and implementers. However, the starting point in developing the WASH market is to create that demand and provide necessary support to service providers to meet the growing demand for WS products.

9.3 MARKET-BASED RESPONSES TO WATER CRISES IN TAJIKISTAN

9.3.1 Transition from humanitarian to development aid

To address this humanitarian crisis, Oxfam initiated operations in Tajikistan in 2001 with the humanitarian mission to alleviate human suffering and respond to natural disasters, especially in rural areas. In the WASH sector, Oxfam diverted its resources to address the rehabilitation of Soviet-built drinking water and sanitation systems, including the construction of public taps in rural areas and latrines in schools and healthcare facilities, that had deteriorated substantially over time. The approach was mainly supply-driven with no payment mechanism from households, given the fact that the rural inhabitants were considerably poor at that time and unable to afford payment.

Therefore, Oxfam in partnership with the Government of Tajikistan (GoT) conducted a study in 2007 on the status and performance of water utilities in rural areas. The research outcomes concluded that the status of access to drinking water for the rural population is very poor and there is very limited institutional capacity to address the issue at national level. Investment and technical know-how were two of the issues most commonly flagged up by local government representatives and communities.

It was identified that the centralized water supply systems at district or town level were in poor condition and often do not reach the villages or the most remote populations. Moreover, the quality and quantity of water provided at district level were often unreliable due to poor operation and maintenance.

To address this issue, Oxfam and the GoT held a series of consultations with key donors, civil society organizations and community representatives to improve basic water supply in rural areas. As a result of recommendations, in 2008, Oxfam began to focus on transitioning to a more sustainability led WASH programme approach with an emphasis on decentralized water supply services, public and private partnerships and policy advocacy.

The new sustainability led approach to WASH service signified a fundamental change in service delivery, where the centralized supply system was not feasible due to technical, economical and/or institutional reasons. The decentralized nature of the system referred to the distribution and treatment of water to the community, where the service is operated and maintained by community-level water user associations (WUAs). It was also expected that the decentralized infrastructure would enhance resilience by contributing to water resource conservation, cost efficiency and greater adaptability to configure water systems for the specific local contexts, and capacity of local operators.

9.3.2 Economic resilience approach

Natural disasters, which Tajikistan is very prone to, along with climate change and rapid urbanization pose a serious risk to rural areas, which are less financially viable for service providers in the drinking water and wastewater treatment sector. The WS systems in rural areas, if they exist at all, are particularly susceptible to risks from natural hazards and disasters. Moreover, given the level of impoverishment in rural areas, the government response to ensure a basic WS service becomes an issue owing to its limited capacity.

History. Oxfam refers to 'resilience' in Tajikistan as economic resilience in order to link the economic capacity of the community (demand side) with the service provider (supply side) to overcome the environmental, social and economic challenges. In this regard, the definition adopted by the United Nations Disaster Risk Reduction (UNDRR) office is more relevant as it describes the resilience as 'the ability of people, organisations and systems, using skills and resources, to manage adverse conditions, risk and disasters. The capacity to cope requires

continuing awareness, resources and good management, both in normal times as well as during the disasters or adverse conditions' (Assembly UG. 2016).

Given that most resilience indicators focus on technical dimensions, Oxfam has transformed its WASH programme since 2009 to address the economic and governance dimensions of the WSS sector. The programme developed a strategic vision until 2022 and is based on a theory of change that supports the development of autonomous WASH management structures in the country to establish financially and operationally sustainable WS and wastewater treatment services, especially in rural areas.

The financial and operational sustainability of WS refers to recovery of operations and maintenance (O&M) costs intended to achieve a fully functioning water system to ensure the capture, treatment-purification, transport and active supply of water to consumers. Oxfam developed a plan for a cost-recovery tariff that can be used by WUAs. It is based on recovering reoccurring O&M costs, giving operators the ability to sell their services in exchange for water consumption.

Oxfam's cost-recovery tariff setting plan provides water utilities with financial means to cover their O&M expenses to reach a certain level of financial independence. The O&M services include but are not limited to:

Operation:

- Supervision and monitoring of equipment, machinery and other constituent parts
- Operation and management of technical elements, machinery and distribution intervals
- Process control (flow rates, sampling etc.)
- Consumption management (electricity tariff optimization)
- Risk and administrative management (risk assessment, mitigation plan, invoicing etc.)
- Waste management
- Reports

Maintenance:

- Electromechanical maintenance (equipment, repair, replacement etc.)
- Regulatory maintenance
- Upkeep (painting, leaks, carpentry, gardening, cleaning etc.)

Strategy. The programme is built upon four pillars (Table 9.1) that act as the transition into the market-based WASH service delivery and incentivizes business models to sustain economically viable service delivery in Tajikistan.

An interaction between these pillars is built by influencing policies and system changes based on best practices in the field so that the government can adopt adequate measures in water sector reform. Moreover, the market interaction between the service providers and consumers is the interaction with the most

Table 9.1 WASH programme strategy pillars.

Theory of change: Improved, sustainable and equitable access to safe drinking WS, and adoption of better hygiene behaviour in Tajikistan through market players			
Building demand for and supply of WASH services	Improved governance and resilience of WASH service providers	Securing financing and system functionality through blended funding	Policy advocacy and influencing
<ul style="list-style-type: none"> • Consumers pay for hardware and services • Utilities are sustained by consumer payments and public subsidy • Village is provided with regular electricity and fuel 	<ul style="list-style-type: none"> • Water utilities are trained about effective management and technical monitoring approaches to address consumer needs and pre-empt operational challenges • Utilities provide services and sell products to consumers 	<ul style="list-style-type: none"> • Blended financing of WASH infrastructures • Local government provides subsidies to water utilities 	<ul style="list-style-type: none"> • Policy changes in legislation, regulation and guidance • Coordination of water sector reform

potential to transform the WASH system in the country. The market could play a crucial role in people’s behaviour, as it can respond quickly to people’s needs when demand grows and offers a solution to consumers to contribute financially by buying its services or products. Moreover, the choice of the village also depends on the local context (the level of demand) and availability of public utilities, primarily regular electricity supply.

Oxfam in Tajikistan invested in the development and creation of small water utilities (community-based water user associations or state-owned water enterprises), and market-based solutions such as working with sanitation product retailers (latrines, toilets and hygiene products for households) and wastewater treatment systems (decentralized wastewater treatment systems and faecal sludge treatment plants). All these entrepreneurial type activities rely on consumer payments. This is a key element in developing and sustaining the service delivery with some degree of dependence on external funding, which builds the economic resilience of the water utilities to be robust and resourceful enough to withstand disasters and be able to return to a new normal after a disaster.

Thus, Oxfam predominantly utilizes the following combination in the project design and implementation (Table 9.2):

A further element that cuts across these three areas is to guide and facilitate the process for innovative products or services by market players, which can then be converted into a scalable business.

9.3.3 Community managed services to meet user demands

In the early stages of the feasibility study on site and with the community, it was revealed that the rural communities wanted what they were mostly deprived of – safe drinking water that is available when needed and in reasonable proximity. Most people, particularly women, indicated the long distance to fetch water, unreliable water quality with seasonal changes and lack of governmental support to fix problems on site. Though the water was mostly available in large quantities, the communities did not have the knowledge, capacity, and financial

Table 9.2 Market-based WASH programme design.

Demand creation	<ul style="list-style-type: none"> • Stimulate demand among people to the point of making a purchase
Supply development	<ul style="list-style-type: none"> • Build the capacity of water utilities to meet the demand created
Enabling environment	<ul style="list-style-type: none"> • Collaborate with the government and international stakeholders to revise policies

means to make accessibility easier. They had no belief in governmental support or any investment projects and relied mostly on the women's ability to reach the water. Interestingly, when questioned about the price tag for water supply, the majority of community members responded favourably to the idea of payment if the quality and availability of water were in place.

When Oxfam and local government compiled the survey and interview results from community members, the following list of demands was discovered

Table 9.3 Community demand.

Connection	Accessibility	Availability	Quality	Affordability
Public connection	Outside the dwelling	Max.10 mins collection time	Free from contamination	Fixed price regardless of water use
Household connection	On premise	24/7 supply	Source protection	Volumetric price with metering

(Table 9.3):

9.3.4 Water management model

After the community demand analysis for water, Oxfam together with the Tajik government and civil society organizations (CSOs) agreed to design a decentralized WS system with cost-recovery for communities. In the case of Tajikistan, given that the cost to connect villages to a centralized WS system is expensive, the decentralized WS system is considered more affordable. And there was a general consensus among stakeholders that the decentralized WS system would lead to large improvements in public health by making water available, reliable and safe to drink in areas where the centralized supply fails to provide it.

Ultimately, a water utility management model was designed that encapsulated all essential factors regarding the selection of an appropriate WS system. As the next step, a community-based water user association (WUA) was established within the local government's unit (Jamoat). The WS system as an asset belongs to the local government but the management duty is handed over to the WUA. The local government acts as the supervisor to regulate and monitor the WUA's performance, while the WUA is tasked with day-to-day management, service delivery and technical maintenance of the system. In case of capital re-investment, the government is engaged to finance the restoration of the functions of the WS system in the village.

Table 9.4 showcases the model. As seen from the table, the decentralized WS system requires daily operation and maintenance for users, therefore,

Table 9.4 Water utility management model.

Source of Water	Water Purification Technology	Operation & Maintenance	Payment Method	Utility Dependence
<ul style="list-style-type: none"> Groundwater or Spring • Drilled wells • Pumped reservoir • Piping for gravity flow 	<ul style="list-style-type: none"> • Chlorination • UV lamps 	<ul style="list-style-type: none"> • Community-based water user associations (WUA) • Tojik Ob Dekhot (State Unitary Enterprise responsible for rural water supply) • Limited Liability Company • Note: There are different legal structures established in Tajikistan, but in practice, they perform similarly in terms of O&M 	<ul style="list-style-type: none"> • Private metering • Tariff allocation for consumption of 1 m³ • Monthly household payment based on agreed tariff • State subsidy 	<ul style="list-style-type: none"> • Fuel (service delivery) • Electricity (pumping, UV lamps, delivery etc.)

decentralized supply has the benefit of putting users in control of their system maintenance.

9.4 KEY LEARNINGS AND CHALLENGES IN BUILDING ECONOMIC RELIANCE OF WS SERVICES

9.4.1 Community resilience

Oxfam's past experience with rural WS service providers demonstrates that the primary economic factor affecting WS resilience is the economic capacity of communities. Moreover, owing to underinvestment, slow pace of reform and low interest of the private sector to invest in WS services, the communities have little expectation that the government will resolve this issue soon.

The lack or poor condition of infrastructure stimulates more demand for water because the cost of inadequate hygiene practices and poor sanitary conditions in schools, healthcare facilities and households in previous years outruns the cost of investment for today. Having studied this trend among the population in rural areas, the intervention approach has been diverted from public connections to private (household) ones to change the communities' experience with water.

It became clear during the implementation of the WASH programme in Tajikistan since 2009, that communities who were more engaged in the decision-making process have demonstrated ownership of the management structures in place and a willingness to contribute towards the facility's sustainability, thereby enabling a more resilient water service.

9.4.2 Institutional resilience

Lessons learnt from other projects and disasters have led to more proactive approaches to address the consequences of disasters. The government of Tajikistan mainly relies on aid from international donors to eliminate these risks. However, the starting response and restoration activities are usually subject to budgetary approval by the central government, which can be cumbersome and lengthy. Quick access to funds is very important in the first few weeks following a disaster. Ideally, the district government or local government structures should have different ex-ante (proactive) and ex-post (reactive) financing instruments to give water utilities quick access to finance and thus speed up activities in response to disasters. However, this is not the case.

Thus, Oxfam designs its projects to deliver capacity-building sessions for WS service providers from the very beginning of construction work and trains the community in ownership and self-financing instruments to protect their WS infrastructure. Water utilities can pay the response and restoration costs from their budget contingencies and/or reserves which may include communities' financial contributions. Experience shows that using contingencies and reserves is the quickest way to access finance in the aftermath of a disaster. However, contingencies and reserves are usually small and can quickly be depleted.

Depending on the severity of a disaster, any quick access to finance, even in small quantities, is better than long delays. Governmental support or funding from international donors typically takes time and requires the involvement of significant bureaucracy. The funding, if received, can be allocated for post-disaster recovery or construction activities that were not duly accomplished in the first response. Practice has suggested that even a small contingency budget is the safest option for a quick response to disasters to at least prevent the environmental risk from becoming colossal in the affected villages.

9.4.3 Economic resilience

To summarize the above-mentioned findings regarding community and institutional resilience, monitoring and evaluation results showcase that trained and fully informed communities are better at mobilizing against mitigation and/or response activities to protect WS systems. This, in turn, makes the WS systems of communities more resilient to disasters. Once the community understands that it is more cost-effective to invest in building more resilient systems with safety measures in the early stages of the construction phase, they are more prone to

contribute earlier. On the other hand, water utilities’ quick access to finance is also a significant factor in disaster risk reduction (DRR). However, funding availability does not necessarily guarantee a quick recovery if the community’s support is not in place.

It is highly recommended that the water utilities in rural areas are duly and regularly trained on how to prepare for a disaster by setting up an accountable contingency plan and budget. In the absence of immediate external funding after a disaster, water utilities should be able to access funds from their existing budget by cutting unnecessary and non-urgent expenses. Preliminary budget estimation for contingency preparedness is crucial either by community fund raising or reducing capital expenditure by putting development works on hold. While the resilience of the WS system heavily depends on communities’ economic capacity and water utilities’ access to finance, other dimensions such as transparency and accountability in operational and financial work cannot be ignored.

9.5 DECENTRALIZED WATER GOVERNANCE AS MEANS TO BUILD STRONG RESILIENCE TO RISKS

In this section, experiences with implementing the business model for building economic resilience of WASH systems will be described. This section will also give an insight into how the market-based WASH programme can be designed and implemented considering the demand and supply sides. The market-based WASH programme was implemented with a governance model where all stakeholders are incentivized to invest first before any action is taken.

Table 9.5 shows the overall governance stages in market-based WASH programming.

District-level governance. The WS infrastructure project is tendered with the announcement of an investment plan in rural areas through district governments. The announcement specifically mentions Oxfam’s conditional funding requirements in the WS system and the requirement from the community

Table 9.5 Inclusive WASH programming through four stages.



to contribute a minimum of 5% of the overall infrastructure cost. Once applications are received from rural municipalities, Oxfam and the district government shortlist the villages and carry out initial technical cost estimation, a community willingness survey and DRR assessment. After careful analyses, the selected village is notified about the result and a Memorandum of Understanding is signed between Oxfam and the district government, as well as the central government (SUE KMK) on cost sharing at 10% and 15%, respectively. After the technical design and cost calculation for the WS system are complete, the final cost is assessed by Oxfam and district government engineers for fine-tuning. Once finalized, the project design, cost and management details are discussed with the central government, district government and communities.

Overall, the following key issues are verified and contractually agreed before the project starts:

- Co-financing arrangement – 70% Oxfam, 15% central government, 10% district government, 5% community
- Identification of water management body – Public or private, or community-based water user association
- Connection type – WS connection at household level
- Payment condition – Volumetric tariff system with meters installed in each household

Oxfam and the district government convene Water Trust Fund meetings – Governing Body for decision-making – where they agree on investment lines and funding delivery means. After selecting the construction company through bidding, Oxfam and the district government sign a separate contract for the building of the WS system. The communities either pay in cash to the construction company or contribute in-kind (labour force) for the designated amount of work. This way, all parties, from the very beginning of the project, become shareholders and establish a solid ownership over the assets and further processes. At this stage, the business plan is also discussed with the water utility where Oxfam and the government facilitate the design and possible funding and expansion plan.

Service-level governance. At the service level, Oxfam supports the creation or development of the WS service in rural areas. Initially, the new water utility is established and trained in technical and financial management aspects of the infrastructure work and WS system. Once it is established, the construction of the WS system is tendered and the newly established water utility is tasked with regular monitoring of the construction work on site. Before the completion of the construction stage, the water utility is involved in a series of training on tariff setting, technical and operational maintenance, taxation and accounting, customer data base collection and update, social accountability tools and communication.

Community-level governance. Active citizens' engagement is rigorously promoted alongside women's empowerment in target communities as water is

very much a driver of economic development. Ironically, efforts to increase access to improved WASH services at the household level often do not adequately consider the risk related to public health. Moreover, in community-level awareness sessions, health-related costs that are often given little weight are highlighted. The social accountability dimension is established by a community advisory board (CAB) within the water utility, whose members are influential people from the community, to hold the water utility accountable for its operation, financial accounting and expansion plans. This CAB convenes once every quarter to listen to water utilities' reports and issues that can be solved through community mobilization.

Oxfam usually encourages community engagement in WASH-related activities to trigger consumer responsiveness towards service quality before, during and after a disaster period. It is very important to prepare the communities to handle the risks very quickly and responsibly using internal resources first in order to prevent the disaster from spiralling out of control. As a hazard, such as a flood or rockfall, can lead to a range of secondary hazards, people might be exposed to contaminated water in the WASH system.

Policy advocacy.

The WS sector in Tajikistan had an acute need for an arena where stakeholders could meet and share experience, ideas, views, knowledge and particular experiences related to the WASH (Water, Sanitation and Hygiene) sector. To respond to this need, Oxfam, in consultation with the government and the Swiss Agency for Development and Cooperation (SDC), as well as other stakeholders, initiated the Network of Stakeholders on Sustainable Water Supply and Sanitation (TajWSS Network) that was launched in November 2009. The network's financial support was provided by the SDC and facilitation was taken forward by Oxfam as an implementer of the SDC-funded Tajikistan Water Supply and Sanitation (TajWSS) project.

The network is now represented by more than 70 stakeholder organizations from the government, parliament, the UN, donors, academia, international non-governmental organizations (INGOs), civil society, the private sector and the media. Its goal is to advocate for policy reforms in the WASH sector and provide expert level support to the government based on the lessons learnt from the field, that align with the SDG 6 targets.

9.6 MAJOR CHALLENGES IN ESTABLISHING RESILIENCE OF WS SYSTEM

Most rural water utilities who were interviewed (Oxfam, 2021) mentioned five key challenges that pose risks to the functionality of the WS system. A limited review of water user associations (WUAs) highlighted the following as risks to their business:

- Higher operational cost

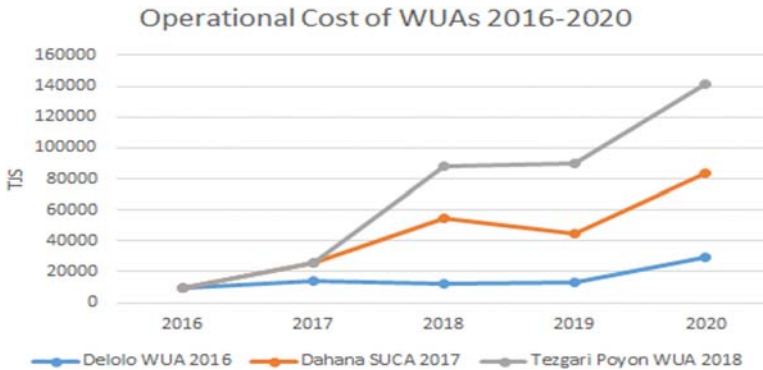


Figure 9.2 Operational cost of WUAs (Oxfam Management Information System (MIS), 2021).

- Operational malfunction
- High employee turnover rate
- Illegal connection by communities
- Limited support by the government and community

High operational costs. The operational cost of WS systems increases with every passing year (Figure 9.2). Thus, the water utilities try to save money while running the system and/or negotiate with the communities to increase the tariff in order to cover the cost. Given unstable water supply means because of climate change and the inflation rate, the operational and maintenance cost (O&M) of the WS system increases every year leading to rises in tariff.

Over the period from 2016 to 2020, the operational cost increased 206% in Delolo WUA in Muminabad district, 349% in Dahana WUA in Kulob district and 74% in Tezgari Poyon WUA in Rudaki district. This clearly demonstrates the water supply infrastructures are typically capital intensive and require a high sunk cost for longer operational functions. The WUAs can increase the operational efficiency through regular maintenance control and a risk register for communication with the customers, who could potentially contribute to the mitigation activities. It also illustrates that the tariffs for water services can generate only a share of the revenues needed, and a government subsidy is required to provide an appropriate level of service and mitigate the risks associated with the cost.

Operational malfunction. The WUAs have mentioned four main areas where an engineering intervention is inevitable, namely, water leakage from pipes, disruption of water meters (especially in winter), overconsumption through illegal connection and pump malfunction. These technical problems demand specialized expertise that

is lacking in the villages, and water utilities are obliged to seek paid labour from neighbouring cities.

High employee turnover rate. The WUAs have seen the substantial risks caused by the departure of technical or financial staff for better jobs in the cities. Moreover, sometimes the district government unofficially dismisses the WUA chairman and replaces him with his subordinate, which is regarded as an abuse of power. This causes a severe disruption in the system and requires additional training and induction. Normally, the chairman of a WUA is selected by the community, and if the person is not respected or recognized by the community, a power struggle occurs.

Illegal water connection. The WUAs have detected more than 50 illegal water connections, either by households or neighbouring villages, to avoid payment. This causes a conflict in the community due to rapid consumption of water from the tanks that goes unnoticed by the water utilities.

Limited support from the community and government. Unfortunately, in all target districts, there is no subsidy scheme in place by the government to support the rural water utilities. Besides, the WUAs have also complained that the community members become less supportive when there is an interruption in the water delivery due to the adverse impact of environmental changes for example flooding, landslide, rockfall, pipe breaks or pump malfunction.

9.7 MAJOR OPPORTUNITIES IN ESTABLISHING RESILIENCE OF WS SYSTEM

As described above, WUAs have come across many challenges in managing the WS system. However, as small rural entities, they also use business opportunities in this work in the background of population growth and potential for expansion to neighbouring villages. During interviews, WUAs mentioned four key areas to improve that they think could be a good set of circumstances to grow as a social enterprise:

- Managerial skills based on key performance indicators (KPIs)
- Possibility to expand
- Tariff setting
- Social accountability

Managerial skills based on KPIs. Oxfam, in partnership with local non-governmental organizations, set up KPIs for rural water utilities to measure their financial and operational progress. Those indicators are shown in [Table 9.6](#).

The KPI-driven water management from 2019 onwards incentivized the water utilities to perform better for higher profit and better customer support. [Figure 9.3](#) also shows that the gross profit margin has started to grow since then. Given that all households are connected to water meters, the WUAs monitor them to detect leaks and eliminate wasteful uses, as well as ensuring sufficient drinking water in

Table 9.6 KPIs for rural water utilities in 2018.

Water Utilities	Tariff Collection Ratio (% of bills)	Gross Profit Margin ^a	Customer Satisfaction Rate (%)	No. of Expansion Requests Sponsored (%)
Delolo WUA	71%	0.31	75	71
Dahana SUCE	82	0.10	77	100
Tezgari Poyon WUA	94	0.30	86	100
Average	80%	0.24	79	90

^aTotal operational revenues/total operational expenditures. If the figure is above 1, it indicates cost recovery.

the reservoir and that adequate sanitation and hygiene behaviours are practised by communities. This serves as a success indicator for water utilities to measure their progress.

Possibility to expand. WUAs have received multiple requests to expand their household connections, which they see as an opportunity to obtain more profit in the long run. Oxfam also provides a consultancy support to water utilities on revenue generation as part of the business. As of 2020, most water utilities expanded on their expense with some financial contribution from potential customers. [Table 9.7](#) perfectly illustrates the additional household requests and percentage of coverage expense paid by each water utility.

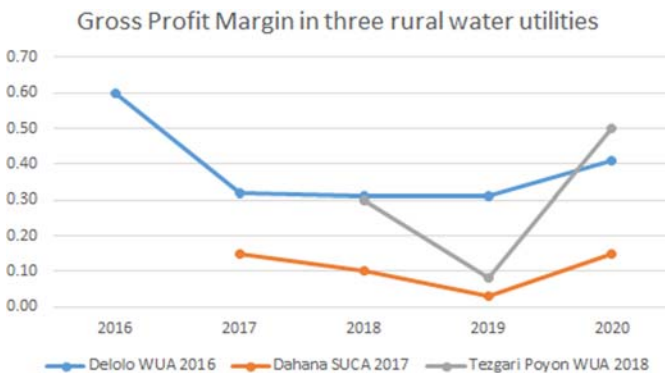


Figure 9.3 Gross profit margin (Oxfam Management Information System (MIS), 2021).

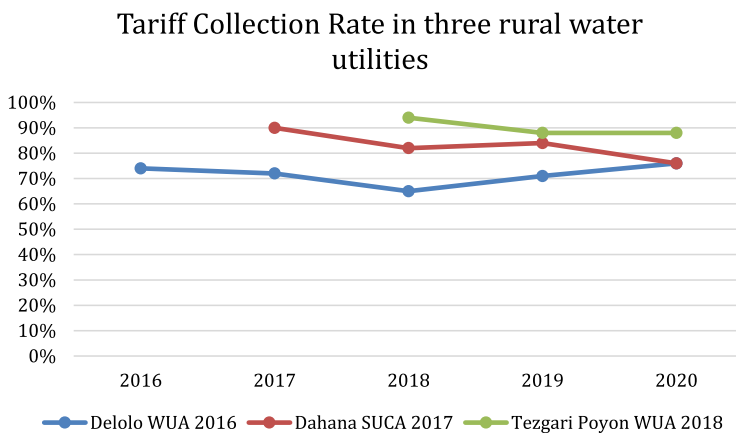
Table 9.7 WUAs' expansion progress.

Names of WUAs	No. of Requests Received	Expanded on WUA's Expense (%)
Delolo WUA 2016	112	71
Dahana WUA 2017	31	100
Tezgari Poyon WUA 2018	54	100

Tariff setting. Under Soviet times, citizens did not pay for water services, and tariffs have historically been set below the level at which service providers can conduct basic operation and maintenance thus leading to underperformance and a dependence on external funding. In Tajikistan, consumers pay too little for water services and the revenue from water charges does not even cover the operation and maintenance cost, let alone reinvestment for the infrastructure. Often, consumers are not aware of the real costs associated with the water supply services because these have been historically heavily subsidized by the government.

Oxfam employs a cost-recovery tariff methodology that is set by the Anti-Monopoly Agency of the Government of Tajikistan within the legal framework. The tariff setting process and decision-making are organized through involvement of community members to identify the local needs, the cost of sustainable operation and maintenance of water supply service, and the potential for reinvestment in the infrastructure. Moreover, to address the needs of the poor households the government either identify the poorest and subsidize their consumption or the community members pay for them.

Disagreement mostly arises between consumers who prefer to pay less and service providers who lean towards having a higher tariff level for stable revenue

**Figure 9.4** Tariff collection rate (*ibid.*).

generation. The analysis of tariff collection rates in three WUAs for the last 5 years demonstrates that the average annual tariff collection rate stands at approximately 80%, which is considered satisfactory for the cost recovery and expansion. The highest tariff collection was recorded as 94% in Tezgari Poyon in WUA in Rudaki district in 2018 with the lowest being 71% in Delolo in Muminabad district in 2019 (Figure 9.4).

Social accountability. All WUAs have confirmed that developing and maintaining continuous dialogue with consumers and the district government are critical to success. This has helped them raise more awareness about issues that they would like to solve and develop solutions in close coordination with community members. From 2016 Oxfam began to establish a social accountability mechanism within water utilities as part of the project funded by the Global Platform for Social Accountability of the World Bank Group. Social accountability can be defined as an approach towards building accountability that relies on civic engagement, that is, in which it is ordinary citizens and/or civil society organizations who participate directly or indirectly in executing accountability (Malena *et al.*, 2004). The project aimed at improving responsiveness and accountability in service delivery by supporting the service users to act collectively to influence key decisions, monitor service quality and demand better services.

Given that all households are shareholders in the water scheme, they understand that for the effective and efficient use of water resources, a joint decision-making body, in this case, the CABs, should act as the authorization platform to set preconditions for economically viable operations of WS systems. Oxfam has urged both sides to act as the owners and investors of the system and provide necessary financial support to minimize external dependence and ensure decentralized management. The purpose of the project was to provide a basis for

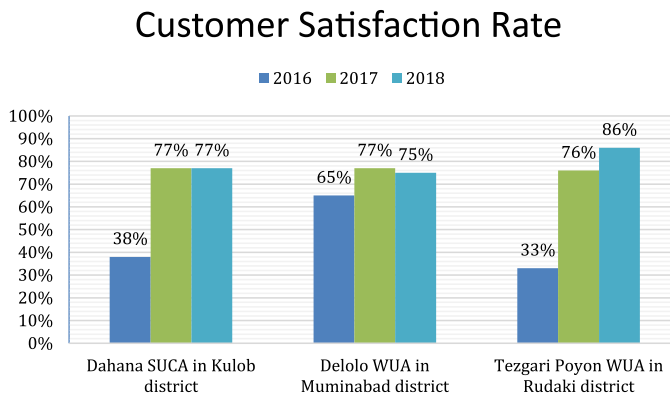


Figure 9.5 Customer satisfaction rate by rural water utility service.

constructive engagement between service users, service providers, and government institutions for sharing information on service performance, discussing discrepancies and issues, and identifying solutions that can be implemented through joint action.

Despite water utilities' inability to address the complaints adequately due to financial capacity, the assessment of data about the number of complaints received versus resolved shows very promising progress. As detailed in Figure 9.5, over the course of project implementation from 2016 to 2018, there was continuous improvement in customer satisfaction rate across three water utilities because of the application of a social accountability mechanism through CABs within each water utility.

9.8 CONCLUSION

By promoting sustainable business models and by improving the financial and managerial capacity of water utilities, there is a high chance that the WS service will be more resilient against disasters and be better prepared to respond when resources are dwindling. The programme analysis has shown that building such systems requires a blended funding mechanism and ownership by all interested parties, in a context where services had previously been provided for free and without a responsiveness to environmental risk. If the profit making is not secured in the service delivery, there is a slim chance of managing the WS system professionally on a voluntary basis. Moreover, the selected communities' economic capacity (demand) and water utilities' access to finance (supply) should also not be ignored.

In this chapter, a WASH business model and the vulnerability of the WS system to hazards in rural areas has been demonstrated. The key learnings from these activities are summarized as follows:

- (1) *Creating demand:* It is highly important to assess the economic capacity of potential communities and their willingness to pay for water and sanitation services by monitoring or collecting data about the employment rate, key production areas, social activities and private/public health habits before their qualification for investment projects.
- (2) *Developing supply:* It is equally critical to re-examine the profitability of water utilities in light of hazards and risks. Regular capacity-building activities and business know-how by sponsors or the government would be very valuable for WS service providers in integrating disaster risks into their budget planning and developing a contingency plan to act proactively against unforeseen cases. Quick access to finance marks a milestone of the capability of service providers to overcome challenges without delay thereby avoiding additional cost due to delay.

- (3) *Enabling environment*: It is of utmost importance to create an institutional culture in which water utilities can perform based on realistic metrics that will incentivize profit making. Moreover, it is equally important to work with the government to align or adjust policies in line with the interests of those who will be willing to invest or manage the WASH services, especially in rural areas. In the future, opportunities for water utilities to access micro-loans from banks should be explored.

Future sustainability and resilience of WSS in rural Tajikistan depends on the following opportunities and risks:

Opportunities:

- **Sense of community ownership.** The community engagement and social accountability mechanism (CAB) anchors a great sense of ownership for the sustainability of the system.
- **Gradual tariff increase in line with inflation rate.** Increases in water price might generate revenue for water utilities further enabling them to address water issues and grow their customer base.
- **Decentralized service delivery.** The management model applied in rural areas does not require significant investments and is more cost-effective than connection to the centralized system.

Risks:

- **Local human resources to maintain the WS system.** All water utilities report high turnover and the loss of staff trained under the projects to operate and maintain the service delivery.
- **Governmental buy-in.** Government agencies have significant potential to impact project sustainability either positively or negatively. However, what is unclear is the government's financial contribution (or subsidy) in maintaining the WS system. The government buy-in in water service delivery in rural areas is essential to promote future expansion and quality application.
- **Aged infrastructure.** As consumers become more engaged in management processes and advocate for their rights, they become accustomed to getting stable and quality service from WUAs. However, as the infrastructure ages the re-investment responsibility lies outside the control of WUAs and users. The government has to step in and ensure that the state funding is within reach to rehabilitate the infrastructure in every 10–20 years to avoid any disruption in the service delivery and curb the public trust.

The current economic trend in Tajikistan requires a solid analysis of market size, prices, costs and returns for new actors to intervene in the WASH sector. The

market challenges are still prevalent in involving potential investors in financing the WASH sector for profit. Besides, experiences in Tajikistan show that there is still highly limited knowledge regarding the principles of a market-based and decentralized WASH programme and the required design/implementation approaches. Moreover, most INGOs and donors have not yet shifted from supply-driven WASH programme delivery approaches in Tajikistan. The majority still provide funds for the implementation of WASH infrastructure without confirming that a payment system is in place to ensure the system's longer-term sustainability.

In conclusion, managing the WASH programme requires a combination of methodologies and analytical tools to assess the economic, social and environmental costs and benefits of WS infrastructure and service delivery at the rural level. Given that the WS service is a capital-intensive sector, achieving a resilient water supply in rural Tajikistan is especially challenging due to climate change, financial inflation and growing demographic trends. It requires investment not only in infrastructure, but also in institutional development of WUAs and data collection software for informed decision-making. The WUAs can deliver expected economic and health benefits to the community only when they are backed by appropriate support systems such as customer and government financing, skilled staff, an accountability mechanism and information. Addressing this requires long-term strategic district WASH planning with clear investment pathways that increase the government and communities' resilience to adapt over time in response to environmental risks and developments.

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