



WHAT DOES IT TAKE TO SUSTAIN WATER, SANITATION, AND HYGIENE OUTCOMES?

Lessons from Six Ex-Post Evaluations

Executive Summary

October 2020

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While global progress toward achieving Sustainable Development Goals (SDGs) to meet water, sanitation, and hygiene (WASH) needs is notable, the number of people lacking these essential services remains vast, and progress in the world's poorest countries has been sluggish despite decades of development interventions. Since 2000, access to at least basic water services has only increased from 51 percent to 56 percent in the least developed countries, and basic sanitation access has increased from 22 percent to 34 percent. As of 2017, 3 billion people lacked basic handwashing facilities.¹ The health and economic implications are critical, as poor WASH conditions are linked to 2 million deaths annually and significant gross domestic product loss due to health and time burdens alone.²

Lack of sustainability is a crucial barrier to progress, with evidence that 25 percent of water points fail within four years and frequent reports of slippage into previous open defecation habits.³ Sustainability has come more into focus in the last decade as WASH sector programming has evolved from a direct service delivery model to a systems approach oriented toward facilitating sustainable service provision through local actors. Through its commitment to identifying sustainable approaches to WASH, USAID commissioned a series of six ex-post evaluations of its WASH activities completed three to 10 years prior. These studies identified what outcomes had been sustained years later and why. This report shares key findings from the series. Findings are summarized according to finance, governance, management, and behavior change.

EX-POST EVALUATION SERIES

The series examined four rural and two urban WASH activities three to 10 years after the activities ended, as shown in Table 1. All evaluations involved mixed qualitative and quantitative methods. The lack of endline data from the original activities at most ex-post evaluation sites prevented direct measurement of sustainability. However, in Madagascar directly comparable endline household and community data from the original intervention permitted robust conclusions about sustainability. Similarly, ex-post utility performance data in Indonesia proved to be comparable to a metric used during the project.

The evaluation team (ET) noted low sustainability of USAID-established rural water points, with functionality ranging from 44 percent to 65 percent at ex-post (Figure 1). In Indonesia, nearly all the eight USAID-supported utilities evaluated had increased water connection coverage in the five years since the activity ended (average change from 35 percent to 43 percent). In India, water access varied widely across the six USAID-supported municipalities evaluated, from a consistent 62 percent for the past five years in one city to a steep three-year increase from 31 percent to 100 percent in another.

The ET did not find materials for handwashing with soap in most rural contexts, ranging from none in a very small Ethiopia sample to 31 percent of households observed in Senegal. Access to any type of sanitation at ex-post ranged from 45 percent to 92 percent of households in Senegal, with basic sanitation access much lower in all settings. Madagascar saw statistically significant slippage in latrine use in targeted geographies from 69 percent to 45 percent. Lack of directly comparable endline data prevented confirmation of changes in other settings, but the evaluations confirmed open defecation continued to occur in populations targeted by activities in Mozambique, Ethiopia, and Senegal.

About This Report

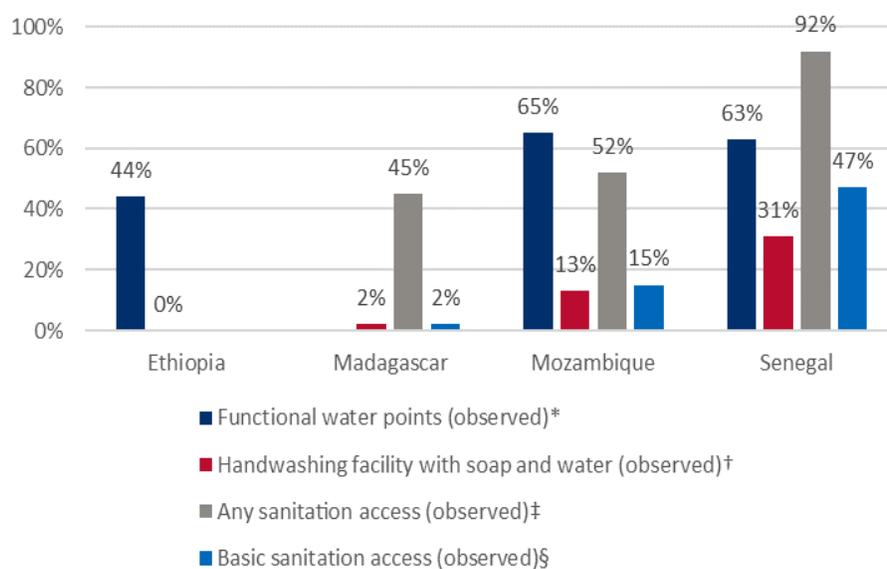
This report summarizes key findings from a series of six independent ex-post evaluations, available on Globalwaters.org, that assessed the extent to which USAID-funded WASH activities sustained outcomes three to 10 years after closure and which factors drove those outcomes. These findings and related WASH literature are meant to foster learning and improve evidence-based sustainable development assistance at USAID and across stakeholders in the WASH sector.

Topics in this report are generally constrained to former WASH activities studied through the evaluation series; this report is not a comprehensive sector-wide assessment.

Table 1. Activities Evaluated

Country	Activity Name	Timeframe	Activity Focus	Ex-Post Follow-Up
Madagascar	Rural Access to New Opportunities for Health and Prosperity (RANO-HP)	2009–2013	Improve WASH access in primarily rural areas	3 years
Indonesia	Environmental Services Program (ESP)	2004–2010	Improve and expand safe water access in urban areas with a focus on support to utilities	7 years
Ethiopia	Millennium Water Alliance Ethiopia Program (MWA-EP)	2004–2009	Improve WASH access in rural areas	8 years
India	Financial Institutions Reform and Expansion–Debt and Infrastructure (FIRE-D)	1994–2011	Capacitate local stakeholders to plan, manage, and finance urban water and sanitation development	7 years
Senegal	Programme d’Eau Potable et d’Assainissement du Millénaire (PEPAM)	2009–2014	Improve WASH access in rural and peri-urban areas	4 years
Mozambique	Strengthening Communities through Integrated Programming (SCIP)	2009–2015	Improve WASH access in rural and urban areas	4 years

Figure 1. Ex-Post WASH Outcomes in Predominantly Rural Evaluation Settings



*Ethiopia water point functionality data derive from secondary data in one zone (n=54). Mozambique n=46; Senegal n=169. Madagascar did not include assessment of the water intervention.

† Ethiopia n=15; Madagascar n=688; Mozambique n=990; Senegal n=601.

‡ Madagascar n=688; Mozambique n=990; Senegal n=602. Due to the small, purposive sampling approach in Ethiopia, sanitation data are not included here.

§ Madagascar n=688; Mozambique n=990; Senegal n=540. Due to the small, purposive sampling approach in Ethiopia, sanitation data are not included here.

FINANCING FOR SUSTAINABLE SERVICES

Adequate and sustainable WASH financing is essential to improve service delivery and meet universal access targets associated with national WASH strategies or the SDGs.⁴ Sustainability requires efficient financial management practices, strategic planning, and adequate cost recovery or subsidy from public resources to achieve financial stability. Under the right conditions, success in these domains enables service providers to attract private financing for capital investments, including from repayable sources, thereby reducing reliance on public funds or foreign aid.

USAID sought to improve financial viability and performance as a central component of the India FIRE-D (focused on states and municipalities) and Indonesia ESP (focused on utilities) activities. The ET found most approaches that codified improved practices into policies, manuals, or technologies persisted beyond the life of the USAID-funded activity. For example, the ET found evidence of sustainability at nearly all the FIRE-D-supported sites of municipal accounting reforms; cost recovery efforts such as water or energy audits and leak detection repair; tax reform; and “e-governance” initiatives that allowed customers to pay bills, report leaks, and register complaints. These initiatives had also been scaled across many other states and municipalities nationwide since the national government adopted them into its WASH funding schemes—a further demonstration of their value. Similarly, utilities for whom the Indonesia ESP activity provided non-revenue water (NRW) capture protocols and improved meter reading technology still used these resources and credited them with documented reductions to their NRW rate. Despite the sustainability of these efforts, the poor financial performance of evaluated utilities in Indonesia and ongoing financial struggles of some evaluated municipalities in India show that such efforts alone can be insufficient to overcome significant financial challenges.

To the extent India and Indonesia sought credit enhancements to facilitate access to market-based repayable financing sources, the ET concluded that the overall enabling environment and financing landscape limited their success. Of three evaluated municipalities where FIRE-D had supported bonds or credit ratings, two maintained a strong enough financial position to continue funding water and sanitation services through bonds. However, FIRE-D’s vision of commercially viable infrastructure did not materialize broadly in India, as abundant public funds for WASH became available, reducing the need for commercial finance.

The ex-post series examined the sustainability of some mechanisms to reduce financial barriers for the poor. In Madagascar, three years after USAID support ended, a sanitation microfinance loan product continued to be offered, whereas a water connection microfinance loan in Indonesia failed because the large partner bank applied excessively stringent standards to assess customers’ creditworthiness. To a limited extent—17 percent—members of village savings and loan groups in Madagascar continued to use these mechanisms to fund WASH improvements after RANO-HP ended.

GOVERNANCE OF WATER AND SANITATION SERVICES

Good governance is an essential foundation that sets the stage for sustainable service delivery in tandem with finance. Strong government commitment to WASH is critical for improvement. Though not designed to measure causal relationships or the role of government policy, the ex-post series revealed that in very general terms, the relative success and sustainability of each activity trended along with the level of government commitment to WASH at the time of USAID activity implementation. The India FIRE-D example illustrated the value of partnering with a committed government to drive sustainability.

Most activities examined through the ex-post series did not have explicit governance-focused interventions, but governance-related challenges emerged in all settings. In Ethiopia, the lack of policies and guidelines to clarify roles and responsibilities for water point monitoring, maintenance, and repair created challenges for managing rural water points.⁵ Ethiopian stakeholders disagreed on who should take responsibility for various rural water point repairs and expressed concerns about each entity’s

financial and technical ability to perform their roles. In India, despite the nation's decentralized governance framework, whereby local entities bore responsibility for planning and managing water and sanitation services, most municipalities lacked the personnel and resources, financial control, or decision-making autonomy to carry out their roles. These challenges illustrate the importance of not only having clear sector policies on the books, but also adequate human resource capacity to implement, and better local planning for sustainability in general.

Water service governance also includes tariff setting. While tariffs in utility-served urban areas tend to be clearer, they are less defined for rural water systems, which often follow the community-based management (CBM) model. In each of the rural water ex-post evaluations, communities defined their own water fees, with varying levels of guidance and support from implementers or the government. Across the developing world, tariffs for rural water services tend to be set below the point of cost recovery out of concern for the poor; however, evidence suggests even the poor may be willing (and do currently pay) higher rates than are currently set for high-quality services.⁶ Some countries and their utilities have explored alternative tariff structures that allow for cross-subsidies whereby commercial users and/or wealthier users pay higher rates than poorer users.^{7, 8} Despite some promising practices, clear and adequate tariff setting remains a challenge in many developing countries.

LONG-TERM MANAGEMENT OF WATER SERVICES

The ex-post evaluations implicated management challenges as key constraints to the sustainability of water infrastructure at ex-post. However, management of rural and urban water services have different models and trends. The ET examined the influence of various management factors on sustainability, including core management models, treatment of costs, and the handling of operations and maintenance (O&M) and repairs.

CBM entities, such as local water committees, dominate management of rural water services. The rural water activities in Ethiopia, Mozambique, and Senegal made efforts to improve the capacity of these entities, such as providing training in basic WP maintenance, setting and collecting water fees, and the frequency of meetings and the sharing of minutes though the ET found mixed results regarding the sustainability of these efforts. The literature also finds that the management and maintenance practices typically taught to CBM entities vary in their effectiveness.⁹ The training CBM entities received from the USAID implementers regarding water point maintenance was insufficient in many cases to perform regular maintenance, manage funds and address larger repairs, and turnover among trained committee members exacerbated the skills gap.

In rural settings, public-private partnerships (PPPs) have had mixed success in improving water service delivery. In Senegal, some PPPs failed due to insufficient tariff collection, while in Madagascar (where RANO-HP's water investments were studied by Villanova concurrently with the ex-post evaluation) some failed due to poor relationships between the private sector entities and local government and communities. This aligns with a 2017 World Bank study, which noted mixed success with private sector management in rural settings, but found promise in successful models that fostered long-term engagement among governments, development organizations, and the private sector, and typically included a clear delineation of the institutional framework to support private sector engagement.¹⁰

For urban utilities, capacity building has been a common approach to address service challenges.¹¹ In Indonesia, local water utilities managed to sustain the capacity improvements achieved under ESP and increase access to water connections, in part due to the enduring use of ESP-generated standard operating procedure manuals. In some cases, utility management performance continued to improve after the end of the activity.

PPPs are also a common approach to improving urban water service delivery. FIRE-D in India included a small PPP component. The ex-post stakeholder interviews in India emphasized the need to obtain

financial stability and address negative public perceptions of private sector involvement for PPPs to be viable options. A 2009 World Bank study of urban utilities found that PPPs can significantly improve operational efficiency when proven approaches are taken.¹²

Across the ex-post series, the difficulty water service providers had raising sufficient funds to cover their costs contributed to failures, especially in rural settings. Payment collection emerged as a significant challenge as the establishment of appropriate rates. Many users of rural water systems evaluated at ex-post did not pay any fees, and utilities in some evaluated cities in India and Indonesia had challenges with collection efficiency. Cost recovery remains a significant challenge to sustainability.

Asset management, water services monitoring, and water quality testing are important components of effective management. The three ex-post evaluations that examined rural water points found weak government asset management and a lack of routine water quality testing—both linked in part to unclear roles and responsibilities. Inadequate maintenance skills played a role in sustainability challenges, but lack of sufficient finances arose as the key barrier. Management of urban utilities fared better. FIRE-D–supported e-governance tools in some cases facilitated service management, payments, network monitoring, repair requests, and feedback mechanisms through a single portal. Stakeholders noted their contribution to improved efficiency and effectiveness of service management.

HYGIENE AND SANITATION BEHAVIOR CHANGE

The low prevalence of observed basic handwashing facilities at ex-post, and the very limited improvement within the life of the two activities for which endline data exist, emphasize that achieving sustained habitual handwashing behavior with soap is one of the biggest challenges in the WASH sector. Virtually none of the USAID–promoted tippy taps remained in any of the four evaluation sites. The Participatory Hygiene and Sanitation Transformation (PHAST) and behavior change interventions applied in Ethiopia, Mozambique, and Senegal have known limitations; they tend to focus on knowledge and do not address the multiplicity of complex drivers across technology, psychosocial, and contextual dimensions.¹³ USAID and other actors have generally replaced or supplemented such approaches with more holistic social and behavior change activities.

Regarding sanitation, while Senegal clearly stood out among ex-post evaluations with 92 percent latrine access, the ex-post activities did not meet the long-term community-led total sanitation (CLTS) goal of eliminating open defecation (OD), given low ex-post latrine access in Mozambique, significant slippage in Madagascar, and reports of community OD in 73 percent and 32 percent of surveyed households in Mozambique and Senegal, respectively. Basic sanitation access fared worse; most latrines appeared to either be unimproved or shared with other households. The ET identified latrine quality as a major problem, and stakeholders in three countries attributed low sustainability to poor quality of their original latrines, which had to be rebuilt constantly. These findings are very common regarding CLTS interventions.¹⁴

The primary reported barriers to latrine construction, maintenance, and reconstruction in all rural ex-post evaluations tended to be either financial or material in nature. USAID and others in the sector are increasingly calling for targeted financial support options, such as vouchers, for the poor to facilitate higher quality latrine construction.¹⁵ The Senegal ex-post evaluation provides some support for a CLTS–plus-subsidy approach. The professional training of local masons to construct quality latrines showed promise as well as sustainability in the three countries where implemented.

CONCLUSION

Findings across the ex-post series led to several key takeaways in the areas of finance, governance, management, and behavior change:

Key Takeaways

Finance

1. *Technical assistance to service providers for business planning, improved financial management and cost recovery, and credit enhancements were largely sustainable interventions, particularly when scaled through partnership. However, without an appropriate enabling environment, these strategies proved insufficient on their own to facilitate access to market-based finance, toward the goal of self-sufficiency.*
2. *Interventions leveraging technology, such as e-governance tools and improved metering and meter-reading, facilitated long-term improvements in financial management and cost recovery, especially through the reduction of NRW.*
3. *Training CBM entities to establish bank accounts and transparent accounting practices were insufficient to achieve sustainable finance for rural water system operations and maintenance.*
4. *While some limited microfinance continued to be available for WASH, it did not drive increased access to WASH services. This failure shows the need for appropriate alignment of lender incentives and processes with project goals and beneficiary needs.*

Governance

1. *Unclear roles and responsibilities across actors prevented effective service delivery and discouraged sustainability. Inadequate training and resources to carry out those roles also inhibited sustainability.*
2. *A committed government is an important driver of activity sustainability, particularly in terms of WASH governance reforms.*
3. *Unclear tariff policies covering rural areas led to widely varying tariffs across communities, nearly all of which did not attain adequate cost recovery.*

Management

1. *CBM entities did not successfully ensure long-term sustainability of water services in rural areas, regardless of capacity building and training interventions.*
2. *Cost recovery for water service delivery was a key challenge to sustainability. In both rural and urban areas, setting cost-reflective tariffs and collecting these fees was a challenge, with some rural systems unable to collect fees at all. Operational inefficiencies and high losses also contributed to this challenge in urban areas.*
3. *The use of PPPs for water service delivery showed mixed success, due in part to the lack of cost recovery, government inexperience with management and oversight of PPPs, and inadequate relationship building among stakeholders.*
4. *Efforts to strengthen supply chains for water system spare parts to enable maintenance by local technicians largely failed.*

Hygiene and Sanitation Behavior Change

1. *Handwashing social and behavior change programs focused primarily on knowledge, such as PHAST, did not work, nor did they address the multidimensional drivers of and structural barriers to behavior change.*
2. *CLTS did not eliminate open defecation in the long term, and communities relied upon poor quality latrines. Triggered households did not generally progress toward improved or basic sanitation, meaning households missed out on substantial health benefits over the long term.*
3. *Financial barriers served as the major impediment to sustained latrine quality, maintenance, and use. Targeted subsidies combined with CLTS in Senegal offered modest improvements to sustained outcomes.*

ENDNOTES

¹ According to the United Nations Joint Monitoring Programme, basic sanitation is use of non-shared, improved facilities (i.e. flush/pour flush to piped sewer system, septic tanks or pit latrines, ventilated improved pit latrines, composting toilets or pit latrines with slabs). Basic handwashing facility is the availability of either a fixed or mobile handwashing facility on the premises with soap and water. UNICEF and WHO. 2019. Progress on Household Drinking Water, Sanitation and Hygiene 2000–2017. Special Focus on Inequalities. New York: UNICEF and WHO. https://www.who.int/water_sanitation_health/publications/jmp-report-2019/en/.

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