Water, Sanitation, and Hygiene Research and Learning Agenda

SEPTEMBER 2022

ACKNOWLEDGEMENTS

World Vision

Water, Sanitation, and Hygiene Research and Learning Agenda

Version 1.0

Published September 2022

RDU18066 © 2022 World Vision, Inc.

World Vision is a Christian humanitarian organization dedicated to working with children, families, and their communities worldwide to reach their full potential by tackling the causes of poverty and injustice. We serve all people, regardless of religion, race, ethnicity, or gender.

TABLE OF CONTENTS

⊙ BACKGROUND

BACKGROUND

Overview

World Vision's FY21–25 Roadmap to Impact, our global water, sanitation, and hygiene (WASH) business plan, calls for leveraging over $1 billion of investment for delivery of transformative WASH services to over 15 million people in 41 countries, mostly in fragile contexts, in partnership with governments, communities, and other organizations. However, progress toward meeting Sustainable Development Goal (SDG) 6 (clean water and sanitation for all) has been too slow, and many evidence gaps need to be addressed to effectively deliver such services. Therefore, World Vision is investing at least $5 million in implementation research during this period to better understand how to deliver transformative, sustainable WASH services, strengthen community norms and governance structures, and increase the well-being of the most vulnerable people globally.

This evidence will start from rigorous monitoring and evaluation of existing World Vision programming, and research priorities will be developed from gaps identified in our own programs as well as the entire sector. World Vision will seek to fill these gaps with innovations drawn from a combination of the most up-to-date scientific theories and identified promising approaches already taking place. Ultimately, we will measure our success not only by SDG indicators, but by the impact we have on human flourishing in a broad sense.

World Vision 14-country evaluation by the University of North Carolina Water Institute

One of the key activities prompting and guiding the development of this research and learning agenda is World Vision's 14-country evaluation conducted in partnership with the University of North Carolina (UNC) Water Institute. The evaluation assessed WASH conditions in 36,860 households, 2,532 water points, 2,691 schools, and 2,022 healthcare facilities in 14 countries. Completed in 2017, the study aimed to: 1) establish a baseline for the state of WASH in 14 countries using SDG indicators and 2) assess the status of WASH services in World Vision program areas compared to non–World Vision program areas. Though this study did not analyze specific interventions, the findings provided a snapshot of WASH access around the world and helped determine to what degree World Vision programming was consistently effective in improving the quality and sustainability of WASH systems. Stratified cluster randomized sampling was done to collect data in 56 World Vision program areas and 56 comparison areas in each country using a harmonized approach to the degree possible. This assessment and subsequent deeper dives into the data provided the basis for identifying key areas where additional learning was needed.

Relevant results are described within each section of this document. At a high level, World Vision achieved substantial gains in water access in its program areas, though household water quality was a challenge in both World Vision and non–World Vision areas. There was little difference between sanitation levels in World Vision and non–World Vision areas, and while having a place for handwashing with soap was statistically significantly higher in World Vision areas, both World Vision and non–World Vision areas had below 10% of households with such a place. About half of healthcare facilities and schools had basic water service, with less than one in five having basic handwashing or sanitation services. Additional results are available in the final report.[1]

In response to these findings, World Vision implemented several structural changes and increased our emphasis on water quality, sanitation and hygiene, and behavior change. In addition, based on

---

1   The Water Institute at UNC, The World Vision 14-Country Evaluation Final Report, 2020. Project website: https://waterinstitute.unc.edu/projects/world-vision-14-country-evaluation.

emerging evidence in the WASH sector for the need to work on governance and finance, water security, and resilience, and to explicitly consider gender equality and social inclusion, World Vision established a deeper programmatic emphasis on these topics in our FY21–25 Roadmap to Impact, which led to a focus on learning how to maximize impact in these areas. Given our consistent engagement with faith leaders and broad view of promoting human flourishing, these topics also became priorities for learning. Finally, with the significant expansion of World Vision's renewed research efforts, a specific focus on equity in research and learning was established as well.

Implementation research approach

World Vision will apply an implementation research paradigm to this evidence-building process. Much research fails to provide actionable guidance to improve program design and delivery across contexts, and as a result learnings are slow to be incorporated into programs. Implementation science (a field of study derived from health services research) and implementation research (the application of implementation science methods to solve real world problems), provide a set of methods, tools, and approaches that can be used to bridge this gap.

Implementation research is a formal field of study that differs from other kinds of research in two main ways: First, it focuses on the entire process of evidence building and uptake of learnings, from beginning with inclusive and participatory identification of local research priorities to ensuring that the evidence is widely disseminated and used. Second, rather than just identifying whether a program works or not, it focuses on the how and why of whether programs work, with additional attention paid to how programs are delivered in different contexts.

Implementation research improves upon existing approaches to learning through 1) strengthening of monitoring systems, which is the foundation of all learning, 2) rigorously documenting context to allow others to understand how their context differs from where evidence was generated, 3) the use of behavioral and other theoretical frameworks to design or improve programs to maximize their potential effectiveness, and 4) using causal inference methods (estimating impact through data regularly collected for programmatic monitoring) and hybrid study designs (cross-over designs, stepped wedge trials, and others) that more naturally fit into World Vision programs than traditional randomized controlled trials.

Our implementation research process also draws on World Vision's "innovation stages" to determine the appropriate methods to use to enhance learning, selecting research methods based on how much is known about a topic as well as the need to adapt existing knowledge to a new context, as shown in the table below.

Table 1: Innovation Stages and Learning Approaches

	Ideate	**Design**	**Experiment**	**Adapt**
Evidence stage	We're still exploring the problem.	We want to test our new idea.	We want to understand how well, why, and how our idea works.	We want to know how to do this in many places with maximum impact.
Research method	Qualitative exploration or rapid quantitative survey	Pilot project with standard programmatic monitoring	Hybrid trial to compare the experimental approach to standard approaches	Implement in other areas with some combination of the first three stages
How it's implemented	Data collection before or during implementation	Additional indicators included in standard monitoring and evaluation plan	Timing of program implementation randomized with additional rounds of data collection	Some or all of the approaches from previous stages (when the intervention is more context-dependent, include more early stages in the process)

Research capabilities

World Vision will build upon the comparative advantage of our existing WASH programming, which spans 41 countries, as well as our multi-sectoral approach, long-term engagements of 10 to 15 years in each area program, and partnerships with research institutions as shown below. A large number of these programs are implemented using flexible, internal funding, such that the timing of programming and data collection can be controlled to maximize learning. World Vision will promote learning by internally funding evaluations of our existing programs and pilot projects and utilizing external funding where our existing programming may be leveraged by academic researchers to carry out basic research of interest to the sector.

World Vision will disseminate our findings through a variety of avenues, including peer-reviewed journals, conference presentations, and technical reports or policy briefs to allow wide uptake of helpful findings. But, realizing that there is an overwhelming number of studies published on these topics, World Vision will further incorporate these findings and others in the sector into publicly available evidence synthesis briefs, sharing consolidated learnings to date as well as highlighting where World Vision is seeking to move the sector forward.

Organization of this document

This research and learning agenda is laid out into a series of standalone sections relating to various research streams, including overarching theme, technical areas, critical settings, and special topics. Each section includes an overview of the specific challenges World Vision is focused on within each area, an overview of learnings to date, a summary of high-level research questions guiding our learning, and a summary of planned learning projects relevant for each section

We will publish a revised version of this document on an annual basis to track progress toward our learning goals and add new learning activities where relevant. These achievements will also be described in an annual report tracking progress against targets, which will summarize key learnings and progress toward research equity goals as described in that section below. Every two years, the learning questions will be revisited through an internal and external consultative process, with questions removed if fully answered, altered if emerging evidence demands, and new questions added based on emerging concerns.

Current learning partners

Continuing   *New*

Table 2: Organization of World Vision's WASH Research and Learning Agenda

Overarching theme	Research equity				
Technical areas	Governance and financing	Water supply and quality	Water security and resilience	Behavior change	Gender equality and social inclusion
Critical settings	WASH in healthcare facilities			WASH in schools	
Special topics	Human flourishing			WASH and faith integration	

◉ OVERARCHING THEME

Research equity

RESEARCH EQUITY

What is the issue?

Challenges in the WASH sector often disproportionately affect the most vulnerable people. However, diversity, equity, and inclusion (DEI) issues are more than just inequalities in outcomes—they are often the source of the challenges we are seeking to address in our WASH programs. Many challenges result not only from power imbalances and other structural factors affecting service delivery,[2] but from learning processes that do not fully address these challenges. Inequity is ubiquitous in learning, including representation on the editorial boards of journals and academic departments, in donor priorities and practices, and throughout the research process itself.[3] Unfortunately, research agendas are often driven by global priorities rather than established in local contexts, so they may not address these underlying realities. World Vision therefore seeks to support programs and research to put principles of decolonization into practice by addressing the inequities, power structures and dynamics, and colonial mindsets that influence research in development contexts.

What has World Vision done?

1. As an integral part of this research and learning agenda, World Vision aims to promote equity in research processes related to funding allocations, project leadership, and recognition of local partners as well as community participation in all phases of research. We do this because we value people and believe in ensuring opportunities for local researchers who unjustly have fewer than those in more privileged situations and because we believe in the intrinsic value of people living in World Vision program areas. But World Vision also believes that it will result in better research and programs both in the short- and long-term. The first step of this initiative was incorporating into our FY21–25 business plan a goal to

form partnerships with four local research institutions, which we accomplished by 2022.

2. World Vision has also conducted a study in partnership with Drexel University on decolonizing WASH research, which included interviewing senior and junior researchers based in or originating from low- and middle-income countries (LMICs) to understand the challenges they face, interviewing donors to understand their perceptions of these challenges and actions they've taken to address them, and presenting initial findings at the University of North Carolina Water and Health conference. So far, we've developed the following equity principles for our research and learning agenda:

   • **Equity in the selection and inclusion of researchers:** We will ensure that lead and junior researchers and all staff reflect the diversity of the contexts in which rural WASH is a challenge.

   • **Equity in defining research questions:** We will ensure that research questions, while reflective of global challenges, will be tailored to concerns of local stakeholders and community members, directly addressing root causes of injustice.

   • **Equity in selected metrics and outcomes:** We will ensure that our metrics capture disaggregated data on standard indicators as well as a broader understanding of the diversity of experiences of people from their own perspectives.

   • **Equity in attribution and dissemination of results:** We will ensure that the balance of authorship, attribution, and presentation opportunities are pro-equity and that there is data sharing among researchers, practitioners, and decision-makers.

2 K. Worsham et al., "Leadership for SDG 6.2: Is Diversity Missing?" *Environmental Health Insights*, 2021, https://doi.org/10.1177/11786302211031846.

3 M. S. Khan, "More Talk than Action: Gender and Ethnic Diversity in Leading Public Health Universities," *The Lancet* 393 (2019), pp. 594-600; S. Bhaumik and J. Jagnoor, "Diversity in the Editorial Boards of Global Health Journals," *BMJ Global Health* 4, no. 5 (2019); A. M. Büyüm, "Decolonising Global Health: If Not Now, When?" *BMJ Global Health* 5, no. 8 (2020); J. Levich, "The Gates Foundation, Ebola, and Global Health Imperialism," *American Journal of Economics and Sociology* 74, no. 4 (2015), pp. 704-742; Maitreyi Bordia Das, "The Rising Tide: A New Look at Water and Gender," World Bank (2017), http://hdl.handle.net/10986/27949.

What are World Vision's key learning questions?

1. What are the key barriers to conducting equitable research identified in prior studies that should be addressed due to being most common, important, and possible to change?

2. What financing and partnership modalities provide effective support for local research institutions to build increased capacity?

3. How can we regularly evaluate the impact of our research equity initiative both in terms of process and any measurable outcomes?

Where is World Vision going from here?

1. We're beginning by **publishing the results of the decolonizing WASH research study,** and we're going beyond just dissemination with a focus on **sparking collective action**. Through consultations with stakeholders across the sector, we are seeking to join with others to catalyze lasting change in the equity of research in the sector.

2. Beyond that, we aim to **divest ownership by transitioning leadership** on this topic area and our research in general to LMIC-based leadership, playing a supporting role by funding continued work and advocacy, where helpful.

3. We also aim to expand the work of investigating power imbalances to include **assessing equity in our program designs and outcomes**, as well as in how our organization and partnerships are structured.

For example, starting with our first annual report on progress against this research and learning agenda, we will track first and senior authorship statistics for publications emerging from our funding by gender and country of origin (LMIC versus high income); we'll also track the allocation of research funds to high-income country institutions versus LMIC institutions.

❯ WASH TECHNICAL AREAS

Water supply and quality

Sanitation and hygiene

Governance and finance

Water security and resilience

Behavior change

Gender equality and social inclusion

WATER SUPPLY AND QUALITY

What is the issue?

In total, 771 million people still lack even basic drinking water services, including 367 million with unimproved sources and 122 million using direct surface water. While 5.8 billion people have access to safely managed drinking water sources, there is still considerable regional variability in water being accessible, available when needed, and free of contamination. Safely managed drinking water requires that water be accessible within the household or compound, consistently available to meet water demands, and free from contamination.[4] Therefore, designing for safely managed drinking water requires a holistic approach, including the evaluation of source water variability and intermittence,[5] infrastructure material selection and source water quality,[6] post-collection recontamination,[7] system operation, and system maintenance.

In response to the World Vision 14-country evaluation conducted by the University of North Carolina, we are prioritizing improving water quality at the systems level, working with partners to provide water free from bacteriological and chemical contamination. Our approach includes shifting from boreholes with hand pumps to piped-water systems that deliver water as close to the household as possible to not only improve water quality, but also relieve women and girls of the disproportionate time and burden of water collection. As the water systems we implement grow in number and complexity, we need a strengthened approach to promoting quality designs based on sound engineering principles that consider the full life cycle of infrastructure and post-construction governance.

What has World Vision done?

1. The **World Vision 14-country evaluation**[8] identified gaps in safely managed water service delivery, including 39% of households lacking basic water service and 69% having levels of E. coli in drinking water exceeding WHO standards. This led to World Vision's emphasis on promoting water quality monitoring and piped-water household connections.

2. We assessed **continuous quality improvement**[9] (CQI) methods to improve microbial quality of household drinking water. A CQI package of safe water storage containers, community training, and maintenance tool replacement in Ghana resulted in increasing households with water in conformity to microbial risk standards from 17% to 40% and decreasing those in the high-risk category from 42% to 26.5%. We are continuing to evaluate the effectiveness of CQI methods in Mali, Niger, and Ghana.

3. During a **previous study**[10] in three African nations, the University of North Carolina and World Vision found water system equipment parts containing lead in a substantial proportion of rural pumps

---

[4] World Health Organization, "Progress on Household Drinking Water, Sanitation and Hygiene 2000-2020: Five Years into the SDGs," 2021.

[5] E. Kumpel and K. L. Nelson, "Comparing Microbial Water Quality in an Intermittent and Continuous Piped Water Supply," *Water Research* 47, no. 14 (2013), http://dx.doi.org/10.1016/j.watres.2013.05.058.

[6] M. B. Fisher et al., "Occurrence of Lead and Other Toxic Metals Derived from Drinking-Water Systems in Three West African Countries," *Environmental Health Perspectives* 129, no. 4 (2021), PMID: 33877857, 10.1289/EHP7804.

[7] E. Gross, I. Guenther, and Y. Schipper, "Improved Water Supply and Water Handling Technologies: Revealed Complements but Perceived Substitutes for Safe Water Quality," *Development Engineering* 7 (2022), https://doi.org/10.1016/j.deveng.2021.100089.

[8] The Water Institute at UNC, The World Vision 14-Country Evaluation Final Report, 2020.

[9] M. B. Fisher et al., "WaSH CQI: Applying Continuous Quality Improvement Methods to Water Service Delivery in Four Districts of Rural Northern Ghana," *PLoS ONE* 15, no. 7 (2020), doi:10.1371/journal.pone.0233679.

[10] M. B. Fisher et al., "Occurrence of Lead and Other Toxic Metals Derived from Drinking-Water Systems in Three West African Countries," *Environmental Health Perspectives*, 129, no. 4 (2021), PMID: 33877857, 10.1289/EHP7804.

and taps of all ages, installed by various agencies and implementers in the study. Approximately 1 in 10 water samples from these systems had levels of lead exceeding national and international guidelines. This study led to new World Vision WASH procurement guidelines and procedures.

4. We tested the **Nurturing Care Group** approach, in which 10 to 12 women chosen by groups of 10 to 15 neighboring households each meet with health promoters and then relay key messages back to their neighbors. We observed a decrease in detectible E. coli concentrations in drinking water from 32% to 8% and increases in many behaviors leading to improved water quality (such as using storage containers with a lid, using a dipper to remove water from the container, and keeping drinking water beyond the reach of animals).

5. As our focus began to shift from boreholes to mechanized piped-water systems, we developed a **water quality protocol** outlining procedures for adequate water quality testing and mitigation strategies. The global data collected by our teams is used to determine whether provided water is safe for human consumption or requires additional treatment. As part of this process, our teams routinely evaluate the effectiveness of filtration, chlorination, and other treatment systems as well as household treatment solutions. For example, we are testing self-backwashing filters in Kenya to understand their effectiveness at replacing an existing coagulation system to reduce reliance on consumable products.

What are World Vision's key learning questions?

1. What resources will result in improved reliability and functionality of safely managed drinking water systems?

2. What water system quality indicators (e.g., days without service, number of maintenance tickets and time to resolve) can best assess the effectiveness of our water supply programming?

3. Does the use of hydraulic models (such as EPANET) during the design stage improve performance of water systems and minimize maintenance needs?

4. Can geophysical, hydrological, or climate forecasting evaluations be performed or improved to increase long-term groundwater yield sustainability and to better understand potential water quality impacts?

5. How can those installing water systems utilize available data, information on geophysical studies, and previous drilling and installation records to critically inform hydrogeological investigations?

6. How does water availability vary between different types of systems (hand pump versus piped-household connection) and over different seasons (dry versus rainy)?

7. In addition to procurement standards, what other planning and design evaluations should be performed to improve the water quality of our water systems?

8. What are sustainable (centralized or decentralized) solutions to treating water at the source, tap, or household to meet World Health Organization water quality guidelines?

9. How can improved water safety planning and catchment investigations be incorporated into World Vision's WASH Core Project Model to better protect water sources from contamination and depletion?

10. How can we improve government partnerships and capacity building efforts to expand water quality monitoring regulations to promote the long-term delivery of water that is safe for human consumption?

Where is World Vision going from here?

1. We are reviewing current engineering practices to determine **how to effectively define and promote a *culture of quality*** among our global technical staff. We are surveying multiple staff members from 17 countries to gauge current planning, design, implementation, maintenance, procurement, and reporting practices. Results will be synthesized, and a final report of recommended practices will be developed and incorporated into future resources. Initial reports and recommendations are expected by the end of 2022.

2. To explore the **equity of different kinds of rural water supplies**, a study with the University of Toronto and the University of Zambia will evaluate the variability in water availability between piped-on-premises water systems and shared water sources (improved sources) over time and season (dry versus rainy), with results expected in early 2023.

3. Continuing our partnership with the UNC Water Institute and as a follow-up to the trace metals evaluation, a new study seeks to strengthen the evidence on sources of trace metal contamination in water systems and generate new evidence on ways to prevent contamination in new systems, as well as to remediate high-priority existing systems where needed by the end of 2024.

4. As part of our global WASH business plan, we added a new indicator requiring the collection of one annual sample from all World Vision–supported water systems, including an analysis for E. Coli. **Water quality data collected globally will be evaluated to verify safe levels of water supply service and identify the effectiveness of existing strategies** such as in-line chlorinators. Water quality data will be reviewed on an ongoing basis and reviewed globally on an annual basis to identify any areas where additional interventions may be necessary.

5. As part of a global InnoCentive challenge, we are designing and implementing a **research study in Kenya to monitor residual chlorine in piped-water systems** to evaluate the effectiveness of disinfection systems. Results are expected by the end of 2022.

SANITATION AND HYGIENE

What is the issue?

Globally, 1.7 billion people lack at least basic sanitation services, including 616 million with unimproved facilities and 494 million still practicing open defecation.[11] Increasing household sanitation coverage has been challenging, and existing approaches either have limited impacts (e.g., community-led total sanitation)[12] or are unproven at scale (e.g., sanitation marketing).[13] Basic hygiene service is particularly rare in rural and poorer contexts, and low-quality sanitation and hygiene products that are sometimes considered a basic service are also inadequate to drive sustained behavior change.[14] While World Vision areas had higher rates of basic household hygiene service than non–World Vision areas in our 14-country evaluation, both were less than 10%, so significant gaps remain. Given World Vision's focus on district-wide universal service coverage, the organization needs a comprehensive approach that appropriately sequences different sanitation and hygiene interventions (on both the demand and supply sides) and considers financing/subsidies and innovative products. In addition, there is still limited evidence about how to drive sustainable universal service coverage and, in particular, how to hold governments accountable to equitable financing and programmatic support so that no one is left behind.

> **NOTE:** Universal service coverage for sanitation and hygiene also must consider healthcare facilities and schools. These topics are covered in the WASH in healthcare facilities and WASH in schools sections, respectively.

What has World Vision done?

1. The **Nurturing Care Group** approach promotes establishing a place for handwashing with soap and water and construction of an improved toilet through biweekly meetings, opportunities for feedback and troubleshooting, and comprehensive community coverage. A controlled before-and-after evaluation in Ghana showed a net increase for basic handwashing service of 51 percentage points, with a smaller net increase of basic sanitation service by 7 percentage points.

2. Ethiopia's **WASH business centers** are retail and wholesale outlets promoting sanitation and hygiene products since 2018. They have shown impact through bringing more affordable products closer to households, including a total of 12,000 latrine slabs sold. A survey of those living within 3.1 miles of WASH business centers found that half of those who had heard of the centers had made a purchase from them, and those who had heard of them were more than twice as likely to have an improved toilet as those who had not.

3. Together with InnoCentive, a crowd-sourcing design challenge organization, World Vision sponsored a **low-cost sanitation design challenge**. Three designs were awarded: Most Scalable Design for the HappyLoo, designed using locally sourced materials; Best Use of Eco-Friendly Materials for an innovative design for separating urine from feces; and Most Versatile Design for a set of designs that could be used across multiple contexts.

11 World Health Organization, "Progress on Household Drinking Water, Sanitation and Hygiene 2000-2020: Five Years into the SDGs," 2021.

12 D. Whittington, M. Radin, and M. Jeuland, "Evidence-Based Policy Analysis? The Strange Case of the Randomized Controlled Trials of Community-Led Total Sanitation," Oxford Review of Economic Policy 36 no. 1 (2020), pp. 191-221, doi:10.1093/oxrep/grz029.

13 W. D. Evans et al., "Social Marketing of Water and Sanitation Products: A Systematic Review of Peer-Reviewed Literature," Social Science and Medicine 110 (2020), pp. 18-25, doi:10.1016/j.socscimed.2014.03.011.

14 W. T. Gibson et al., "Hand Hygiene Innovation for Low Income Households in India," Journal of Water, Sanitation and Hygiene for Development 11, no. 1 (2021), pp. 165-172.

4. We have worked to adapt measures of quality of life to the contexts of our programs, conducting assessments using the sanitation-related quality of life (SanQoL) tool in Zambia, Malawi, and Ethiopia. These studies have shown that drivers of sanitation uptake are much more related to cost, avoiding disgust, and convenience than desiring to prevent the spread of infectious diseases.

What are World Vision's key learning questions?

1. How can we provide affordable, desirable, low-cost sanitation and hygiene solutions that drive high sustained rates of use?

2. How should we maximize the (pro-poor) impact of investments into sanitation and hygiene markets?

3. How can we leverage different sources of financing, including different payment modalities, subsidies, and/or microfinance to households, communities, and/or institutions to support rapid and equitable increases in sanitation and hygiene coverage?

4. How can we achieve sustainable universal sanitation service coverage in a sub-district through strategically targeting, integrating, and phasing demand generation (e.g., community-led total sanitation) and supply side activities (e.g., market-based solutions) combined with governance and financing?

5. How do sanitation and hygiene contribute to well-being beyond direct health impacts?

Where is World Vision going from here?

1. Building on the previous evaluation, we are **deepening our learnings related to WASH business centers** and expanding into Malawi and Kenya and into additional areas in Ethiopia. We are assessing how to strengthen their business model and plan to study their cost-effectiveness for delivering rural sanitation and hygiene.

2. To **understand how sanitation and hygiene affect quality of life**, we are building upon our previous work to assess the impact of our WASH promotion programs using the SanQoL (and related) tools as a part of prospective trials. Results will be available in mid-2023.

3. In partnership with the London School of Hygiene and Tropical Medicine and the Malawi University of Business and Applied Sciences, we are leveraging opportunities for intra-program variability presented by Nurturing Care Groups to test the **relative effectiveness of more intense versus more frequent promotional messages** and the sustainability of **Open Defecation Free status in our program areas** in Malawi, with results expected in 2024.

4. We are partnering with Emory University to use implementation science to **assess the effects of field-level activities and district-wide planning processes for reaching universal WASH service coverage** by 2026 in all areas where World Vision works in these countries and to generate learnings that will inform other national offices and the broader sector, with sharable results expected mid-2023.

GOVERNANCE AND FINANCE

What is the issue?

Strengthening how WASH services are governed and financed represents a fundamental first step toward sustainable service delivery and the achievement of SDG 6. From rethinking community-based management approaches to improving local government oversight to unlocking new sources of capital, effective governance and sufficient financing provide the foundation for ensuring that water and sanitation facilities are maintained, repaired, and continue to serve the most vulnerable. USAID's evaluation of six major WASH projects around the globe found, for example, that "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."[15]

Against this backdrop, World Vision seeks to build the capacity of government, community leadership, and the private sector in the countries and areas where we work. Partnering with government strategically supports efforts to bring WASH services to all communities and equips them with the tools and systems for ongoing operation and maintenance of those services. Further, we endeavor to strategically leverage multiple funding streams in support of equitable and affordable WASH services, including co-investment with local and national government, user fees that reflect "ability to pay," and private sector risk mitigation tools, such as insurance.

What has World Vision done?

1. World Vision's implementation model is founded on **local government partnerships for universal service coverage** to extend district-wide water and sanitation services to all. By forging partnership agreements, World Vision embraces a co-financing model where district governments share capital investment costs. In 2021 alone, for example, World Vision leveraged over $5 million in district government co-investment for the construction of new water systems in vulnerable communities in Rwanda.

2. World Vision has leveraged **microfinance for expanded access to water and sanitation services**. In Kenya, for example, World Vision's partner VisionFund is providing an innovative lending product to households in the Bartabwa and Kalawa area programs to finance on-site water supply. After a full year of implementation, 264 WASH loans have been dispersed for household water tanks totaling approximately $57,000.

3. A qualitative and participatory field research study in 18 rural communities throughout Kenya, Ghana, and Zambia was conducted to identify processes that foster the **sustainability of community-managed water systems**.[16] This study resulted in developing processes for creating social capital, generating collective action, promoting resource allocation, and enabling water system maintenance and rehabilitation.

4. World Vision is facilitating alternative financing approaches to support the **operation and maintenance of rural water supply systems**. Under the USAID-funded SPIR program in Ethiopia, for example, World Vision helped the local government set up **pooled operation and maintenance funds for Woreda WASH committees**.

---

[15] United States Agency for International Development, "What Does It Take to Sustain Water, Sanitation, and Hygiene Outcomes? Lessons from Six Ex-Post Evaluations," 2021, https://www.globalwaters.org/sites/default/files/ckm-synthesis-report.pdf.

[16] Four articles resulting from this study are available. Topics include hardware management and rehabilitation, resource mobilization, social capital and sense of ownership, and seasonality, water use, and community water management.

5. In Kenya and Zambia, World Vision is promoting **risk mitigation through private insurance**, supporting the establishment of insurance arrangements with private insurance providers to help cover the costs of major damages to water supply infrastructure.

6. World Vision frequently engages with national government ministries to improve the policy environment for water and sanitation services. For example, in Rwanda World Vision helps lead a technical working group that created government guidelines for school hygiene promotion.

What are World Vision's key learning questions?

1. How can community-based water management committees best be supported to create sustainable services, from changing the scope of committee mandates to more inclusive "handover" processes that incorporate the service authority and designated service provider?

2. How can life cycle costing be fully integrated into universal service coverage planning at both the system and district levels?

3. What are viable long-term financing strategies for rural water supply infrastructure, including the balance of tariffs, taxes, and transfers? Similarly, what role might district revolving, trust, and/or sustainability funds play in covering tariff and tax financing gaps for operations, maintenance, and depreciation?

4. What systems and technologies can improve cost efficiencies in the management of rural water supply systems, producing a micro-utility approach?

Where is World Vision going from here?

1. In Indonesia, World Vision is partnering with six district governments to **develop district-wide water and sanitation services plans**, including the development of new approaches to finance district-wide service expansion as well as to holistically track water and sanitation budget allocations and expenditures, with outputs expected in mid-2023.

2. In support of our "service-centered approach," World Vision is seeking to test dedicated district-level financing mechanisms that facilitate results-based funding for water supply services. The envisioned district-level drinking water sustainability funds will address the challenges of persistent capital and operating expense financing gaps, the need for professionalized service provision, and the challenge of systems strengthening in priority districts. As dedicated funds at the service authority level, the district-level drinking water sustainability funds will help to support universal service coverage in the truest sense of the phrase.

WATER SECURITY AND RESILIENCE

What is the issue?

The continuous availability of water in sufficient quantity and adequate quality is fundamental to the expansion of safe drinking water services under SDG 6.[17] Water underpins much of our global economy, forming a key component in the sectors of agriculture, forestry, fishery, energy, and more.[18] A growing body of research has also linked water security with mental health and social well-being outcomes, although we do not yet fully understand how water insecurity impacts overall well-being and few tools exist to assess this relationship.[19] Climate change, land-use changes, and population growth are among key factors that threaten a water-secure future and make water availability less predictable. At the same time, water-related disasters are becoming more frequent in many places, accounting for 90% of global natural disasters, with vulnerable populations often being the worst affected.[20]

Water security is a broad concept encompassing many dimensions, but there is a lack of evidence-based guidance for implementers on best approaches to engaging appropriate stakeholders on integrated water resources management (IWRM) as well as priority single-sector actions that can support improved water security. General guidance exists on IWRM and water safety planning, but actionable entry points within each local, national, and regional context are still needed.

What has World Vision done?

1. World Vision is supporting improved **groundwater management in Somalia** by deploying a network of groundwater sensors and weather stations that provide real-time monitoring of groundwater levels, water temperature, electrical conductivity, salinity, and total dissolved solids. Nine sensors were initially installed as part of a pilot project and provided insight into water level trends as well as length of recovery periods after pumping sessions. This network of sensors is currently being expanded with 18 additional stations across Somaliland, Puntland, Jubaland, and South West. Key informant interviews will be conducted to understand how the increased availability of hydrometeorological data impacts localized water resources management and decision-making.

2. World Vision is working to enhance water security and effective flood and drought management in two counties in Upper Nile State in South Sudan. As part of this project, World Vision will pilot a hydrometeorological database in partnership with the Ministry of Water and Ministry of Infrastructure, construct one 30,000 cubic-meter reservoirs for flood protection and water storage, and work with local farmers and management associations to build capacity in IWRM. The team will be piloting use of the brief water insecurity experiences (BWISE) indicators to capture changes in household experiences of water security.

What are World Vision's key learning questions?

1. What definition and assessment method of water security and resilience makes the most sense in the low- and middle-income country (LMIC) context and for the work of WASH implementers? What do people most value about water security?

2. What are the most effective methods and tools to improve monitoring of raw water resources, including surface and groundwater quality in LMIC

---

[17] U.N. General Assembly, "Transforming Our World: The 2030 Agenda for Sustainable Development," 2015.

[18] R. Connor, "The United Nations World Water Development Report 2015: Water for a Sustainable World" Vol. 1, UNESCO publishing, 2015.

[19] J. Kangmennaang and S. J. Elliott, "Linking Water (In) Security and Wellbeing in Low- and Middle-Income Countries," *Water Security* 13, 2021.

[20] UNESCO, "The United Nations World Water Development Report 4," World Water Assessment Programme, 2012.

contexts? Are there well-established tools in other sectors (e.g., food security) that could be adapted for use in WASH? What data sharing sensitivities, if any, should implementing organizations be aware of?

3. What are common resources leveraged and challenges faced by water resources management decision-makers?

4. What are existing gaps in the maintenance and upkeep of monitoring networks and associated information systems that are limiting the use of data for water resources management decisions?

Where is World Vision going from here?

1. World Vision funded a critical review of peer-reviewed articles and unpublished literature on evidence surrounding water security assessment methods and adaptations led by the Water Institute at UNC. This review will help identify **appropriate definitions of water security for implementing organizations**, as well as provide an evidence base for programmatic and learning recommendations. Results are expected by the end of 2022.

2. To support a **localized approach to water resources management**, World Vision is concurrently developing an internal reference guide on water security and resilience for use by our global Partnership. This reference guide will draw on the evidence summarized in the critical review conducted by the Water Institute and will serve as a resource for all World Vision offices on water resources management.

3. Through several projects, including in Somalia and South Sudan, we are leveraging opportunities to observe **how data availability impacts water resources planning and decision-making**.

4. We are also focused on learning from the World Health Organization water safety planning approach, specifically in terms of how water safety planning can best be adapted to support small-scale water supply systems in rural areas where World Vision operates.

BEHAVIOR CHANGE

What is the issue?

Changing the behavior of individuals, groups, and organizations is critical to maximizing human flourishing. Globally, the top 20 causes of disease all have a significant behavioral component.[21] Behavior change is important for all sectors and significantly contributes to poverty in both high- and low-income settings.[22] In addition to changing the behavior of individuals, transforming harmful social norms and reducing stigma in communities around topics like gender and disability are also key to realizing WASH and other development outcomes. Building infrastructure, providing training, and thoughtfully designing environments can encourage healthy behaviors, but many behaviors are difficult to change in a sustainable, cross-context way. World Vision has been implementing behavior change for many years, but saw lower than anticipated results in sanitation and hygiene as well as water quality from our 14-country WASH evaluation.[23] World Vision program areas had higher rates of some behaviors compared to non–World Vision areas. However, low overall rates of household water quality, basic sanitation service, and basic hygiene service (handwashing with soap) led World Vision to place a greater emphasis on developing effective behavior-change approaches to leverage existing evidence and allow local contextualization (even within subnational regions).

NOTE: *Behavior change cuts across all technical approaches and critical contexts within WASH, and there is therefore overlap of behavior-change topics across the research and learning agenda more broadly.*

What has World Vision done?

1. The **World Vision 14-country WASH evaluation** conducted by the Water Institute at UNC showed that 2 out of 3 households lacked basic sanitation, 5 out of 6 lacked basic handwashing facilities, and half did not have satisfactory household drinking water quality. Several detailed studies have resulted from this assessment, and World Vision has chosen to focus on eight priority behaviors as a result: 1) handwashing with soap, 2) safe construction and hygienic use of latrines, 3) proper child feces disposal, 4) separation of children from soil and animal feces, 5) proper household handling, storage, and treatment of drinking water, 6) safe use and disposal of appropriate menstrual materials, 7) household payment for water use and system maintenance, and 8) hygienic food preparation.[24]

2. The **Nurturing Care Group** project uses a model where 10 to 12 women chosen by groups of 10 to 15 neighboring households each meet with health promoters and then relay the messages back to their neighbors, resulting in high-frequency messaging that reaches entire communities, leading to opportunities for collective action and social norms change. This model resulted in substantially lower levels of E. coli in drinking water and associated water storage and treatment behaviors, increased handwashing with soap, reduced stigma related to menstrual health and hygiene, and substantially increased animal feces management in communities. Nurturing Care Groups or similar approaches are currently being used across several

21 V. Curtis and R. Aunger, "Motivational Mismatch: Evolved Motives as the Source of-and Solution to-Global Public Health Problems." *Applied Evolutionary Psychology*, 2012, pp. 259-75, https://oxford.universitypressscholarship.com/view/10.1093/acprof:oso/9780199586073.001.0001/acprof-9780199586073-chapter-0016.

22 A. Daminger et al., "Poverty Interrupted: Applying Behavioral Science to the Context of Chronic Scarcity," 2015, http://www.ideas42.org/wp-content/uploads/2015/05/I42_PovertyWhitePaper_Digital_FINAL-1.pdf.

23 The Water Institute at UNC, The World Vision 14-Country Evaluation Final Report, 2020.

24 M. Moffa et al., "Measuring Household Hygiene Access and Handwashing Behaviors: Findings from 14 Low- and Middle-Income Countries," *International Journal of Hygiene and Environmental Health* 237 (2021), https://doi.org/10.1016/j.ijheh.2021.113810.

of World Vision's country offices (including Ghana, Ethiopia, Kenya, Malawi, and Sudan).

3. **World Vision's Behavior Change Guide** was created to deliver practical implementation guidance for behavior-change programs, including evidence synthesis guides for each of our eight key WASH behaviors and tools to allow practitioners to rapidly adapt this evidence to their local context.

What are World Vision's key learning questions?

1. What is the most cost-effective "dose" and "frequency" of behavior-change interventions/ messages along with other promotion approaches such as mass media or market-based approaches?

2. What are the most effective approaches for promoting behavior change related to handwashing with soap and safe construction and hygienic use of latrines?

3. Has our strategy of providing evidence synthesis guides combined with easy-to-use tools produced behavior-change programs that drive sustainable, sizable changes in behavior?

4. What key behavior-change strategies are needed to ensure delivery of WASH in institutions, such as healthcare facilities and schools? How should interventions targeting staff members be different than those targeting the domestic setting?

5. How can individual- and group-delivered messages/ approaches be combined to change behaviors dictated by social norms or requiring collective action?

6. How can we effectively monitor and assess the effectiveness of behavior-change interventions within program implementation?

Where is World Vision going from here?

1. To **increase the potential impact of the World Vision Behavior Change Guide**, we are conducting a process and outcome evaluation of different target behaviors across at least seven countries (Indonesia, Sudan, El Salvador, Guatemala, Honduras, Kenya, and Zimbabwe) to inform our future guidance and behavior-change processes, with results anticipated in late 2022.

2. To **maximize the impact of Nurturing Care Groups**, we are investigating how the timing/sequencing/ intensity of messages affects outcomes and considering the role of supply-side interventions to particularly improve sanitation uptake across several countries, including Malawi and Ethiopia, with results anticipated in late 2023.

3. We are **assessing the key behavioral and systems challenges related to delivering WASH in institutions** in Zambia, India, and Niger (described in more detail in other sections of the research and learning agenda) through partnerships with the Center for Infectious Disease Research in Zambia (CIDRZ), Stanford University, and UNC, with results anticipated throughout 2022 and 2023.

4. We are working with the Aquaya Institute to understand the effectiveness of interventions to **improve the governance and financing of rural water systems** through a project in Ghana, with results anticipated in late 2023.

GENDER EQUALITY AND SOCIAL INCLUSION

What is the issue?

Women and girls, people with disabilities, and people from other marginalized groups are among those who have less access to safe WASH and also have disproportionately worse outcomes due to poor WASH access.[25] The lack of adequate WASH services that are gender-sensitive increases the risk of harassment, violence, injury, and illness, among other issues.[26,27,28]

Further, the lack of accessible water, toilets, and hygiene facilities is a major challenge for older adults and people with disabilities, who may have difficulties traveling long distances or using toilets without assistive devices.[29] Indigenous groups are also often underserved and more susceptible to harms related to interruptions in service delivery.[30]

Table 3: The World Vision GESI Continuum

World Vision GESI Continuum		
Not GESI responsive	**GESI absent**	There is no consideration of gender norms and unequal power relations, or of potential patterns of gender equality or social inclusion, in the design or delivery of program activities. There is no discussion of the gendered or inclusive dimensions of the environment where programs may be operating or how this may affect interventions.
	GESI exploitative	Reinforces, uses, and/or takes advantage of gender inequalities, social norms, and stereotypes.
	GESI insensitive	Gender norms and social inequalities are acknowledged as key aspects of context but not brought into any aspects of program planning, delivery, or feedback.
GESI responsive	**GESI accommodating/ sensitive**	Acknowledges but works around gender, disability, or other social differences and inequalities to achieve project objectives. Interventions address practical needs of vulnerable groups but not the underlying root causes of inequality or exclusion. There is a "missed opportunity" to shift norms that reinforce inequality and exclusion.
	GESI transformative	Actively seeks to engage with and transform gender and social inequalities in the long term to achieve GESI sustainable change. Challenges or shifts gender norms, unequal power relations, stereotypes, and discriminatory practices. Promotes equitable systems.

GOAL » Better development outcomes for the most vulnerable.

25 WHO and UNICEF, "Progress on Household Drinking Water, Sanitation, and Hygiene 2000–2017: Special Focus on Inequalities," 2019.

26 E. Fleifel, J. Martin, and A. Khalid, "Gender Specific Vulnerabilities to Water Insecurity," 2019, https://ic-sd.org/wp-content/uploads/2019/11/eliana-fleifel.pdf.

27 G. L. Kayser et al., "Water, Sanitation and Hygiene: Measuring Gender Equality and Empowerment," *Bulletin of the World Health Organization* 97, no. 6 (2019), p. 438.

28 S. Jansz and J. Wilbur, Women and WASH (briefing note), 2013, https://washmatters.wateraid.org/publications/women-and-wash-water-sanitation-and-hygiene-for-womens-rights-and-gender-equality-2013.

29 FANSA and WSSCC, Leave No One Behind, 2015, https://sanitationlearninghub.org/resource/leave-no-one-behind-voices-of-women-adolescent-girls-elderly-and-disabled-people-and-sanitation-workers/.

30 Alejandro Jiménez, Moa Cortobius, and Marianne Kjellén, "Water, Sanitation and Hygiene and Indigenous Peoples: A Review of the Literature," *Water International* 39, no. 3 (2014), pp. 277-293, https://doi.org/10.1080/02508060.2014.903453.

World Vision's gender equality and social inclusion (GESI) approach features five domains of change: 1) access, 2) participation, 3) decision-making, 4) systems, and 5) well-being. The GESI continuum describes the degree of GESI responsiveness in any given project or program. GESI-transformative programs are not just structured to address the immediate effects of inequality, but also aim to identify and tackle the root causes of inequality to create lasting transformation. GESI-transformative approaches to WASH are required to achieve universal access, which is a goal of SDG 6 as well as World Vision's WASH business plan.

What has World Vision done?

1. We have developed a **GESI and WASH reference guide** to compile evidence and support the programmatic integration of GESI-transformative approaches into all World Vision WASH programming. This guide includes program design, monitoring, and evaluation tools tailored to WASH, building on the **World Vision GESI Design, Monitoring, and Evaluation Toolkit**.

2. Our standard WASH programs address GESI-related concerns and have received recognition from the **Zero Project** for their work on disability inclusion. For example:

   » **Comprehensive GIS mapping of accessible WASH facilities** was conducted in Zambia and is being rolled out more broadly as a part of universal service coverage efforts.

   » We are **building capacity of disabled persons' organizations** and supplying funding for implementation, as in the Accessible WASH project in Kirkuk, Iraq.

3. A Stanford University study of the **equity effects of piped-water systems**[31] constructed by World Vision in rural villages in southern Zambia showed a strong impact on women and girls, who disproportionately bear the burden of collecting water. Households that had access to a shared or individual yard tap showed an 80% decrease in average time spent collecting water. Overall, the study concluded that piped-water systems could "generate substantial increases in time savings, water consumption, and productive uses of water, disproportionately benefitting the well-being of women and girls."

4. World Vision's program **WASH UP! Girl Talk**, developed in partnership with Sesame Workshop, educates both boys and girls about puberty and periods, techniques for menstrual hygiene management, and girls' empowerment. It builds on the foundational learnings of WASH UP!, a play-based, child-focused, hygiene behavior-change program. An **independent assessment**[32] of the program's impact in Zimbabwe from 2017 to 2020 by the global nonprofit Education Development Center demonstrated its initial success, finding it had a significant impact on all students' knowledge about puberty and periods, dispelled common myths about menstruation, and improved girls' practical knowledge about their cycles.

What are World Vision's key learning questions?

1. How do we effectively measure increases in empowerment for GESI-representative groups caused by improvements in key WASH outcomes?

2. What are the impacts of GESI-transformative WASH, particularly in communities and schools? How can combined impact of an integrated sector approach improve GESI outcomes?

3. What GESI-representative groups do our programs currently consider (especially people with disabilities and indigenous peoples)? How can we best enable our country offices to apply a GESI lens to their program design?

4. What GESI-related barriers exist within our own organization, both globally and within country offices, and how do we catalyze change internally and within the sector?

[31] Winter, J. C., Darmstadt, G. L., & Davis, J. (2021). "The Role of Piped Water Supplies in Advancing Health, Economic Development, and Gender Equality in Rural Communities," *Social Science & Medicine, 270*, 113599. doi: https://doi.org/10.1016/j.socscimed.2020.113599.

[32] Light, D., Matinhure-Muzondo, N., Ferguson, C., Muzondo, T. H., & Lungu, N. H. (2020). "Improving Students' Knowledge of Puberty and Menstruation in Rural Zimbabwe: An Evaluation of Sesame Workshop's Girl Talk Program," *Journal of Water, Sanitation and Hygiene for Development, 11*(1), 173-178. doi:10.2166/washdev.2020.286.

Where is World Vision going from here?

World Vision will continue to explore how we can make all of our WASH programs more GESI-transformative. In doing so, we expect to see improved WASH outcomes and outcomes related to the empowerment of marginalized groups. We will draw on the following projects with intentional learning components with a goal of catalyzing change throughout all our country programs.

1. **Iraq GESI Accelerator Fund**: Conflict, displacement, and the COVID-19 pandemic have taken a significant toll on the well-being of Iraqi women and girls, who face 31% unemployment, and people living with disabilities, who make up 15% of the total population.[33] The Iraq GESI Accelerator Fund, an 18-month project in Kirkuk and Hawija Districts of Iraq, aims to 1) partner with a local organization of persons with disabilities, Rozh Society, to identify people living with disabilities and incorporate them in the design process of inclusive WASH facilities in public institutions, and 2) equip female university graduates and displaced women to join the WASH workforce through certified trainings on financial literacy, entrepreneurship, and business development. The project team will also pilot innovative approaches to measuring evidence of GESI transformation. Results from this project will be available in late 2023.

2. World Vision's **Strong Women Strong World**™ **program** sets out a vision to transform the lives of women and girls—empowering them through WASH and providing economic opportunities. It challenges World Vision to go beyond access

to deepen our focus on the most vulnerable. This three-year program (2022–2025) spans four countries—Guatemala, Honduras, Kenya, and Zimbabwe—to define, refine, and measure a scalable, effective programmatic model to empower women and girls through transformative WASH and economic opportunities, alongside our learning partner, Emory University. Learnings from this program will be used to refine World Vision's approach to GESI-transformative WASH and to support scale-up across World Vision's global WASH program.

---

[33] UNOCHA-Iraq, Humanitarian Needs Overview, 2021.

⊘ CRITICAL SETTINGS

WASH in healthcare facilities

WASH in schools

WASH IN HEALTHCARE FACILITIES

What is the issue?

Only an estimated 2% of healthcare facilities (HCFs) in low- and middle-income countries (LMICs) have access to comprehensive basic WASH services.[34] Lack of safe WASH services and practices in healthcare settings puts those seeking care at significant risk of healthcare-associated infections, sepsis, and maternal and infant morbidity and mortality, while also affecting healthcare providers' retention and ability to practice quality care.[35] Additional WASH infrastructure is necessary but not sufficient for better health conditions in LMICs.[36,37] Unfortunately, building an enabling environment for sustained, high-quality WASH service provision in HCFs and identifying potential barriers are often overlooked. Research has identified factors associated with improved WASH service levels. These include the existence of a protocol for operation and maintenance (O&M), management of HCFs by a person with medical training, installing an infection prevention and control focal person, and training staff to deliver WASH services.[38,39,40] However, there is an ongoing need to create evidence-based recommendations for infection prevention and control and environmental health services (EHS) more broadly, and for how to implement effective O&M. There is also a need to validate,

contextualize, and simplify methods for estimating costs to sustainably deliver WASH in HCFs.[41,42]

What has World Vision done?

1. World Vision updated our core indicators in 2017 to better track WASH interventions and progress in health facilities by SDG standards (i.e., including key indicators for waste segregation and environmental cleaning). As a result, between 2017 and 2021, **over 2,000 facilities** were reached with, at minimum, a source of clean water. A resource guide was created from this wealth of implementation knowledge to continue to equip teams to collaborate with health colleagues and to center the patient experience in our work in healthcare facilities.

2. World Vision partnered with the Water Institute at UNC on **a study that collected data from 2,035 HCFs across 14 countries** where World Vision has WASH programming. Several studies were born out of this data collection effort, including a look at the environmental conditions in maternity wards,[43] as well as a cross-sectional study of WASH infrastructure, supplies, and behaviors across a subset of randomly selected rural HCFs in six out

34 R. Cronk and J. Bartram, "Environmental Conditions in Health Care Facilities in Low-and Middle-Income Countries: Coverage and Inequalities," *International Journal of Hygiene and Environmental Health* 221, no. 3 (2018), pp. 409-422.

35 R. Cronk et al., "Environmental Conditions in Maternity Wards: Evidence from Rural Healthcare Facilities in 14 Low- and Middle-Income Countries," *International Journal of Hygiene and Environmental Health* 232 (2021), https://doi.org/10.1016/j.ijheh.2020.113681.

36 A. Guo et al., "Water, Sanitation, and Hygiene in Rural Health-Care Facilities: A Cross-Sectional Study in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," *American Journal of Tropical Medicine and Hygiene* 97, no. 4 (2017), pp. 1033-1042, https://www.ajtmh.org/view/journals/tpmd/97/4/article-p1033.xml.

37 D. Fejfar et al., "Healthcare Provider Satisfaction with Environmental Conditions in Rural Healthcare Facilities of 14 Low- and Middle-Income Countries," *International Journal of Hygiene and Environmental Health* 236 (2021), https://www.sciencedirect.com/science/article/pii/S1438463921001176?dgcid=coauthor.

38 A. Guo and J. K. Bartram, "Predictors of Water Quality in Rural Healthcare Facilities in 14 Low- and Middle-Income Countries," *Journal of Cleaner Production* 237 (2019), https://cdr.lib.unc.edu/downloads/2z10wr072.

39 L. Kmentt et al., "Water, Sanitation, and Hygiene (WASH) in Healthcare Facilities of 14 Low- and Middle-Income Countries: To What Extent is WASH Implemented and What are the 'Drivers' of Improvement in their Service Levels?" *H2Open Journal*, 2021, https://iwaponline.com/h2open/article/doi/10.2166/h2oj.2021.095/82974/Water-sanitation-and-hygiene-WASH-in-healthcare.

40 R. McCord et al., "The Implementation of Environmental Health Policies in Health Care Facilities: The Case of Malawi," *International Journal of Hygiene and Environmental Health* 222, no. 4 (2019), pp. 705-716, https://www.sciencedirect.com/science/article/abs/pii/S1438463918309428.

41 D. M. Anderson et al., "Safe Healthcare Facilities: A Systematic Review on the Costs of Establishing and Maintaining Environmental Health in Facilities in Low- and Middle-Income Countries," *International Journal of Environmental Research and Public Health* 18, no. 2 (2021), p. 817, https://www.mdpi.com/1660-4601/18/2/817/htm.

42 D. M. Anderson et al., "A Toolkit for Costing Environmental Health Services in Healthcare Facilities," *Journal of Water, Sanitation and Hygiene for Development*, 2021, https://iwaponline.com/washdev/article/11/4/668/81993/A-toolkit-for-costing-environmental-health.

43 R. Cronk et al., "Environmental Conditions in Maternity Wards: Evidence from Rural Healthcare Facilities in 14 Low- and Middle-Income Countries," *International Journal of Hygiene and Environmental Health* 232 (2021), https://doi.org/10.1016/j.ijheh.2020.113681.

of the 14 countries.[44] A **detailed analysis and programmatic recommendations** were published from this effort.

3. Partly in response to the findings from the 14-country evaluation, World Vision's **Mali WASH in HCFs project** worked with 34 healthcare facilities to implement a WASH package that met national standards as well as those defined by the WHO Water and Sanitation for Health Facility Improvement Tool (WASH FIT). USAID's Clean Clinic Approach was also implemented in a subset of the health centers. A Centers for Disease Control and Prevention endline evaluation showed huge gains in infrastructure (100% with basic water access, 91% with waste management guidelines present), but highlighted the need for ongoing behavior-change interventions to ensure sustained hygienic environments for patients.

4. WASH in HCFs is not something that can be done in a vacuum as the HCF is a key part of the community and a key component of the healthcare system. World Vision's BabyWASH approach advocates for integration of interventions in the first 1,000 days of life, with hygienic care at delivery playing an important role in that framework. World Vision has implemented successful programs in **Uganda**, Kenya, and Zambia, and is beginning a large effort in El Salvador in coordination with the Office of the First Lady that will launch in 2022.

What are World Vision's key learning questions?

1. What are the ongoing O&M needs for sustainable EHS in HCFs? What resources are available to meet these O&M needs and what resources are lacking?

2. What are the major barriers to appropriate planning, staffing, budgeting, and procurement for O&M? What mitigates these barriers, including process-level factors such as stakeholder engagement and formal agreements between funders and implementers? What coping strategies do HCFs use to overcome these barriers to improve sustainability?

3. What is the cost associated with O&M of EHS in HCFs?

Where is World Vision going from here?

1. **To understand the cost of WASH service provision in HCFs where World Vision works**, we are partnering with the Water Institute at UNC to review, modify, and adapt an existing costing toolkit that was recently developed by UNC in the context of fieldwork in Malawi for practitioners. These tools have yet to be validated in other contexts. Therefore, World Vision and UNC will work to apply the adapted costing tool in the context of HCFs in Niger. Results are expected by mid-2023.

2. Also in partnership with the Water Institute at UNC, we are **exploring the resources required for long-term sustainable service delivery in HCFs**. This will support World Vision's efforts to establish HCF O&M programmatic guidance, including necessary components in O&M strategies and World Vision–specific HCF staffing and training strategies across different types of facilities and contexts.

3. Moving beyond internal processes within health systems to ensure sustainable EHS, we are partnering with the Center for Infectious Disease Research in Zambia (CIDRZ) to understand the role of **promoting EHS sustainability through community advocacy and accountability** through World Vision's Citizen Voice and Action approach. Results are expected in late 2022.

---

[44] A. Guo et al., "Water, Sanitation, and Hygiene in Rural health-Care Facilities: A Cross-Sectional Study in Ethiopia, Kenya, Mozambique, Rwanda, Uganda, and Zambia," *The American Journal of Tropical Medicine and Hygiene* 97, no. 4 (2017), p. 1033, https://www.ajtmh.org/view/journals/tpmd/97/4/article-p1033.xml.

WASH IN SCHOOLS

What is the issue?

WASH in Schools secures a healthy school environment, protecting children from illness and contributing to their learning outcomes. These facilities are essential to ensure safety, privacy, and dignity of children, especially girls. According to the Joint Monitoring Programme's (JMP) special focus on COVID-19 report, 584 million children lack basic drinking water services, 698 million lack basic sanitation facilities, and 818 million children lack basic hygiene services. Out of 120 countries reviewed in the JMP's 2020 report, 31% of schools lack access to a basic drinking water source, 39% lack basic sanitation services, and 43% lack handwashing facilities with soap and water.[45] Education facilities are also a key entry point to teach adolescent girls proper menstrual hygiene management (MHM); however, in World Vision's 14-country evaluation, only 26% of schools had MHM materials available. MHM-friendly and disability-accessible WASH facilities are key for ensuring all children are able to regularly attend school.

An estimated 92,000 children and adolescents between the ages of 5 and 14 die from diarrheal and acute respiratory illnesses annually where the attributable risk is poor WASH services. Soil transmitted diseases, trachoma, and scabies are also common in schools with unsanitary toilet facilities and poor hygiene practices. Poor health and nutrition among children reduces their time in school and negatively impacts their learning abilities and achievement of educational outcomes.[46] The COVID-19 pandemic has increased the importance of WASH programming in schools as a key means of preventing and controlling transmission.

What has World Vision done?

1. World Vision implements WASH in schools programming in all of our 41 business plan countries to varying degrees addressing service provision, infrastructural upgrades and rehabilitation, hygiene education, and behavior change. World Vision is currently working in partnership with Stanford University and Oxford Policy Management India to develop an effective operation and maintenance (O&M) strategy for WASH in schools so that infrastructure is properly maintained and products are regularly supplied to ensure consistent and appropriate utilization.

2. World Vision and Sesame Workshop partnered together to develop, contextualize, and implement the **WASH UP! program** in 15 countries. WASH UP! offers school-aged children meaningful sanitation and hygiene education using play-based learning materials. As children complete WASH UP!, they learn proper hygiene, ways to share this knowledge with friends and family, and ultimately how to change community practices. In a pilot impact assessment in Zambia,[47] researchers from Stanford University found the WASH UP! play-based curriculum to be an effective tool for teaching children the difference between safe and unsafe water sources, what germs are and how to prevent them from causing illness, and how diarrhea is related to lack of handwashing and toilet use.

45 WHO and UNICEF, "Progress on Drinking Water, Sanitation and Hygiene in Schools: Special Focus on COVID-19," 2020.

46 D. Plaut et al., "Getting to Education Outcomes: Reviewing Evidence from Health and Education Interventions," in *Child and Adolescent Health and Development*, ed. D. Bundy et al. 3rd ed. The International Bank for Reconstruction and Development / The World Bank, 2017.

47 J. C. Winter et al., "The Potential of School-Based WASH Programming to Support Children as Agents of Change in Rural Zambian Households," *BMC Public Health* 21, 2021, https://doi.org/10.1186/s12889-021-11824-3.

3. Building on the foundational learnings of WASH UP!, Sesame Workshop and World Vision developed **WASH UP! Girl Talk** to educate both boys and girls about puberty and periods, techniques for menstrual hygiene management, and girls' empowerment.[48] The pilot for WASH UP! Girl Talk took place in Zimbabwe from 2017 to 2020. An independent assessment of the program's impact by the global nonprofit Education Development Center demonstrated its initial success, finding it had a significant impact on all students' knowledge about puberty and periods, dispelled common myths about menstruation, and improved girls' practical knowledge about their cycles.[49]

What are World Vision's key learning questions?

1. What is the impact of high-quality infrastructure on WASH behaviors in schools?

2. What operation and maintenance strategies, at schools and at the local government level, can lead to sustainable WASH in schools?

3. What is the impact of WinS interventions, both infrastructure and behavior-change efforts, on educational success?

4. What is the community/household impact of school-based behavior-change programming?

5. What interventions for cleanliness (sanitation) are sustainable and what is their relationship with behavior in schools?

Where is World Vision going from here?

1. We are partnering with Stanford University and Oxford Policy Management India to to evaluate the impact of **WASH infrastructure and behaviors promoted through WASH UP!, along with the impact of O&M strategies** through a four-arm randomized controlled trial in India. Results are expected in mid-2023.

2. We are partnering with Emory University in our **Strong Women Strong World™ program to understand how WinS interventions affect girls' empowerment and educational attainment.** This four-country program includes the scaling up of WASH UP! and Girl Talk in schools, and we will be focusing on how these programs influence the empowerment of girls, with results anticipated in 2025.

---

48 K. Foulds et al., "Using Participatory Design to Develop a Menstrual Hygiene Management Intervention: Designing WASH UP! Girl Talk in Zimbabwe," *wH2O: The Journal of Gender and Water* 8, no. 1 (2021), p. 12.

49 Daniel Light et al. "Improving Students' Knowledge of Puberty and Menstruation in Rural Zimbabwe: An Evaluation of Sesame Workshop's Girl Talk Program." *Journal of Water, Sanitation and Hygiene for Development* 11, no. 1 (2021), pp. 173-178.

⊙ SPECIAL TOPICS

Human flourishing

WASH and faith integration

HUMAN FLOURISHING

What is the issue?

Recent trials have called into question the direct child health benefits of basic WASH services, and many programs only evaluate the benefits of WASH across outcomes like reductions in diarrhea, stunting, and wasting.[50] However, the extensive (mostly qualitative) literature[51,52,53] shows there are broad benefits from WASH services, including time and cost savings; impacts on livelihoods (especially important in the COVID-19 era); and privacy, safety, and dignity. But tools for capturing these benefits in a rigorous, quantitative, easy-to-deploy manner are lacking. Such an approach for measuring sanitation-related quality of life has been developed in urban contexts but needs to be adapted to World Vision's primarily rural program areas, where decisions between use of a toilet and open defecation may make assessing quality of life associated with sanitation more challenging. Relatedly, the impact of WASH services on broader measures of human flourishing has not been thoroughly explored to date.

What has World Vision done?

1. World Vision has assessed **sanitation-related quality of life** (SanQoL) using cross-sectional methods in two contexts. First, an in-depth qualitative and 400-household quantitative study in Zambia, in partnership with the Center for Infectious Disease Research in Zambia (CIDRZ), showed that experiences beyond health drive quality of life, and that even poor-quality toilets were associated with higher SanQoL scores than open defecation. A larger scale study in Ethiopia with about 1,600 households in locations with higher rates of open defecation is currently being analyzed.

What are World Vision's key learning questions?

1. How can we develop and deploy measures of well-being related to water, sanitation, and hygiene that are useful for both evaluation and the designing of programs?

2. What broader impacts on human flourishing do higher levels of WASH services have?

Where is World Vision going from here?

1. In Malawi and Ethiopia, we are incorporating SanQoL measures into programs with prospective, randomized, or quasi-experimental designs, as well as testing measures related to hygiene-related quality of life, with results anticipated in 2023.

2. In Zambia and India, we are incorporating broad measures of human flourishing into a study with the University of Toronto and the University of Zambia assessing water use and equity during rainy and dry seasons. We are using this natural experiment to understand seasonal variations in such measures, with results anticipated in late 2023.

[50] O. Cumming et al., "The Implications of Three Major New Trials for the Effect of Water, Sanitation and Hygiene on Childhood Diarrhea and Stunting: A Consensus Statement," *BMC Med* 17, 2019, https://doi.org/10.1186/s12916-019-1410-x.

[51] E. Gross, and I. Günther, "Why Do Households Invest in Sanitation in Rural Benin: Health, Wealth, or Prestige?" *Water Resources Research* 50 (2014), pp. 8314–8329, https://doi.org/doi:10.1002/2014WR015899.

[52] C. J. Lagerkvist, S. Kokko, and N. Karanja, "Health in Perspective: Framing Motivational Factors for Personal Sanitation in Urban Slums in Nairobi , Kenya , Using Anchored Best-Worst Scaling," *Water, Sanitation and Hygiene for Development* 4, no. 1 (2014), https://doi.org/10.2166/washdev.2013.069.

[53] M. Jenkins and V. Curtis, "Achieving the 'Good Life': Why Some People Want Latrines in Rural Benin," *Social Science and Medicine* 61, no. 11 (2005), pp. 2446–2459.

WASH AND FAITH INTEGRATION

What is the issue?

While community members may not always listen to a government agent or a nongovernmental staff member, they often listen more carefully to respected faith leaders. Generally, faith leaders are uniquely trusted and are important influencers when it comes to changing behaviors and attitudes that have a significant impact on community health. Humanitarian and development actors have often failed to consider faith leaders and communities as essential partners in understanding local contexts. Governments, multilateral organizations, and nongovernmental organizations frequently view faith leaders as a tool or instrument to further specific goals, failing to consider the importance of building relationships or understanding the diversity and nuance of faith perspectives even within the same context. Furthermore, improved WASH services may serve to bring hope to communities and strengthen other aspects of their faith and community life.[54]

What has World Vision done?

1. Our **Channels of Hope** approach[55] involves participatory training of faith leaders and their spouses, bringing together representatives of all faiths present in the community. Drawing on basic values and beliefs present in each tradition, this approach provides a foundation for shared prioritization and achievement of development outcomes. World Vision has trained more than 75,000 leaders in 59 countries using Channels of Hope, including specific curricula on Ebola, HIV, and gender.[56]

2. We directly train faith leaders on how to share messages related to key WASH outcomes. In the last four years (FY2018–FY2021), we have trained about 50,000 faith leaders on WASH promotion both to share in large faith meetings and to join others' voices in community events related to WASH.

3. We have developed an internal Practitioners Guide to Faith Integration in Water, Sanitation, and Hygiene Programs that provides practical guidance for implementers about how working with faith leaders can help to strengthen WASH access and sustainability as well as how WASH work can strengthen faith communities and spirituality.

What are World Vision's key learning questions?

1. What is the potential of Channels of Hope to improve WASH outcomes alongside standard sector approaches, especially through WASH messaging promotion applied to scriptures that address health/hygiene or use WASH-related metaphors?

2. What approaches are best to encourage faith leaders to engage with key development issues over a long period of time?

3. Through what messages and modalities can faith leaders best drive social norms change?

4. What kinds of impacts on faith communities and spirituality have World Vision's WASH interventions had?

---

54 Ray Norman and Odoi Odotei, "Faith Integration and Christian Witness in Relief and Development," *Christian Relief, Development, and Advocacy: The Journal of the Accord Network* 1, no.1 (2019), pp. 31-43.

55 https://www.wvi.org/health/publication/channels-hope

56 K. Marshall and S. Smith, "Religion and Ebola: Learning from Experience," *The Lancet* 386 (2015), pp. e24-e25.

Where is World Vision going from here?

1. We are documenting the broad range of activities being implemented by country offices to understand successes and challenges of existing approaches to WASH and faith integration. Findings will provide a point of departure from which to further refine our published guidance.

2. Our next step is to pilot this guide with field testing in select national offices, evaluating both the process of its uptake and the impact of its use on the communities we serve. We anticipate having qualitative results capturing the experiences of leaders and community members in 2023.