IMPACT REPORT

Measuring human experiences to advance safe water for all

The
Water
InSecurity
Experiences
Scales

CONTRIBUTORS

This brief was prepared in collaboration with:

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LICENSING

You can find in-depth profiles for 40 countries based on nationally representative data at www.WISEscales.org and interactive visualization by the Center for Strategic and International Studies (CSIS) at www.csis.org/wise-infographic.

Designed by Daniel Abeledo

The Water InSecurity Experiences Scales

CONTENTS

1.0 WHAT ARE THE WISE SCALES?

The Water Insecurity Experiences (WISE) Scales are a suite of tools that bring the voice of the people to the water sector.

Current global water indicators primarily focus on directly observable phenomena, like the amount of available freshwater and availability of improved drinking water services. These are useful and necessary indicators, but they do not tell us if people have insufficient water for basic daily needs – that is, whether they are water insecure (*figure 1, box 1*).

box 1 Definition of water insecurity.

Water insecurity is the inability to reliably access and use water to meet basic domestic needs. It can be caused by problems with water availability, accessibility, acceptability, safety, or reliability.[1]

Traditional water indicators did not measure consumer perspectives

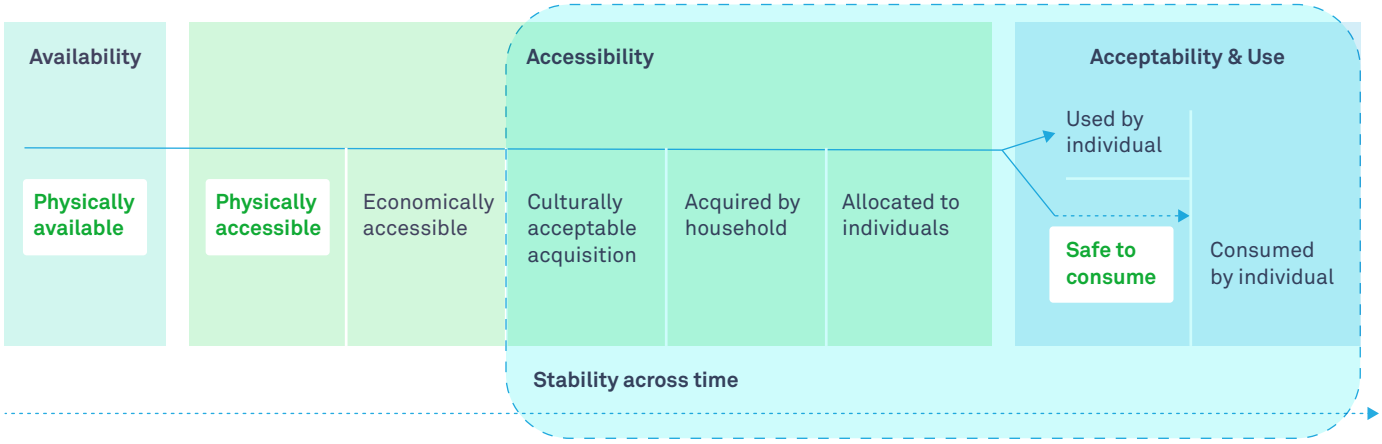


figure 1 Water security has four domains: water availability, accessibility, use, and stability across time (or reliability). Current global water indicators capture a subset of these domains (**green text**). The WISE Scales complement these indicators by measuring peoples' challenges related to water access, use, and reliability (– – – –). Figure reproduced from a prior publication.[40]

The WISE Scales include 12 questions about how frequently problems with water are experienced (*figure 2*). Items focus on experiences with water for consumption (e.g., drinking, cooking) and hygiene (e.g., handwashing), and consider psychological manifestations of water insecurity (e.g., worry, anger).

The questions can be directed at the household, using the Household Water Insecurity Experiences (HWISE) Scale,[2] or the individual level, using the Individual Water Insecurity Experiences (IWISE) Scale.[3] The 12 questions take approximately 3 minutes to ask. There are also short forms of each (the HWISE-4 Scale[4] and the IWISE-4 Scale[5]); these take approximately 1 minute to administer. Recall periods of both four weeks and one year have been validated.

(See Appendix for the complete HWISE and IWISE Scales).

figure 2 The 12 items in the Household Water Insecurity Experiences (HWISE) Scale and the Individual Water Insecurity Experiences (IWISE) Scale query about adverse experiences caused by problems with water. The four items on the top row are those that comprise the HWISE-4[4] and IWISE-4[5]. Full phrasing and scoring process for the WISE Scales can be found in the Appendix. The HWISE and IWISE Scales have been translated into dozens of languages and are freely accessible online. Figure reproduced from a prior publication.[5]

"In Kajiado, we have had painful experiences of loss of livestock from drought. The WISE approach can assist to quickly identify chokepoints in livelihood diversification, thereby enhancing climate resilience."

Dr. Leina Mpoke | Kajiado County Minister for Water, Environment, & Natural Resources

2.0 WHY THE WISE SCALES?

Data from the WISE Scales complement traditional indicators and expand our understanding of the burden of water insecurity. In so doing, they:

1. Reveal who is being left behind.

Data from the IWISE Scale can be disaggregated to examine differences by gender and other characteristics that are obscured with watershed- and household-level measures. The WHO/UNICEF Joint Monitoring Programme (JMP), together with Emory University, and others have recommended inclusion of the IWISE-4 Scale in global water, sanitation, and hygiene (WASH) monitoring efforts under Sustainable Development Goal 6 because they can track gender disparities in water access and use (*image 1*).[6]

image 1
The 2024 report recommending gender-specific indicators for SDG 6, in which use of the IWISE-4 Scale is recommended.

2. Connect water to other sectors.

Data from the WISE Scales are relevant within the WASH sector, but have demonstrated utility in many other fields (*figure 3*). Experiential water insecurity measures are typically more predictive of well-being than supply-side indicators. To date, water insecurity has been found to meaningfully impact health and well-being (*figure 3*), including food security (*see Thematic Brief 4.5*), prosperity (*Thematic Brief 4.7*) and physical and mental health (*Thematic Brief 4.8*).

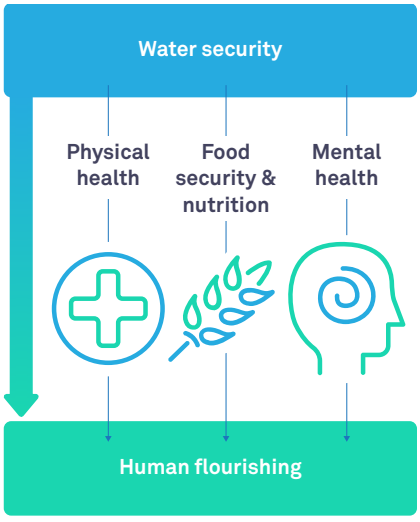


figure 3 Water security has intrinsic value, but it is also imperative for physical health, food security & nutrition, and mental health, all of which are necessary for humanity to flourish.

3. Permit global comparisons.

The WISE Scales have been validated for making comparisons across countries with diverse water infrastructure, climates, and population densities.[2,3] The WISE Scales can thus be used to track changes across locations and time (*figure 4*).

"Water, food, and nutritional security for all is a prerequisite for sustainable development. Their equitable distribution and management are critical for people and the planet. This report addresses all these key topical issues for a better future. We definitely need such a report focusing on southern Africa."

Sylvester Mpandeli | Executive Manager, Water Research Commission of South Africa & Vice President for Africa of the International Commission on Irrigation and Drainage

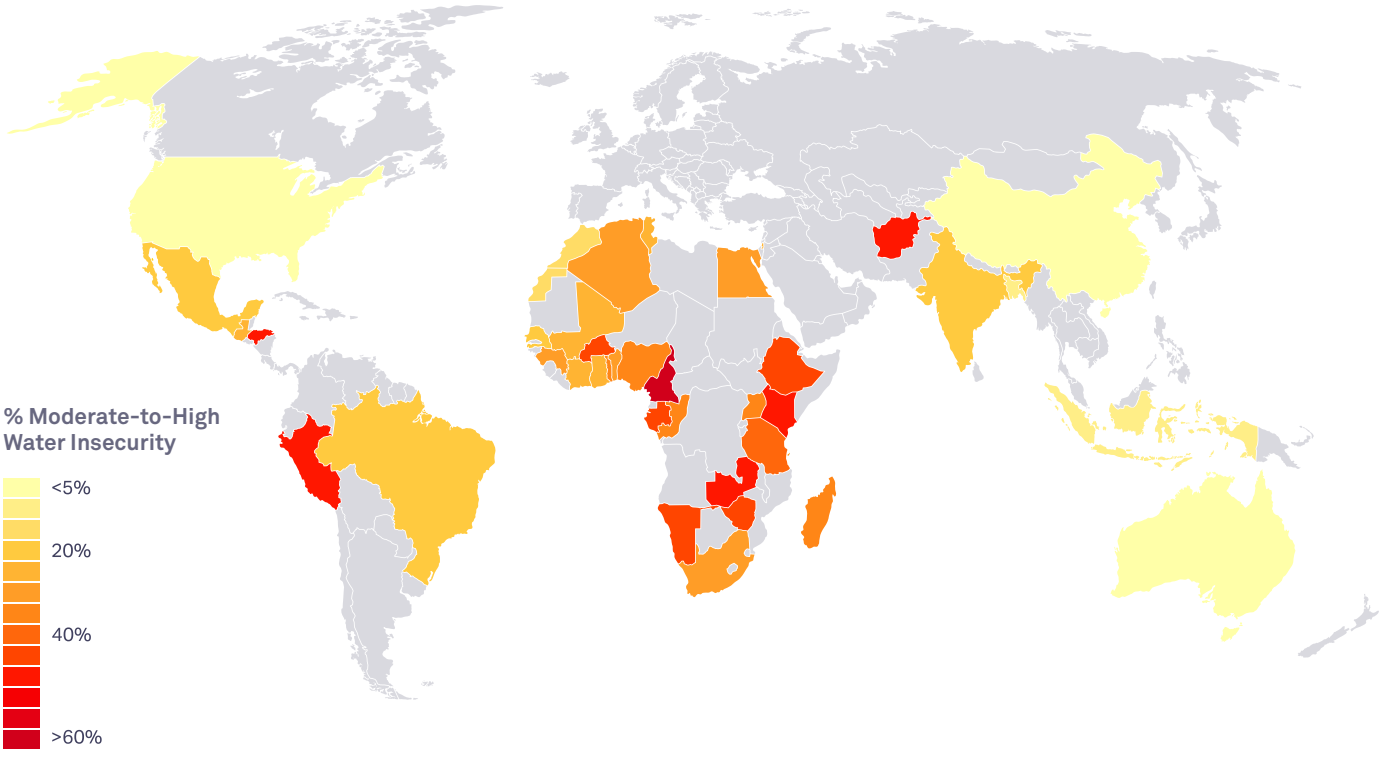
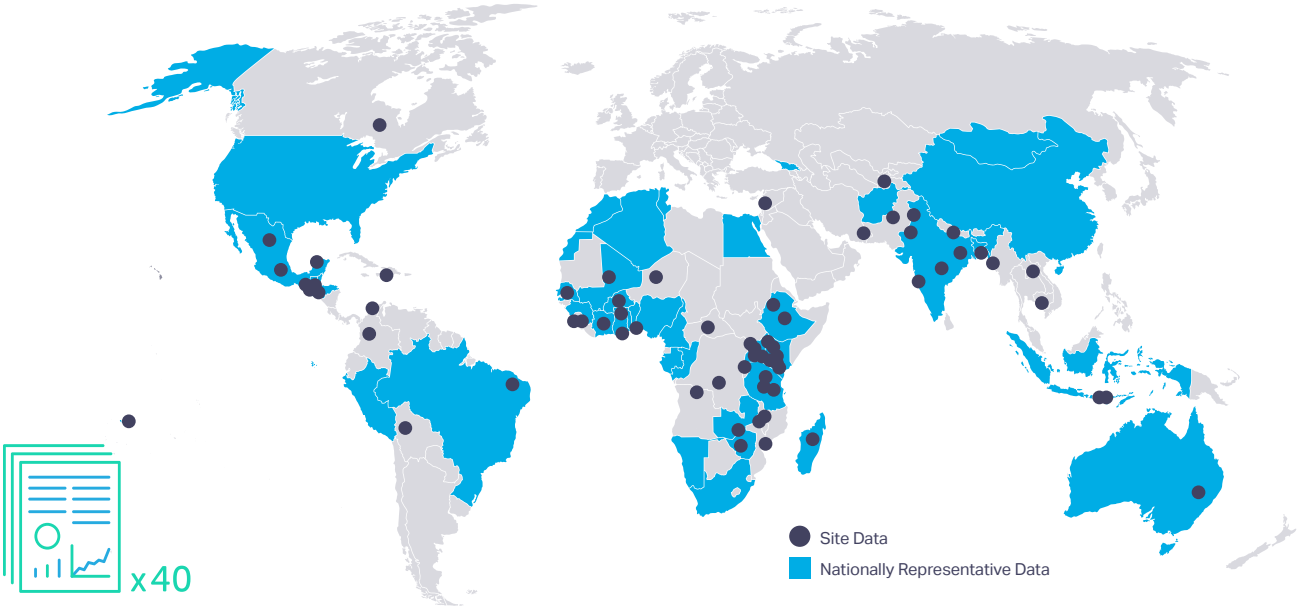


figure 4 Prevalence of moderate-to-high water insecurity across 40 countries in which nationally representative data have been collected. Data come from the 2020 & 2022 Gallup World Poll (IWISE Scale); Mexico's 2021 National Health and Nutrition Survey (HWISE Scale); and Tonga's 2022 Equality Insights Rapid Survey (IWISE-4 Scale). The portion of this figure based on 2020 Gallup World Poll data is replicated from a prior publication, with permission.[10] Countries in grey are those without nationally representative WISE data. The data used to make this map are available in country reports on the WISE Scale website.

3.0 WHERE HAVE THE WISE SCALES BEEN USED?

The WISE Scales have now been used by 100+ organizations in more than 55 countries.



You can find in-depth profiles for 40+ countries based on nationally representative data at www.WISEscales.org and interactive visualization by the CSIS at www.csis.org/wise-infographic.

figure 5 Dots indicate places where site-specific data have been collected. Countries in blue are those for which nationally representative data have been collected (n=40). To date, we have estimates of water insecurity experiences for approximately half of the world's population.

Organizations that have used the WISE Scales include:

ALUDHAA · Action Against Hunger · charity: water · Dharriwaa Elders Group · The DHS Program Demographic and Health Surveys · FAO · Feed the Future · Instituto Nacional de Salud Pública · Helvetas · IFAD Investing in rural people · International Food Policy Research Institute · International Water Management Institute · NL · Oxfam · REDCap · unesco · unicef · Unilever · USAID From the American People · The World Bank

KEY MOMENTS IN THE DEVELOPMENT OF THE WATER INSECURITY EXPERIENCES (WISE) SCALES

MARCH 2017 TO JULY 2018

HWISE Scale data collection

Candidate items were piloted by dozens of collaborators in 28 sites across 23 countries

JULY 2018

HWISE-Research Coordination Network formed

Developed with support from many researchers and the US National Science Foundation

SEPTEMBER 2019

HWISE Scale is published

The final 12 items first appeared in BMJ Global Health

FEBRUARY 2020

UN collaboration launched

Gallup, UNESCO, and Northwestern sign a Memorandum of Understanding to work together towards developing an individual-level measure of water insecurity

MARCH 2021

HWISE in Mexico

Mexico becomes the first country to use the WISE Scales in a national health and nutrition survey

OCTOBER 2021

IWISE data reveal global disparities

Findings from application of the validated IWISE Scale show surprising differences – and similarities – in water insecurity by gender, income, urbanicity

SEPTEMBER 2022

IWISE-4 Scale is published

A subset of 4 IWISE Scale items is valid for assessing water insecurity prevalence in approximately 1 minute

JANUARY 2023

Water and food insecurity experiences clearly linked

In a 25-country study with FAO, water insecurity is associated with 2-to-3 times greater odds of being moderately- to-severely food insecure

APRIL 2023

WISE-Latin America & the Caribbean Consortium launches

A result of a meeting in Mexico City with representatives from 40 different governmental agencies, non-governmental organizations, development banks, and academic institutions throughout Latin America

MARCH 2024

The JMP and Emory University endorse the IWISE-4 Scale for global monitoring

The IWISE-4 Scale is recommended for WASH monitoring under SDG targets 6.1 and 6.2

4.1 Gender

KEY MESSAGE

IWISE data reveal gender differences in water insecurity that are obscured by household- and watershed-level measures.

Water-related responsibilities are often highly gendered. Traditionally, men manage water points, while women are responsible for water collection and water-related activities.[7,8] Gender and other characteristics, like age, marital status, tenancy, and ethnicity, can impact water insecurity experiences. Watershed- and household-level measures, however, obscure differences in water insecurity by individual characteristics.

The IWISE Scale advances the field by allowing for comparisons by individual characteristics. For example, in a 31-country study, women disproportionately experienced water insecurity in some countries, such as Cameroon, Algeria, and Guatemala (*figure 6*).[3] Elsewhere, men had higher mean IWISE Scale scores, including in Ethiopia, Tanzania, and Ghana. With higher resolution data, we can more precisely pinpoint who is being "left behind".

For this and other reasons, the Joint Monitoring Program featured IWISE data in their 2023 progress report focused on gender disparities.[9] They have also recommended that the IWISE-4 Scale be integrated into national and global monitoring for Sustainable Development Goal (SDG) 6.[6] Measurement at this level will allow for identification of water insecurity inequalities by gender and permit intersectional analyses of multiple overlapping characteristics, such as gender and urbanicity.

"IWISE is one of the very few examples of tools for large-scale data collection that targets individual, rather than household, experiences of water access and use. This gives a rare opportunity to explore inequalities in how women and men, and potentially other groups like the elderly or disabled, experience domestic water insecurity."

Rick Johnston | World Health Organization

Individual experiences of water insecurity vary widely between countries and regions, but overall differences between men and women are small

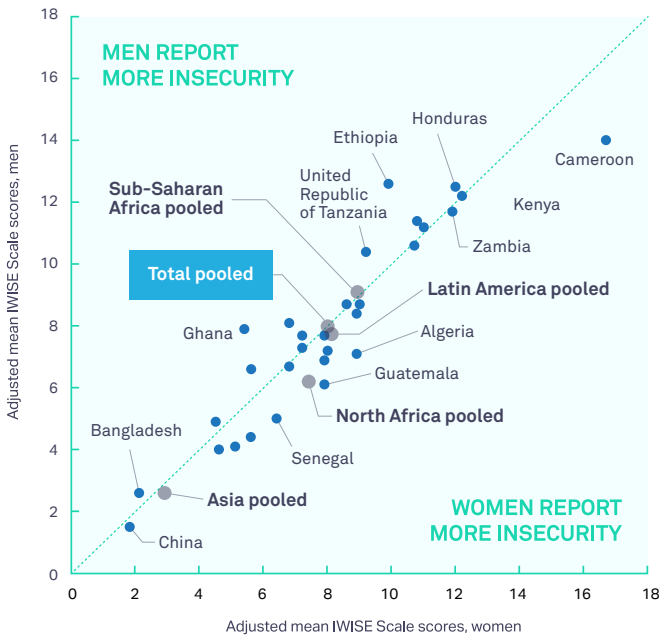


figure 6 Differences in mean IWISE Scale scores for women relative to men, adjusted for other sociodemographic variables, using nationally representative samples from the 2020 Gallup World Poll. Reproduced from prior publications.[9,10]

Special thanks to Jess MacArthur (University of Technology Sydney), Sheela Sinharoy and Bethany Caruso (both of Emory University), and Hilary Bethancourt (Northwestern University) for their contributions to this thematic brief.

4.2 Advocacy

KEY MESSAGE

Data from the WISE Scales can be used by community members for advocacy efforts and to galvanize government action.

In Walgett, New South Wales, Australia, prolonged drought and river mismanagement have reduced surface water supplies. The resultant use of piped groundwater has caused many hardships. High groundwater salinity has not only affected drinking water taste and appearance, but also presented substantial health risks, exacerbating conditions like hypertension, renal problems, and diabetes.[11]

Community organizations including the Dharriwaa Elders Group, an Aboriginal cultural association, and the Walgett Aboriginal Medical Service petitioned the government for years to improve the water, to little effect.

The situation in Walgett changed dramatically in 2022, after community-led surveys revealed the burden of water and food insecurity. The resultant policy brief[12] (*image 2*) – which highlighted that 44% of the community experienced moderate-to-high water insecurity, far higher than the national prevalence of 1% – was widely covered by the Australian press, including the nightly news broadcast of the Australian Broadcasting Corporation (*image 3*).[13]

image 3 In Australia, data on experiences of water insecurity captured national attention and political will in ways that data on elevated sodium levels did not. There was broad media coverage, including on the 7:30 PM evening news by the Australian Broadcasting Corporation.

In response, the Water Minister visited the area and initiated actions to remedy the situation via a coordinated government response.[13] Based on this series of events, *Nature* highlighted the utility of the WISE Scales as policy tools in August 2023.[14]

image 2 Yuwaya Ngarra-li Community Briefing Report; it catalyzed interest in Walgett's food and water insecurity issues across Australia.[12]

Special thanks to Greg Leslie (University of New South Wales) and Wendy Spencer (Dharriwaa Elders Group) for their contributions to this thematic brief.

4.3 Climate

KEY MESSAGE

Measuring water insecurity experiences makes evident the toll of climate change.

Climate change is causing shifts in rainfall patterns and temperature, which in turn cause issues with water quality and quantity.[15] Data about the role of climate in water insecurity are needed to mobilize action, design interventions that enhance climate resilience, and ensure that the most vulnerable are not left behind.

IWISE Scale data collected from 29 countries in the 2020 Gallup World Poll were geotagged and overlaid with data from the International Disaster Database.[16] Doing so made clear that individuals who were exposed to floods or droughts for one month or more in the prior year were much more likely to experience higher levels of water insecurity than those who had not (*figure 7*).

Additional geospatial analyses revealed that living in certain climate zones (arid or tropical vs. temperate) was also associated with greater water insecurity experiences.[17] Arid zones are expected to expand as climate patterns change, such that water insecurity may also increase. These data are evidence that "if climate change is a shark, water is its teeth".[18]

"Measures of how people experience water insecurity can help organizations like The Nature Conservancy draw connections between nature and people, and help to design (or demonstrate) natural solutions that benefit human health."

Tom Iseman | Director of Water Scarcity and Drought Resilience, The Nature Conservancy

Climate events & water insecurity go hand-in-hand

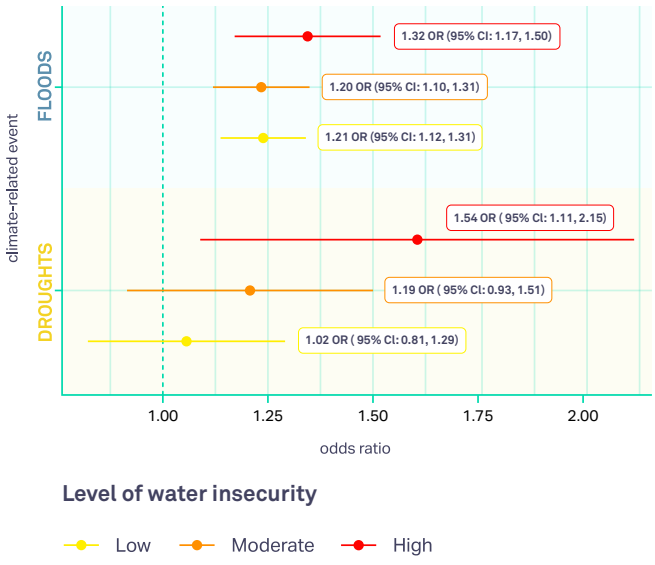


figure 7 Individuals who had experienced ≥1 month of floods or droughts were more likely to experience greater water insecurity in nationally representative samples from 29 countries in the 2020 Gallup World Poll. Models adjusted for key sociodemographic variables.

Beyond the WASH sector, the WISE Scales can be used to evaluate the impact of non-WASH interventions such as rural infrastructure (*Thematic Brief 4.6*), increasing the understanding of the relationship between climate resilience, economic well-being, and water insecurity (*Thematic Brief 4.7*).

Special thanks to Indira Bose (London School of Hygiene and Tropical Medicine), Tafadzwanashe Mabhaudhi (London School of Hygiene and Tropical Medicine, the University of KwaZulu Natal & Institute for Natural Resources), Laura MacDonald (University of Colorado Boulder), and Claire Dooley (University College London) for their contributions to this thematic brief.

4.4 Program targeting

KEY MESSAGE

Governments are using WISE data to better understand community needs and target poverty reduction programs.

Annual inclusion of the HWISE Scale in the Mexican National Health and Nutrition Survey has revealed that ~16% of Mexican households experience moderate-to-high water insecurity.[19] The burden is not borne equally; in the northern state of Nuevo León, 42% of the population is estimated to be water insecure. In 2022, Nuevo León declared a state of emergency due to droughts and high temperatures.[20]

Government emergency responses included installation of community water tanks, distribution of packaged water, and water deliveries via tanker truck (*image 4*).

image 4 Community water tanks were installed by the Nuevo León government during the state of emergency in early 2022.

> **"Water is one of our main concerns in Nuevo León. The HWISE Scale is giving us a much more complete understanding of how poor households are being affected. We are using the scale to improve the way we identify households in need and thus better support them with our policies."**
>
> *Martha Herrera González* | Minister of Equality and Inclusion, Nuevo León, Mexico

To better anticipate local water issues and needs, the Governor and key Ministers signed a Declaration endorsing use of the WISE Scales in a ceremony at the Government Palace of Nuevo León (*image 5*). They also added the HWISE Scale to the *Cuestionario Homologado Estatal de Condiciones Socioeconómicas*, a survey the state uses to design and allocate poverty interventions.

Initial results show that the prevalence of moderate-to-high water insecurity is highest among low-income households in urban areas (74%, n=4,759). Based on these findings, the Ministry of Equality and Social Inclusion, which is responsible for designing and implementing social policies to reduce poverty, is working to jointly address the interlinked challenges of poverty and water insecurity.

image 5 The Governor and Ministers of Nuevo León signed a Declaration to use the HWISE Scales at the Government Palace on July 4, 2023.

Special thanks to Pablo Gaitán-Rossi (Universidad Iberoamericana Ciudad de México) and Hugo Melgar-Quiñonez (McGill University) for their contributions to this thematic brief.

4.5 Food insecurity

KEY MESSAGE

To achieve global food security targets, water insecurity must be considered.

We are early in our understanding of how experiences with water insecurity, food insecurity, and nutrition are related, in part because water insecurity measures that are comparable across countries have only recently been developed.[21] In contrast, experience-based scales for food insecurity have been used for the last several decades,[22] including to monitor progress towards SDG 2 Zero hunger.

Recent surveys using the WISE Scales have made it clear that water and food insecurity go hand-in-hand. For example, a national survey by the Brazilian Network for Food and Nutrition Sovereignty and Security Research (PENSSAN) in 2021 found that 64.8% of those affected by household water insecurity also experienced moderate-to-severe food insecurity (n=12,745). The most robust evidence comes from a collaboration with the Food and Agriculture Organization, in which water and food insecurity were measured in the same individuals in 25 countries.[23] The results were striking: individuals with moderate-to-high water insecurity had 2.69 times the odds of experiencing moderate-to-severe food insecurity, even after controlling for common covariates like age, gender, and income (*figure 8*).

"USAID has included the WISE Scales in numerous evaluations across water, agriculture, and more. These scales fill a gap that has been lingering for years. The WISE Scales are transforming the way that stakeholders measure water insecurity and their responses to the challenge. The rapid rise of the WISE Scales is a testament to the value that many stakeholders see in this work."

Jeff Goldberg | Director, Center for Water Security, Sanitation and Hygiene at USAID

Such findings suggest two important lessons.[24] First, measuring experiences with water insecurity can help assess whether water problems are a potential barrier to preparing healthy foods. Second, policies and programs that address water and food insecurity concurrently are likelier to lead to better outcomes than those that address each separately.

Water insecurity strongly predicts food insecurity across 25 countries

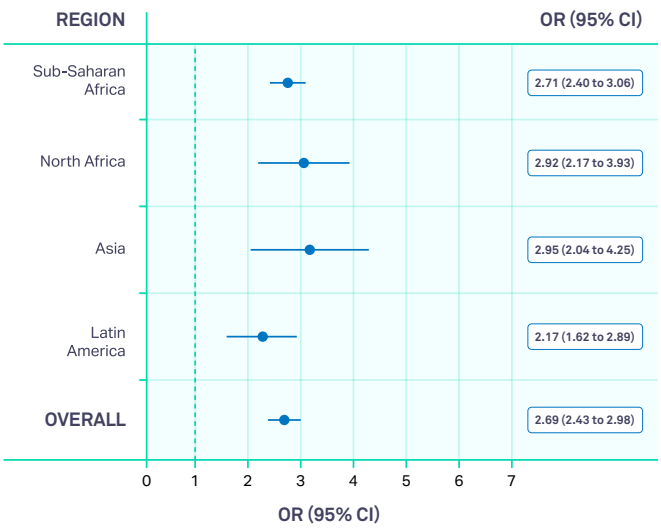


figure 8 The adjusted odds of experiencing moderate-to-severe food insecurity were much higher for those with higher water insecurity (IWISE Scale score ≥12) than for those with lower water insecurity (scores <12), controlling for common covariates (n=31,755, 2020 Gallup World Poll). Reproduced from a prior publication.[23]

Special thanks to Edward Frongillo (University of South Carolina), Hilary Bethancourt (Northwestern University), and Sara Viviani and Carlo Cafiero (both of the Food and Agriculture Organization of the United Nations) for their contributions to this thematic brief.

4.6 Monitoring & evaluation

KEY MESSAGE

Data from the WISE Scales provide a more comprehensive understanding of how interventions impact water accessibility and use.

Water interventions are often evaluated based on the number of water points installed or individuals served. This information provides valuable insights, but it does not tell us whether individuals can reliably access water, and whether it is sufficient for basic needs – that is, whether individuals are water insecure (*box 1*).

In recognition of this, Oxfam was the first organization to use the WISE Scales to evaluate the impact of a village-level intervention.[25] Since then, many other organizations have used the WISE Scales to evaluate program impact. Notably, the World Bank is using the HWISE Scale to evaluate a $363 million infrastructure investment in Karnataka, India.[26]

Piped water connections were constructed for over 5,600 rural households in Karnali State, Nepal by the NGO Helvetas, in partnership with charity: water and local municipalities. A sample of beneficiaries were surveyed using the JMP drinking water service ladder and the HWISE Scale in 2021, before the intervention, and again in late 2023, after completion.

The two measures provided complementary insights.

"The HWISE Scale gives us at charity: water a tremendous opportunity to understand the results we are achieving (or falling short of achieving) in a more authentic, human way. We see a potential goldmine of opportunities to better connect people in richer parts of the world to the issues faced by more than 2 billion people currently without secure water access."

Brian Hoyer | Chief Programs Officer, charity: water

Access to "basic drinking water services" increased from 23.5% to 100%. HWISE data showed that moderate-to-high water insecurity decreased from 21.7% to 1.3% (*figure 9*).

HWISE data also provided additional insights into how the project impacted daily living, including impacts on psycho-emotional stress, that would have other been missed. At the outset, 70.6% reported worry about water, but only 14.5% at endline. Further, 11.1% of households reported service interruptions and 25.6% experienced difficulties washing clothes after installation of pipes, revealing areas for future targeting.

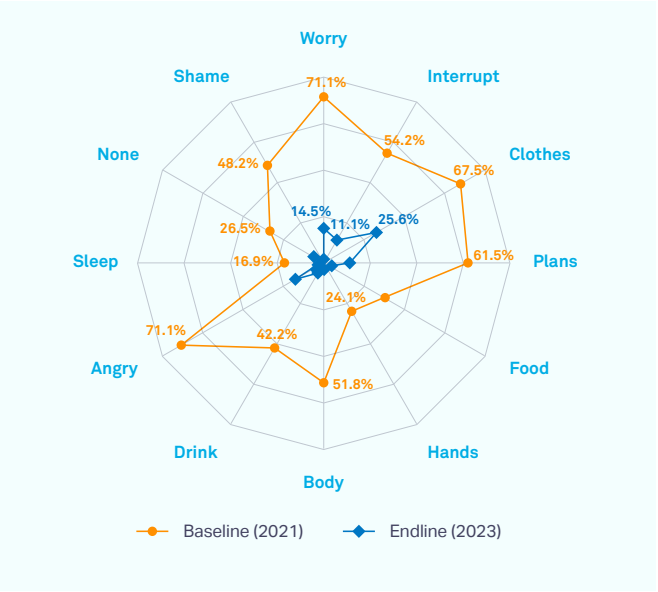


figure 9 The proportion of households affirming the 12 HWISE Scale items substantially decreased in Karnali State, Nepal, after piped water connections were implemented (n=83).

Special thanks to John Brogan (Helvetas) and Joshua Miller (University of North Carolina at Chapel Hill) for their contributions to this thematic brief.

4.7 Prosperity

KEY MESSAGE

Tracking how water insecurity varies by multiple dimensions of prosperity can help to ensure everyone benefits.

Despite efforts to achieve clean water for all, universal access remains an elusive target.[9] By primarily measuring access to infrastructure, we risk forgetting the relevance of water for people's ability to earn, lead productive lives, and be happy. In other words, standard water indicators are difficult to relate to indicators of people's prosperity, such as their income, well-being, health, and happiness.

The WISE Scales address this because they can be used to explore the linkages between water insecurity and prosperity. For example, inclusion of the IWISE Scale in the Gallup World Poll demonstrated that lower household income was associated with greater water insecurity (*figure 10*).[10] Notably, water insecurity persisted even in the highest income quintiles. Additionally, greater water insecurity has been associated with lower faith in one's future opportunities, as measured with Gallup's Life Evaluation Index.

Thanks to the WISE Scales, we are able to understand for the first time how water insecurity can shape people's perceptions of their current and future prosperity. Such information has contributed to a transformation in policy targeting and evaluation: we are no longer just investing to extend access to piped water supply, but to help people feel more empowered about their current and future opportunities. The WISE Scales can also be a route to monetary valuation of people's experiences of water insecurity through assessment of "water-adjusted person years", weighted using the IWISE-4 Scale.[42]

"A better understanding of water insecurity gives us better knowledge to address poverty."

Dean Karlan | Agency Chief Economist, USAID

Water insecurity scores are higher among those with lowest incomes

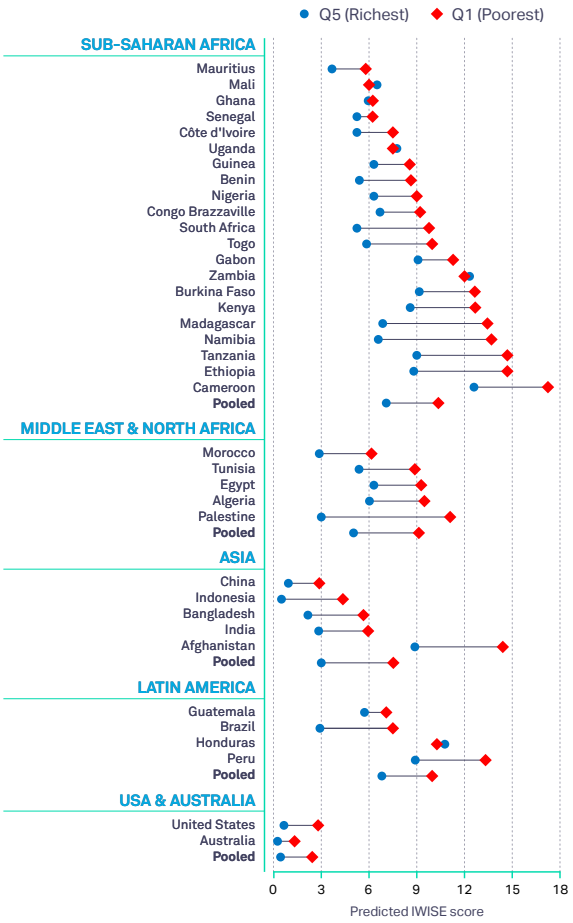


figure 10 Predicted IWISE Scale scores, by income quintile, among individuals across 37 countries (adjusted models, 2020 and 2022 Gallup World Poll, n= 48,373). The subset of data from the 2020 Gallup World Poll were reproduced from a prior publication, with permission.[10]

Special thanks to Edoardo Borgomeo (University of Cambridge) and Ian Ross (London School of Hygiene and Tropical Medicine) for their contributions to this thematic brief.

4.8 Health

KEY MESSAGE

Improving water insecurity has the potential to improve numerous dimensions of human health and well-being.

Water is life. It is fundamental to our physiology, but also shapes numerous basic daily activities and socio-cultural practices that contribute to health and happiness. Yet few water indicators consider lived experiences with water or its use beyond drinking (*figure 11A*). The WISE Scales expand our understanding of how water security influences human welfare by capturing how water is consumed, used for hygiene (handwashing, laundry), and influences psycho-emotional well-being (worry, anger).

Water insecurity precludes daily activities that are critical for good health (*figure 11C*). To date, greater water insecurity experiences have been associated with many outcomes of public health importance, including:

- Poor physical health. Greater water insecurity experiences have been associated with greater odds of AIDS-defining illnesses,[28] poor ART-adherence,[28] diarrhea,[25] injury due to water collection,[29,30] and lower dietary diversity.[31]
- Poor mental health. Water insecurity has been associated with stress,[2,32] depression,[33,34] and interpersonal violence.[35,36]

figure 11 Water security influences individual well-being both directly and indirectly through its impacts on health behaviors and decision-making. Figure modified from a prior publication, with permission.[41]

More research into the pathways by which water insecurity manifests (e.g., due to extreme climatic events), shapes multiple dimensions of well-being, and contributes to health disparities, will soon be possible thanks to the inclusion of the WISE Scales in large national health and nutrition studies (*figure 11B*). For example, the HWISE Scale has been included in Mexico's National Health and Nutrition Survey [Encuesta Nacional de Salud y Nutrición (ENSANUT)] each year since 2021. A further example of large amounts of WISE data being generated comes from charity: water. The HWISE Scale has just been included in its annual monitoring and evaluation framework, currently used by 58 WASH implementing organizations in 22 countries.

Special thanks to Rafael Pérez-Escamilla (Yale University), Teresa Shamah Levy [The National Institute of Public Health of Mexico (INSP)], Asher Rosinger (Pennsylvania State University) and Joshua Miller (University of North Carolina at Chapel Hill) for their contributions to this thematic brief.

4.9 Governance & oversight

KEY MESSAGE

WISE data provide valuable insights for sustainably and equitably managing water services.

Data about water system performance, functionality, and costs are used by public and private agencies to determine water standards, fees, and service improvements. Experiential water insecurity data can be used to strengthen water policies and governance by identifying disparities in safe water access and signaling service shortcomings before larger infrastructural failures.

In response to data demonstrating that the prevalence of moderate-to-high water insecurity in Kenya was 47%, the Resilience Centre surveyed residents throughout Kajiado County, Kenya in 2022 to better understand the scope of water issues locally. The prevalence of water insecurity was found to be higher in Kajiado County (69%), with meaningful differences between men (58%) and women (75%) (*image 6*). These data were particularly valuable given that the functional status for more than two-thirds of the local water systems was unknown.

The Ministry was initially reluctant to use experiential data but concluded that the WISE Scales could be used to rapidly identify salient water issues across a large geographic area and proactively pinpoint water facility issues to prevent expensive repairs. Ultimately, the Ministry opted to include the WISE Scales in the forthcoming Kajiado Water Policy. Legislation to mandate inclusion of the WISE Scales as part of the County Regulations for Water Services is currently under consideration.

"WISE data can greatly assist utility managers and decision-makers to quickly understand where and when problems related to water supply or water quality are occurring. This can facilitate timely repairs, lower costs, and reduce non-revenue water as leakages can be more readily identified."

Dr. Leina Mpoke | Kajiado County Minister for Water, Environment, & Natural Resources

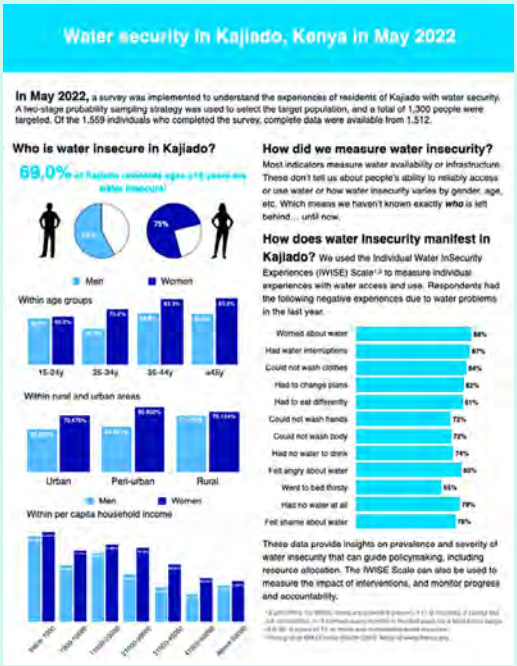


image 6 A snapshot of the water insecurity situation in Kajiado County, Kenya, in May 2022 catalyzed the Ministry of Water, Environment, and Natural Resources to include experiential measures in county-level monitoring efforts.

Special thanks to Simon Thuo (Resilience Center), Simon Mapenay (Kajiado Ministry of Water, Environment, & Natural Resources), Jane Nyamwamu (Neighbours Initiatives Alliance), and Damaris Khakali (Kenya Water and Health Organization) for their contributions to this thematic brief.

4.10 Humanitarian settings

KEY MESSAGE

Experiential measures of water insecurity provide actionable data in humanitarian settings.

Humanitarian emergencies – including disasters caused by natural hazards, conflicts, and disease outbreaks – are occurring at increasing rates and affecting a growing number of people.[43] Water insecurity is disproportionately experienced by people affected by humanitarian emergencies. For example, in Beirut, Lebanese nationals had lower HWISE scores than refugees, despite living in very close proximity (*image 7*).[2]

Additionally, water is projected to become increasingly weaponized and a catalyst for conflict at the macro- and micro-levels due to strained water resources, population migration, and complex transboundary water rights.[37] For example, in nine sub-Saharan Africa sites, experiences with water insecurity were associated with higher odds of interpersonal conflict both inside and outside the home.[38]

image 7 In Beirut, Lebanon, refugees must rely on small water vendors and large storage containers built in areas with exposed electrical wires.

Emergency WASH interventions should provide access to safe water and sanitation and promote good hygiene practices with dignity, comfort, and security. The measurement of liters of water per person per day is one common way to ensure basic needs are being met. But it is also important to know about other water-related issues, such as shame, worry, and anger-related to problems with water, in order to understand well-being; the WISE Scales capture these aspects of water insecurity.

WISE data can also guide appropriate targeting of critical resources in humanitarian settings. For example, most emergency foodstuffs have water removed to reduce spoilage and weight. When designing food security and nutrition interventions, it is therefore important to know if water is available for their preparation.[43] Appropriate targeting can reduce costs and meet the needs of those most vulnerable.

In an evaluation of a USAID-funded Bureau for Humanitarian Assistance (BHA) food insecurity activity among 4,000 households, the HWISE-4 Scale found that 26% of households had moderate-to-high water insecurity. Comparing these data with standard indicators can yield more insight into how water insecurity impacts nutrition and food security among highly vulnerable households.

Nationally representative data are available for many countries with ongoing humanitarian crises. These data can help to contextualize and guide humanitarian relief efforts.

Special thanks to Shalean Collins (Tulane University) and Daniele Lantagne (Tufts University) for their contributions to this thematic brief.

5.0 LOOKING FORWARD

"Experience is the mother of wisdom." – Miguel de Cervantes Saavedra

Although enormous progress has been made in understanding and mitigating water insecurity experiences, there is still much to do. To this end, there are many WISE-related efforts that aim to advance safe water for all:

Data collection. The recommendation by JMPs and Emory University that the IWISE-4 Scale be integrated into national and global monitoring for Sustainable Development Goal 6[6] suggests that WISE data provide actionable insights that are highly valued. To this end, we are actively supporting governments and NGOs to add WISE Scale items to monitoring efforts. For example, the National Nutrition Survey in Colombia has approved inclusion of the HWISE-4 Scale, and Brazilian researchers are finalizing evidence to support a recommendation for regular national monitoring of water insecurity using the HWISE Scale.

"Adding the HWISE Scale as a Key Performance Indicator at Helvetas made a lot of sense. Last year we implemented the scale in 8,400 households in Madagascar, and we will do a follow-up after interventions are complete. We're also excited to be joining efforts to develop scales that measure WASH experiences of students and teachers in their schools and those of patients and staff in health care facilities."

Rupa Mukerji | Director of Advisory Services, Helvetas

We are also fundraising to ensure that nationally representative data for the entire world are available as a global public good.

Regional networks. In Latin America, the WISE Latin America & the Caribbean Network "La Red" is a vivacious group of practitioners, researchers, and policymakers who are working to bring attention to the value of experiential measures of water insecurity for policy development (*image 8*).[39] All are welcome to join the network by emailing wise.lac@ibero.mx. We are also working with partners in Africa to establish a sister network in 2025, and encourage greater South-South collaboration.

Research. Network members have already had major successes, like the inclusion of the HWISE-4 Scale in a national survey of food insecurity in Brazil. A study in 9 countries in Latin America & the Caribbean is ongoing, with the goal of harmonizing HWISE data for regional use and action.

image 8 The inaugural meeting of the Water Insecurity Experiences-Latin America and the Caribbean Network brought together 60 thought leaders from 40 institutions across 13 countries at Universidad Iberoamericana, Mexico City, in April 2023.

Peer-reviewed papers about experiences with water insecurity are being published with increasing frequency, with many more in preparation. For example, findings from face-to-face surveys with 12,745 households across 577 municipalities in Brazil will be shared at a meeting in Rio de Janeiro in September 2024. Elsewhere, the results of an ongoing study using the IWISE-4 Scale in Kenya will allow the weighting of "water-adjusted person years", so that the value of being water secure can be incorporated in economic analyses.[42] This year, the Food and Agriculture Organization's annual 'Panorama of Food and Nutrition Insecurity in Latin America' will feature IWISE data in it climate-themed report.

New tools. There is now clear evidence that the WISE Scales can be used for capturing experiences of water insecurity in low- middle-, and high-income countries. This work has been done with adults in the general population, but other populations also experience water hardships, including children, patients, and incarcerated individuals. For this reason, scales to measure experiences with accessing and benefitting from WASH services in schools and health care facilities are actively being developed by a group of experts from the Mortenson Center in Global Engineering at the University of Colorado, Northwestern University, the Swiss Federal Institute of Aquatic Science and Technology (Eawag), University of North Carolina at Chapel Hill, UNICEF, and WHO, with support from the Swiss Water & Sanitation Consortium and the Hilton Foundation (*image 9*). They are envisioned to be able to stand alone or be included within WHO/UNICEF's WASH FIT tool.

image 9 Institutional WISE measures will help to understand how individuals use and benefit from WASH services in health care facilities and schools, like this one in Ethiopia.

We have come a long way in bringing the voices of the people to the water sector, and momentum is growing. We have further to go, and new partners from all sectors are encouraged to join us in this effort. On behalf of all the contributors, we look forward to working with you to advance the human right to safe water for all.

Sincerely,

Sera Young

Cambridge, England
March 2023

Joshua Miller

Chapel Hill, NC, USA
March 2023

Indira Bose

London, England
March 2023

6.0 APPENDIX

These worksheets are available in multiple languages and can be downloaded here.

The Household Water InSecurity Experiences (HWISE) Scale

Each item is phrased to capture experiences that anyone in the household has had in the last 4 weeks on 1 year. Responses to items for a 4-week recall are: never (0 days), rarely (1–2 days), sometimes (3–10 days), often (11-20 days), and always (more than 20 days). Responses to items for a 1-year recall are: never (0 times), rarely (in 1–2 months), sometimes (in some but not every month), and often/always (in almost every month). Never is scored as 0, rarely is scored as 1, sometimes is scored as 2, and often/always is scored as 3.

	LABEL	ITEM	SCORE
●	Worry	In the last [4 weeks or 1 year], how frequently did you or anyone in your household worry you would not have enough water for all of your household needs?	
	Interrupt	In the last [4 weeks or 1 year], how frequently has your main water source been interrupted or limited (e.g., water pressure, less water than expected, river dried up)?	
	Clothes	In the last [4 weeks or 1 year], how frequently have problems with water meant that clothes could not be washed?	
●	Plans	In the last [4 weeks or 1 year], how frequently have you or anyone in your household had to change schedules or plans due to problems with your water situation? (Activities that may have been interrupted include caring for others, doing household chores, agricultural work, income-generating activities, sleeping, etc.)	
	Food	In the last [4 weeks or 1 year], how frequently have you or anyone in your household had to change what was being eaten because there were problems with water (e.g., for washing foods, cooking, etc.)?	
●	Hands	In the last [4 weeks or 1 year], how frequently have you or anyone in your household had to go without washing hands after dirty activities (e.g., defecating or changing diapers, cleaning animal dung) because of problems with water?	
	Body	In the last [4 weeks or 1 year], how frequently have you or anyone in your household had to go without washing their body because of problems with water (e.g., not enough water, dirty, unsafe)?	
●	Drink	In the last [4 weeks or 1 year], how frequently has there not been as much water to drink as you would like for you or anyone in your household?	
	Angry	In the last [4 weeks or 1 year], how frequently did you or anyone in your household feel angry about your water situation?	
	Sleep	In the last [4 weeks or 1 year], how frequently have you or anyone in your household gone to sleep thirsty because there wasn't any water to drink?	
	None	In the last [4 weeks or 1 year], how frequently has there been no useable or drinkable water whatsoever in your household?	
	Shame	In the last [4 weeks or 1 year], how frequently have problems with water caused you or anyone in your household to feel ashamed/excluded/stigmatized?	
		TOTAL	

● = HWISE-4 SCALE

For guidance on scale development and administration, including peer-reviewed papers and manuals, see www.WISEscales.org.

These worksheets are available in multiple languages and can be downloaded here.

The Individual Water InSecurity Experiences (IWISE) Scale

Each item is phrased to capture experiences that an individual has had in the last 4 weeks or 1 year. Responses to items for a 4-week recall are: never (0 days), rarely (1–2 days), sometimes (3–10 days), often (11-20 days), and always (more than 20 days). Responses to items for a 1-year recall are: never (0 times), rarely (in 1–2 months), sometimes (in some but not every month), and often/always (in almost every month). Never is scored as 0, rarely is scored as 1, sometimes is scored as 2, and often/always is scored as 3.

	LABEL	ITEM	SCORE
●	Worry	In the last [4 weeks or 1 year], how often did you worry that you would not have enough water for all of your needs?	
	Interrupt	Please think about where you get most of your water, such as a tap, well, borehole, bottled water, river, or stream. How often was this water source interrupted or limited in any way (e.g., water pressure, less water than expected, river dried up) during the last [4 weeks or 1 year]?	
	Clothes	In the last [4 weeks or 1 year], how often could your clothes not be washed because of problems with water?	
●	Plans	In the last [4 weeks or 1 year], how often did you have to change schedules or plans because of problems with water? (Activities that may have been interrupted include caring for others, doing household chores, agricultural work, income-generating activities, sleeping, etc.)	
	Food	In the last [4 weeks or 1 year], how often did you change what you ate because of problems with water (e.g., for washing foods, cooking, etc.)?	
●	Hands	In the last [4 weeks or 1 year], how often were you not able to wash your hands after dirty activities (e.g., defecating or changing diapers, cleaning animal dung) because of problems with water?	
	Body	In the last [4 weeks or 1 year], how often were you not able to wash your body because of problems with water (e.g., not enough water, dirty, unsafe)??	
●	Drink	In the last [4 weeks or 1 year], how often did you not have as much water to drink as you would have liked?	
	Angry	In the last [4 weeks or 1 year], how often did you feel angry because of problems you were experiencing with water?	
	Sleep	In the last [4 weeks or 1 year], how often did you go to sleep thirsty because there was no water to drink?	
	None	In the last [4 weeks or 1 year], how often did you have no useable or drinkable water whatsoever?	
	Shame	In the last [4 weeks or 1 year], how often did you feel shame because of problems you were experiencing with water during the last 12 months?	
		TOTAL	

● = IWISE-4 SCALE

For guidance on scale development and administration, including peer-reviewed papers and manuals, see www.WISEscales.org.

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CONTACT

We are always happy to hear from you. You don't need to be in touch to use the open-access WISE Scales, but you might want to reach out if:

- You have any questions about scale implementation or data analysis
- You would like access to the nationally representative data on water insecurity experiences
- You have ideas for additional adventures in water (in)security
- You have translations or implementation experiences to share

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