



ASSESSING THE EFFECTS OF COVID-19 ON ACCESS TO WATER, SANITATION, AND HYGIENE IN USAID HIGH PRIORITY AND STRATEGY-ALIGNED COUNTRIES

Country Deep Dive Report - Mozambique

FEBRUARY 2021

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ACRONYMS AND ABBREVIATIONS

AIAS	Administração de Infraestruturas de Água e Saneamento (National Administration for Water and Sanitation Infrastructure)
COVID-19	Coronavirus Disease 2019
DHS	Demographic and Health Survey
DNAAS	A Direcção Nacional de Abastecimento de Água e Saneamento (National Directorate of Water Supply and Sanitation)
DRC	Democratic Republic of Congo
EDM	Electricidade de Moçambique
FIPAG	Fundo de Investimento e Património do Abastecimento de Água (Water Supply Assets and Investment Fund)
FPA	Fornecedores Privados de Água (Private Water Providers)
GDP	Gross Domestic Product
GWC	Global WASH Cluster
IMF	International Monetary Fund
INGO	International Non-governmental Organization
INS	Instituto Nacional de Saúde - National Institute of Health
IWED	Improving WASH Evidence-Based Decision-Making
JMP	Joint Monitoring Programme of UNICEF and WHO
LMIC	Low-to-middle income country
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
MPHRH	Ministério de Obras Públicas, Habitação e Recursos Hídrico (Ministry of Public Works, Housing and Water)
NGO	Non-governmental organization
OD	Open defecation
SINAS	Sistema de Informação Nacional de Água e Saneamento (National Water and Sanitation Information System)
SMS	Short Message Service - text message
SWA	Sanitation and Water for All
USD	United States Dollars
WASH	Water, Sanitation and Hygiene
WASIS	Water Services and Institutional Support
WHO	World Health Organization

EXECUTIVE SUMMARY

In May 2020, the United States Agency for International Development (USAID) tasked the Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project with assessing the effects of the novel Coronavirus Disease 2019 (COVID-19) on access to water, sanitation, and hygiene (WASH) services and products in USAID high priority and strategy-aligned countries.¹ The assignment sought to characterize the current state of affairs and to forecast near-term trends (6–18 months) that could assist governments, donors and implementers prepare an informed response to the WASH-related impacts of the pandemic.

We pursued two lines of inquiry. The first is a set of “deep dives” in seven countries (the Democratic Republic of the Congo (DRC), Ghana, Kenya, Mozambique, Nepal, Rwanda, and Senegal) selected to reflect a spectrum of geographic, cultural, and vulnerability characteristics. The deep dives consisted of interviews with key informants (WASH product and service providers, government officials, donors, and WASH program implementers), as well as SMS-based surveys of over 3,000 randomly selected individuals (in all countries save Nepal). The second line of inquiry is development of an econometric model linking income changes to WASH outcomes, relying on Demographic and Health Surveys and Multiple Indicator Cluster Surveys, constructed using data from the 28 USAID high priority and strategy-aligned countries, to generate WASH outcome forecasts for those same countries.

The magnitude of COVID-19’s economic shock varies widely across countries. Countries with heavy reliance on tourism and remittances suffered comparatively more, as did those countries where the government response resulted in more extensive or longer-duration movement restrictions that took larger tolls on economic activity. For the full analysis that combines results of the seven deep dives with the econometric analysis, we direct readers to the [WASHPaLS COVID-19 WASH Synthesis Report](#). This report presents the detailed findings of the deep dive for Mozambique.

In response to the pandemic, the Government of Mozambique declared a state-of-emergency on 30 March 2020 which it extended on 5 August, but the resulting reductions in movement were quite modest. Indeed, the mobility reductions in Mozambique were consistently the lowest among six USAID high priority and strategy-aligned countries we examined for which cellular mobility data are available. Respondents to our SMS surveys reported that COVID-19 had a major impact on their incomes, with about a third (32 percent) reporting losing their job and another 23 percent reporting earning less money. Among the 42 percent that ran a non-farm business, 23 percent closed their business. The specific water supply response measures put into place by the Government of Mozambique included suspension of water service cut-offs due to non-payment, reconnection of previously cut-off customers (including roughly 3,000 standpipes), suspension of fines for delayed late payments, and complete payment exemptions for all users of public and private standpipes up to 5m³ per month.

Our topline findings, by subsector, are as follows:

WATER SUPPLY – CURRENT STATUS

I) The proportion of consumers in Mozambique reporting that COVID-19 has made water access more difficult (36 percent) was among the highest we observed in the six countries in which we conducted surveys. At the same time, their reported changes in water supply modality

¹ Our analysis proceeded on the hypothesis that COVID-19’s direct health consequences in terms of morbidity and mortality would ultimately be far outweighed by the pandemic’s economic shock, based in part on predictions of an epidemiological model for the World Health Organization’s African region published in May (Cabore et al. 2020).

suggest some signs of improvements in service in response to government interventions, such as reconnection of utility customers in arrears and prohibiting cutoffs of service for non-payment.

2) Water suppliers are in financial difficulty, but thus far have been able to avoid service disruptions. Our interviews of 30 small private providers throughout Mozambique indicated that service continues largely uninterrupted, even though their revenues have declined. Suppliers have continued to collect revenues, making allowances for customers who face difficulty in paying their monthly tariffs. Their financial positions are precarious, however, and should be monitored. With support from USAID, a novel means of supporting small providers is currently being tested by UNICEF in collaboration with the government: together they will provide assistance to both public and private system operators by covering their electricity bills.

SANITATION – CURRENT STATUS

3) Consumers reported that financial constraints reduced their abilities to purchase sanitation products and services. Among our SMS survey respondents, one in five reported difficulty purchasing, installing, or upgrading latrines – the highest fraction among the six countries where we conducted surveys. Still, reported changes in sanitation service levels due to the pandemic were less than those reported for water services, which is expected given that an economic shock would not be expected to translate into an immediate sanitation service decline.

HANDWASHING – CURRENT STATUS

4) There appears to be a major increase in handwashing as a result of COVID-19. Eighty-nine percent of respondents to our SMS surveys in Mozambique reported that their friends and neighbors washed their hands either “much more” or “a bit more” than before the pandemic. This proportion was the highest among the six countries in which we conducted surveys.

5) We found no evidence of persistent or widespread shortages of soap and other hygiene products. Interviews with manufacturers and distributors of hygiene products, however, did identify drops in profit margins, driven by a shift in consumer preference away from luxury brands toward lower margin economy brands, increases in raw material costs, and the inability to raise prices because of the recognition of weakened purchasing power of consumers.

NEAR-TERM FUTURE TRENDS

6) Because of the scale of committed World Bank assistance, we do not foresee significant performance problems over the next 6-12 months at FIPAG, the major urban water supplier in Mozambique. The financial state of the utility, including its debt burden, however, remains a major concern.

6) Smaller providers, who supply vast portions of the Mozambican population, are on unsteady financial footing. While we did not find evidence of full system disruptions, smaller operators are in financial difficulty, and the administrative task of supporting them is not as straightforward as it is for FIPAG. A USAID-supported effort by UNICEF to cover electricity expenses directly should be monitored closely to determine if it is applicable more broadly.

7) We expect demand for sanitation products and services to track economic conditions. Unlike water supply, for which extended financial difficulties can result in long-term performance declines by providers, consumer demand for sanitation commodities, installation services, and tank and pit desludging should recover if and when economic activity rebounds. If the economic recovery is more

prolonged and there are delays in consumers ability to service, replace and/or repair their latrines, we may see increases in open defecation.

8) We are cautiously optimistic that the pandemic may have brought about a social norms shift with respect to handwashing. We foresee few immediate crises with respect to hygiene product supplies and general availability in Mozambique.

I. INTRODUCTION

Between June and October 2020, the United States Agency for International Development (USAID) Water, Sanitation, and Hygiene Partnerships and Learning for Sustainability (WASHPaLS) project conducted a rapid assessment and forecasting analysis of the effects of the novel Coronavirus Disease 2019 (COVID-19) pandemic on access to WASH services and products in USAID high priority and strategy-aligned countries. The central question we sought to answer was:

How will the COVID-19 pandemic (and resulting economic crisis) affect access to water supply services, sanitation services and products, and hygiene products across the WASH high priority and aligned countries, and how will these effects vary by subsector, geography, and provider type?

We proceeded on the assumption that direct health effects of the pandemic in USAID high priority and strategy-aligned countries would be exceeded by the economic shock of measures taken to contain the pandemic (restrictions of movement, closures of business, disruptions of supply chains, and so forth).²

On 4 May 2020, the Global WASH Cluster (GWC) and Sanitation and Water for All (SWA) released an advocacy document entitled “Mitigating the socio-economic impacts [of COVID-19] on the Water, Sanitation, and Hygiene (WASH) Sector,” which predicted the following trends:

- decline in access to and increase in prices for WASH commodities and services due to rupture in global supply chains caused by restrictions or no movements of goods and essential consumables (e.g. fuel, chemicals), affecting continuity of services;
- decline in the financial viability of WASH services due to loss of revenue and subsidies, and income loss by households, limiting ability to pay for WASH commodities and services;
- decline in national government’s ability to deliver WASH services, affecting social cohesion, leading to tension and instability;
- diversion and deprioritization of domestic funding away from the WASH sector, due to inability to pay for or suspension of loans; and,
- shift in donor funding from existing WASH commitments and priorities, resulting in a significant reduction in the overall funding of [the WASH] sector (Sanitation and Water for All and Global WASH Cluster 2020).

Our assessment was intended to provide both a snapshot of current WASH access conditions and forecasting of near-term trends. To inform our analyses, we found it useful to investigate the degree to which the GWC/SWA predictions played out in practice. The predictions also served to help us formulate a set of hypotheses prior to commencing activities (Table I).

² COVID-19 is likely to cause the first increase in global poverty in two decades, pushing some 100 million people into poverty and 50 million into extreme poverty in 2020, with an estimated 23 million going into extreme poverty in sub-Saharan Africa (Mahler et al. 2020). As we describe herein, the economic shocks of COVID-19 were experienced immediately and profoundly by high priority and strategy-aligned countries, and have persisted even as some of these countries have inched back toward pre-pandemic conditions of economic activity.

We sought to test the hypotheses and predictions noted above through two main activities:

1. a “deep dive” into seven countries, consisting of interviews with hundreds of key informants and SMS-based consumer surveys of 500-750 respondents per country (with the exception of Nepal); and
2. construction of an econometric model to forecast changes in access to water and sanitation access from income losses, using Demographic and Health Survey (DHS) and Multiple Indicator Cluster Survey (MICS) data.

This report focuses on results of the deep dive activity. Details on the econometric model can be found in the [WASHPaLS COVID-19 WASH Synthesis Report](#).

Table I: Pre-specified hypotheses

Water Supply	Sanitation	Hygiene
Service provider revenues will decline because of 1) government policies regarding tariff collection, 2) consumer interpretation of those policies, and 3) reduced ability-to-pay by consumers	Fragile sanitation value chains (with respect to both excreta containment and management) in urban and peri-urban areas will be most highly impacted. There will be increased stress on working capital and cash flows, profitability, and investment capacity	Wholesale costs of soap will rise, a function of the reduced buying power of local currency as well as disrupted supply chains.
Supply chains for key commodities will be disrupted	Consumer spending could shift away from sanitation leading to: a) slower rate of improved toilet adoption in OD/ Limited households and b) reversion to OD in case of unaffordability of pit emptying services	Consumer spending on these products may decline as assets are diminished, with priority spending directed at food and other immediate family needs, but that these spending declines may be partially offset by widespread campaigns to wash hands to prevent COVID infection.
The degree of operational and financial challenges faced by water service providers will vary considerably by modality and target population. The "in-betweeners" will be the most heavily affected; larger utilities will gain donor attention, and rural self-supply will		There have been supply chain disruptions in most countries, particularly those which are net importers of hygiene products or product components. Compounded by limited mobility due to lockdowns or curfews and panic buying from wealthy

<p>be largely unaffected. Smaller providers, informal sector actors, and centralized community systems will have less "safety net"</p>		<p>consumers, supply chain disruptions could lead to product shortages.</p>
<p>Rural populations who rely on self-supply will see far less dramatic access effects. Supply chains for pump parts and maintenance will be affected, but given the already high failure rates of rural water infrastructure, rural populations generally rely on multiple water sources</p>		

2. METHODS AND DATA

Given the time frame for this analysis, we elected to conduct a detailed investigation into a subset of USAID's high priority and strategy-aligned countries. We selected seven countries for deep dive analysis based on their representation of a spectrum of geographic, cultural, and vulnerability characteristics, as well as the confidence in our ability to secure interviews with key informants identified via snowball sampling. The seven countries are Democratic Republic of the Congo (DRC), Ghana, Kenya, Mozambique, Nepal, Rwanda, and Senegal (*Figure 1*).

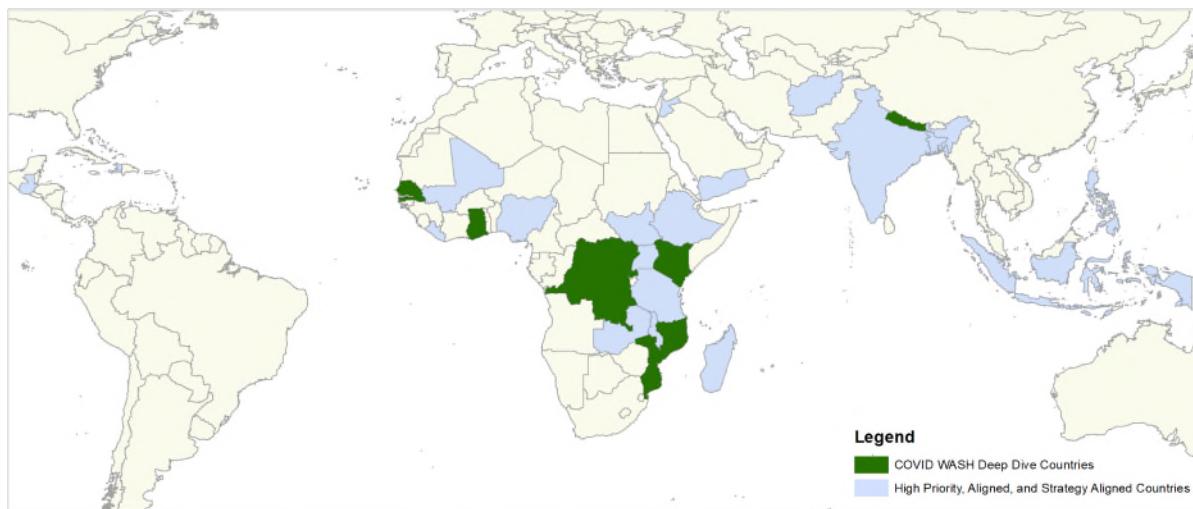


Figure 1. **Highlighted countries are USAID high priority and strategy-aligned countries, with the deep dive countries in green.**

Our preparatory work for the deep dive began with a desk review of the country's COVID-19 status, the government response, and pre-pandemic WASH indicators, and the institutional responsibilities for different elements of WASH provision, which included:

- an overview of the key actors and institutions participating in water and sanitation service provision, including the distribution of legal and regulatory responsibilities,
- consultation of most recent UNICEF/WHO Joint Monitoring Program (JMP) data, UNICEF Multiple Indicator Cluster Survey (MICS), and USAID Demographic and Health Survey (DHS) for the country,
- consultation of publicly available government response trackers and vulnerability estimates for the country,
- examination of import/export numbers for soap and chlorine, and

- web searches for news stories and public reports on WASH in the context of the pandemic.

We consulted the USAID Mission in Mozambique for guidance and recommendations on key informants, and employed a “snow-balling” approach, requesting initial key informants for introductions or contact details (e.g., requesting NGOs and value chain actors for the contacts of their partners). We also cold-called value chain actors based on contact information sourced from LinkedIn. Finally, we conducted short phone surveys with randomly selected small private water system providers (Fornecedores Privados de Água, or FPAs).

2.1. KEY INFORMANT INTERVIEWS

We conducted semi-structured interviews of 6 key informants in Mozambique and an additional 30 interviews of FPAs via phone or videoconference (Table 2). The purpose of these interviews was twofold: first, to secure macro-level insights from well-positioned observers (essential during a period in which in-country visits were rendered impossible) and second, to hear directly from suppliers of WASH products and services regarding their present and anticipated financial and operational challenges. The interviews complemented our consumer surveys, which we conducted by Short Message Service (SMS) questionnaires sent to mobile phones. The interviews provided a depth of information that is not possible to gain from a short SMS questionnaire. We also hoped that the interviews would contribute to predictions of future trends and help us to make sense of differences we observed between countries. Our key informant interviewees included (see **Error! Reference source not found.**):

- operators of water supply systems
- producers and distributors of hygiene products (mainly soap)
- implementers of donor-funded WASH programs
- multilateral and bilateral donors and implementers (such as the World Bank, UNICEF, and the British Foreign, Commonwealth, and Development Office (FCDO), formerly DfID)

We developed interview guides for each key informant group. For WASH products and service providers, we focused on if and how provision of service and product delivery had been disrupted by the economic consequences of pandemic.

Table 2. Distribution of key informants interviewed.

Key Informants Interviewed	Category	Number
Water supply service providers	Small private water service providers	30
Water supply and sanitation materials Suppliers	Soap manufacturers	1
Development Partners	INGOs, Local NGOs engaged in WASH sector, donors	4

Program implementers	Research and capacity development in WASH	1
Total		36

2.2. SMS CONSUMER SURVEYS

In addition to the key informant interviews, we conducted cross-sectional SMS surveys of at least 500 respondents per deep dive country (with the exception of Nepal, where SMS surveying is not yet routinely executed). We contracted the mobile-based research firm GeoPoll to conduct the survey, using an instrument of our design.

SMS surveying is an extraordinarily efficient means of collecting consumer information. With formal access to mobile subscriber databases consisting of millions of people in each of the African deep dive countries, GeoPoll was able to secure SMS survey responses from a sample with geographic and age distributions representative of the broader population of the country. Our survey could be easily read and filled out with a basic feature phone (non-smartphone), and was offered to potential respondents incentivized by a modest offer of top-up credit. The survey contained modules on employment and migration, water supply, sanitation, and handwashing. The instrument consisted of 33 questions, with skip patterns that meant that a respondent typically saw on the order 20-25 questions. In Mozambique, we offered the surveys in Portuguese (see Appendix 2 for the English translation).

We note that our SMS survey respondents, by virtue of their possession of a charged cell phone and the technical ability to fill out a survey, were likely a biased sample of the broader populations of our deep dive countries. Cell phone ownership is estimated to be 10 percent lower among women than among men in low-to-middle-income countries (LMICs)³, which we attempted to address by setting a 50-50 gender split quota for survey results. We consider it likely for respondents to have an elevated wealth and educational status than those who do not own a functional phone. Nonetheless, we consider these biases to be small enough to make using the SMS surveys extremely useful, given the relative ease of deploying them.

Only five percent of 1,790 respondents in Mozambique refused the initial offer of phone credit in return for filling out the survey, and 33 percent filled the survey to completion between 12 and 20 August 2020. To achieve the target sample of each subgroup (by age, gender, and region), we collected 586 surveys. The sample of respondents was broadly representative of Mozambique. We had a range of ages, with 38 percent ages 15-24, 35 percent ages 25-40, and 27 percent over 40. By design, roughly half (49 percent) of the respondents were female. Respondents were geographically dispersed, with 19 percent in Nampula county, 13 percent in Zambezia county, 11 percent in greater Maputo (city and county) and less than 10 percent in each of the other 8 counties. Sixty-four percent were urban residents.

³ GSM Association (2019). The Mobile Gender Gap Report.

3. MOZAMBIQUE CONTEXT

3.1. PRE COVID-19 WASH COVERAGE

Access to improved WASH services in Mozambique shows a distinct regional pattern. Figure 2 and Figure 3 show the distributions of water and sanitation service levels, respectively, for different regions in Mozambique. With respect to water service levels, basic coverage is estimated at above 90 percent in Maputo city and province, above 60 percent in Gaza and Sofala provinces, but below 41 percent in Cabo Delgado, Zambezia, and Tete. Similarly, there are vast regional differences in sanitation coverage and estimated open defecation, with nearly 90 percent basic sanitation coverage in Maputo city, 60 percent in Maputo province, but only 17-37 percent throughout the northern provinces. Open defecation rates are estimated at under 10 percent in Maputo city and province, but reach as high as 62 percent in Zambezia.

According to the WHO/UNICEF Joint Monitoring Programme (JMP), both basic and limited water service provision increased across income quintiles and urban and rural settings between 2000 and 2017 in Mozambique (Figure 4). Improvements in sanitation were observed in urban settings, with much slower rates of increase in both rural settings and in lower income quintiles nationally (including even a modest decline in basic sanitation coverage for the poorest quintile between 2000 and 2017).

According to the 2018 Mozambique Malaria Indicator Survey (MIS), 64 percent of Mozambiquan households have access to an improved source of drinking water, with an urban vs rural split of 89 percent vs 53 percent. Sixty-three percent of urban households have piped water in their home or yard (or in a neighbor's home or yard), whereas improved water supply in rural settings is primarily via public standpipes (17 percent) or boreholes (16 percent) (Instituto Nacional de Saúde and ICF 2018).

Nationally, 37 percent of households use an improved toilet, and open defecation is estimated at 30 percent. Sixty-nine percent of urban households have access to improved toilet facilities, as compared to 23 percent in rural areas, where the most common modality (16 percent of households) is the traditional improved latrine with concrete slab. Nationally, only eight percent of households use an improved toilet facility with flush toilet to a septic tank, and they are primarily in urban areas (24 percent) as compared to rural areas (1 percent) (Instituto Nacional de Saúde and ICF 2018).

Table 3 offers a summary breakdown of national-level water and sanitation service modalities.

Table 3. Summary of WASH Data from the 2018 Malaria Indicator Survey (MIS).

Source: Instituto Nacional de Saúde (INS) e ICF. 2019. Inquérito Nacional sobre Indicadores de Malária em Moçambique 2018.

Indicator	Percentage (%)
Proportion of population with access to improved water source	64
Sources of Improved Water	
Piped water (including into dwellings, yard/plot, neighbors)	23
Public standpipe	16
Tubewell/borehole	12

Protected spring	10
Other protected sources	3
Proportion of population with access to improved sanitation	37
Types of Improved Sanitation Facilities	
Flush/pour flush to: i) Piped sewer system, ii) Septic tank, iii) Pit latrine, iv) other	11
Ventilated improved pit latrine	10
Pit latrine with concrete slab	17
Estimated open defecation	30

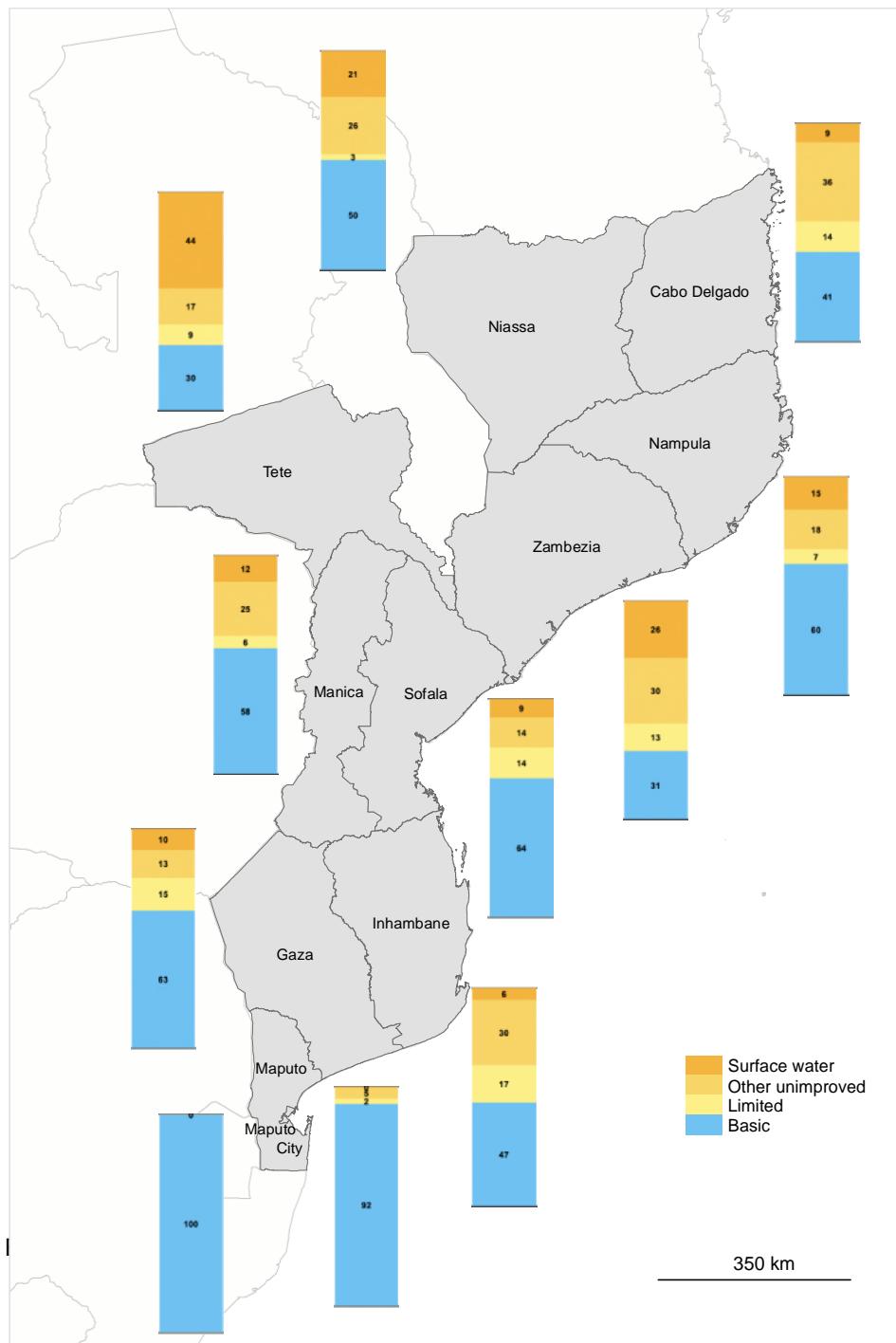


Figure 2. Distribution of water service level in Mozambique, by Region. Source: Mozambique HIV/AIDS and Malaria Indicator Survey (AIS) 2015, via WHO/UNICEF JMP Inequalities Files 2019 (washdata.org).

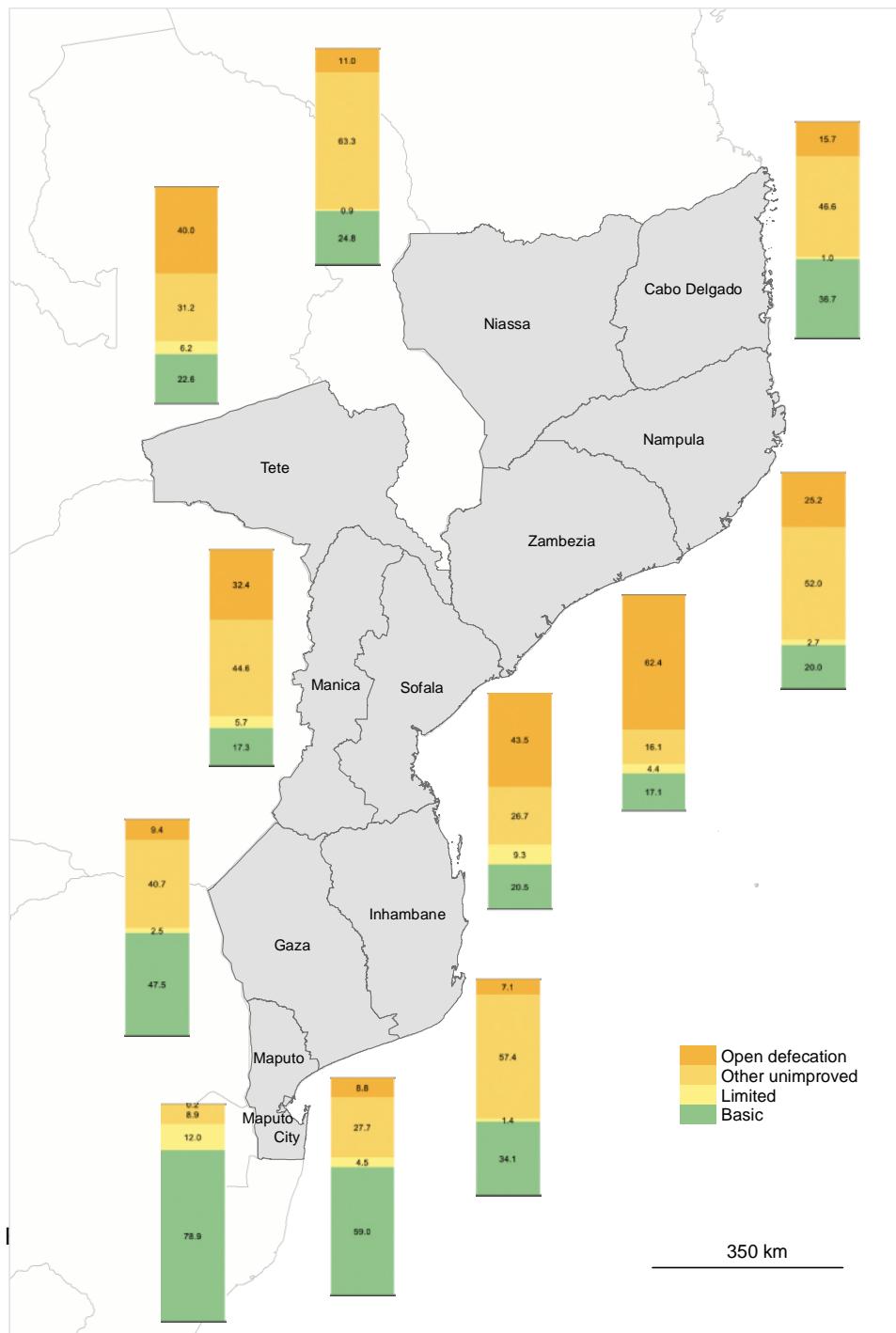


Figure 3. Distribution of sanitation service level in Mozambique, by Region. Source: Mozambique HIV/AIDS and Malaria Indicator Survey (AIS) 2015, via WHO/UNICEF JMP Inequalities Files 2019 (washdata.org).

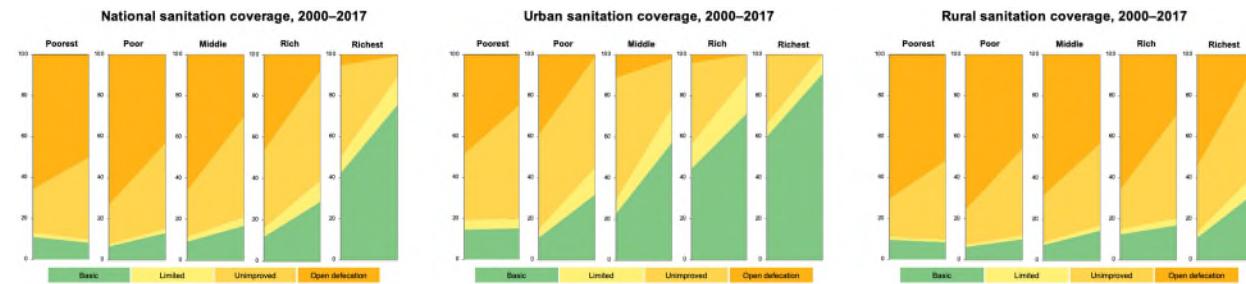
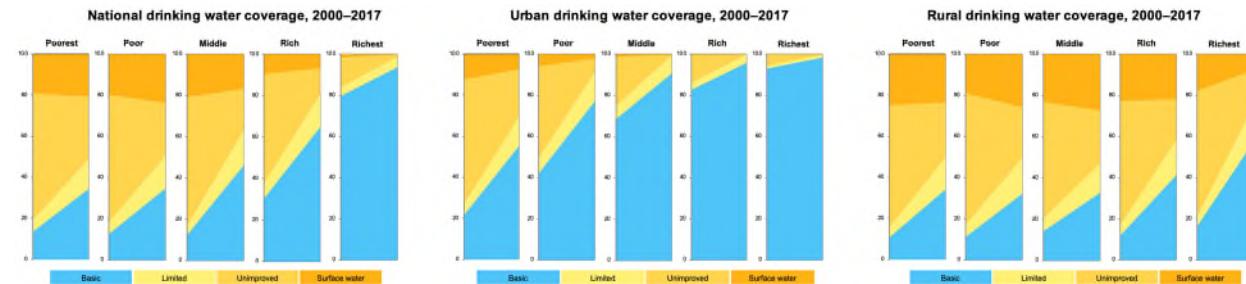
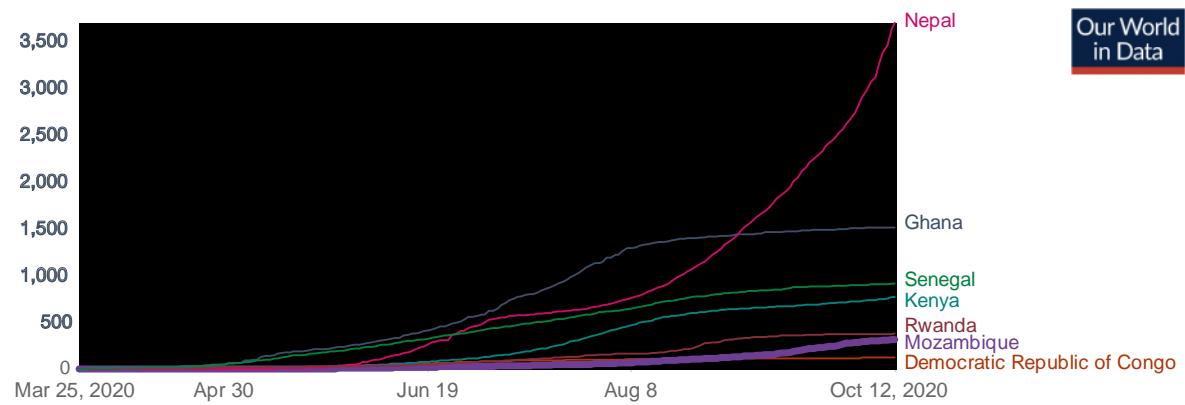


Figure 4. Estimated temporal trends in water and sanitation coverage between 2000 and 2017, broken down by wealth quintile. Source: WHO/UNICEF JMP, Estimates on household water, sanitation and hygiene by wealth quintile and sub-national region in Mozambique, December 2019 update.

3.2. COVID-19 SITUATION AND GOVERNMENT RESPONSE

As of mid-October 2020, Mozambique had recorded a total of approximately 10,000 confirmed cases of COVID-19, corresponding to roughly 320 confirmed cases per million inhabitants, and 70 confirmed deaths, with a marked increase in cases emerging in the first week of September (see Figure 5).



Source: European CDC – Situation Update Worldwide – Last updated 12 October, 10:05 (London time)

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Figure 5. Cumulative confirmed COVID-19 cases per million people. Mozambique highlighted in bold. Source: [Our World in Data](#).

The Government of Mozambique implemented pandemic response measures in late-March, with a state-of-emergency declaration on 30 March extended on 5 August. Specific policies included shutdown of schools, bans of public gatherings of greater than 50 people, ban and cancellation of all entry visas, and a 14-day quarantine for all travelers arriving from abroad. The 5 August state of emergency extension included limitations on movement within the country and on border entries; a further ban on all types of public or private events; closure or reduction of non-essential shops; monitoring of prices of essential goods for preventing price gouging; redirection the industrial sector toward the production of goods necessary for pandemic prevention and mitigation; introduction of employee rotation in the workspace; and enforcement of the adoption of preventative actions in all institutions, public or private. Shortly thereafter, on 18 August, the government introduced a gradual easing of restrictions, including reopening universities and allowing religious gatherings of under 50 people.⁴

Despite these measures, increases in “time spent at home” were relatively modest in Mozambique, consistently the lowest among six countries we examined as part of our COVID-19 trends analysis for which cellular mobility data are available (Figure 6). This muted effect on movement is at least in part a function of ongoing humanitarian crises, civil unrest, and food insecurity, which all inhibit social distancing efforts.⁵

⁴ International Monetary Fund COVID-19 Policy Response Tracker. <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#M>

⁵ Surgo Foundation, the Africa COVID Community Vulnerability Index (CCVI). <https://precisionforcovid.org/africa>

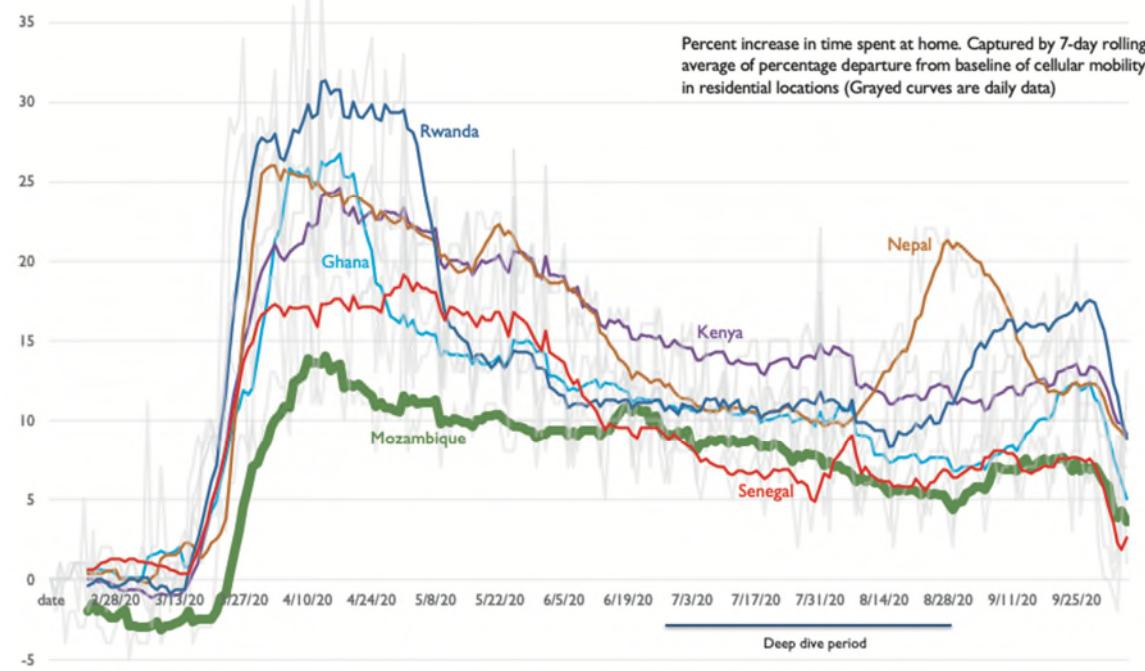


Figure 6. Percent departure from baseline mobile phone mobility, residential category, February to early October 2020. Periods of our SMS survey and deep dive interviews are noted. Mozambique is highlighted in bold. The higher the value, the more time the cell phone user spends at home (and less time at commercial, industrial, or other non-residential locations) relative to baseline. Source: [Google COVID-19 Community Mobility Reports](#).

In response to anticipated social and economic impacts of the pandemic, the government of Mozambique issued a plea to donors for USD 700 million in assistance to finance tax exemptions for families and the health sector (VAT and import tariff exemptions on food, medicine and medical equipment), as well as to facilitate health and humanitarian response expenditures (including health-related goods and services, and increased cash transfers and subsidies to the poorest households as well as microenterprises and small-to-medium enterprises (SMEs)). It also implemented VAT exemptions on soap, sugar, and vegetable oil through December 2020.⁶

⁶ International Monetary Fund COVID-19 Policy Response Tracker. <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19#M>

In collaboration with UNICEF, the Stockholm International Water Institute (SIWI) screened and mapped national WASH policy responses to COVID-19 in 84 countries between March and June 2020 (UNICEF 2020). Their results for Mozambique appear in Table 4

Table 4. Summary of WASH policy measures taken in response to COVID-19 in Mozambique, broken down by the lead institution. Key selected measures highlighted in bold. Source: UNICEF (2020).

Initiatives/measures led by national/central level state institution or national emergency taskforce	Initiatives/measures led by sub-national/local level state institution, sub-national emergency taskforce, or non-state actor
Promoting handwashing with soap and water and safe behaviors through population-wide initiatives	Rehabilitating or constructing new handwashing stations in exposed collective sites and public spaces, including schools, health care facilities, markets, prisons, transport locations and other public places.
Identifying and training community leaders in prioritized rural areas to promote proper handwashing (and other infection, prevention and control (IPC) measures) in their respective communities and participation in monitoring.	Promoting domestic water treatment if there is no access to safe drinking water and proper handling and storage of treated water in households with no piped connection.
Fighting disinformation campaigns, ensuring people are able to access reliable information.	Conducting rapid assessments of the WASH situation in health care facilities, securing the continuity and quality of water and sanitation services in health care facilities
Not cutting off the water supply to households who are unable to pay bills, under any circumstances.	Immediately reconnecting free of charge all households disconnected for non-payment that do not currently receive water services.
Ensuring the availability, quality and continuity of water, sanitation, and handwashing services in schools, in preparation of schools' reopening.	Ensuring a minimum daily volume of drinking water for all vulnerable households or not connected to the mains network, through infrastructure expansion and/or alternative solutions (e.g. distribution of water to households or at specific community points, trucks, kiosks, etc.)
Promoting improved cleaning and disinfection in public spaces and high-risk areas (e.g., public fountains, recreational areas, schools, public places, institutions offices, etc.)	Establishing, maintaining and/or extending (in collaboration with social protection services) the financial instruments needed to facilitate service payments, particularly for vulnerable households
Guaranteeing access to electricity and communications for users so they can communicate with service providers and authorities, receive information, make online payments, etc.	Identifying critical intervention areas ("hotspots") in water utility service areas to prioritize COVID-19 response interventions.
Identifying priority intervention areas, supporting national multi-sector mapping of those areas most at risk from COVID-19 ("hotspots").	Expanding infrastructure and extending coverage of water and sanitation services to unconnected areas.

**Securing access to energy / electricity for utilities,
to ensure the operation of water and sanitation
services.**

In April, Mozambique's Ministry of Public Works, Housing and Water (Ministério de Obras Públicas, Habitação e Recursos Hídricos – MPHRR) presented a COVID-19 contingency plan for the water sector, including an inventory of service levels by system, identification of the number of low-income customers who may require payment relief support for water and sanitation bills, identification of external support for provision of services to low-income populations, and budgeting of the impacts of contingency measures.⁷

The contingency plan identified service continuity, maintenance of adequate disinfection, and chemicals supply chain protection as priorities, estimating costs at USD 44.5 million for 6 months across five categories:

- USD 30.4 million for FIPAG (Fundo de Investimento e Património do Abastecimento de Água): the national para-statal asset owner of water supply for Maputo and the largest population centers, totaling 21 systems across 22 cities and four villages;
- Roughly USD 2 million to AIAS (Administração de Infraestruturas de Água e Saneamento), the national Administration for Water and Sanitation Infrastructure which covers small town systems;
- Roughly USD 3 million for rural water supply systems;
- Roughly USD 2.3 million for small private water system providers, FPAs; and,
- Roughly USD 6.7 million for sanitation expenditures (primarily in the area of fecal sludge management in the cities of Maputo and Beira).

The specific water supply response measures put in place by the government included: suspension of water service cut-offs due to non-payment, reconnection of previously cut-off customers (including roughly 3,000 standpipes), suspension of fines for delayed late payments, and complete payment exemptions for all users of public and private standpipes up to 5m³ per month.

MPHRH's contingency plan also called for a one-year postponement of FIPAG's debt service to its international creditors (estimated at USD 3.8 million), temporary suspension of payment of energy bills for all water and sanitation service providers in the major cities of Maputo and Beira, estimated at around USD 1.5 million per month, and mobilization of approximately 270,000 liters of additional diesel fuel for use by emergency generators.

⁷ MPHRR, "Medidas de prevenção contra a propagação do novo coronavírus Covid19." April 2020.

3.3. THE COVID-19 ECONOMIC SHOCK

Results from the key informant interviews and SMS surveys (presented in detail in the following sections) indicated economic distress among households and operators of water supply systems. Our SMS surveys asked respondents how their employment had changed due to the pandemic. Respondents reported that COVID-19 had a major effect on their incomes. About a third (32 percent) reported losing their job and another 23 percent report earning less money. Among the 42 percent that ran a non-farm business, 23 percent closed their business. There was overlap in job losers and business closures, so 39 percent of respondents either lost a job or closed a business. These reported rates of job loss suggested a much larger economic contraction than the World Bank and IMF forecast. For example, in June 2020 the World Bank forecast GDP growth of 1.3 percent for 2020. This rate is about 3 percentage points below GDP growth of 4.3 percent in 2019.⁸

⁸ https://www.worldbank.org/en/publication/macro-poverty-outlook/mpo_ssa

4. FINDINGS

Below we present findings by WASH subsector, combining results of SMS surveys with our interviews with key informants. The SMS surveys captured effects reported by consumers, while the key informant interviews focused largely on supply-side impacts (i.e., changes in supply of services and performance of service providers).

4.I. WATER SUPPLY – CURRENT STATUS

Despite the government's measures to relieve water supply stress on consumers suffering from the pandemic's economic shock, consumers reported significant levels of COVID-19-related difficulties in water access.

As of August 2020, consumers in Mozambique reported high levels of water access difficulties relative to the countries we surveyed (Figure 7).

In evaluating changes in household access to water supply due to the pandemic, we asked: “*Has COVID-19 made it more difficult to get your drinking*

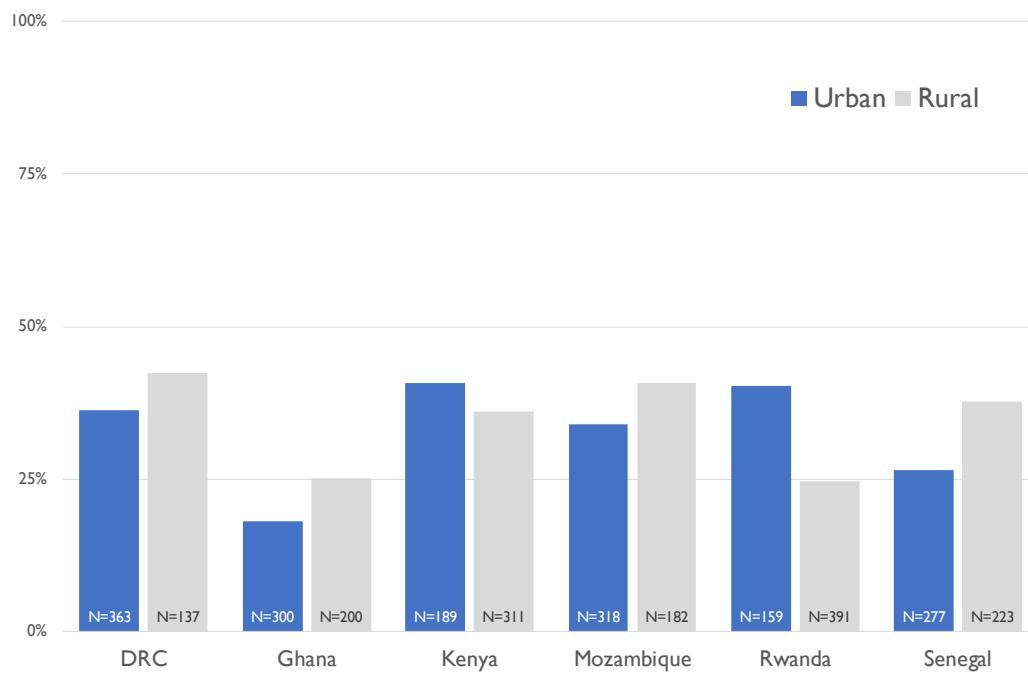


Figure 7. Percentage of respondents answering “Yes” to the question, “Has COVID-19 made it more difficult to get your drinking water?” Source: our own SMS surveys, conducted in August 2020 (except for Rwanda, which was conducted in October 2020). Sample sizes for each country segment shown at the base of the columns.

water?" Overall, 36 percent of the Mozambican respondents reported that COVID-19 made it more difficult to get drinking water; this share was a bit higher among job losers (38 percent) than among job keepers with no income loss (29 percent). Interestingly, job keepers who lost income were the highest fraction reporting more difficulty getting drinking water (43 percent). Among those who reported that drinking water access was more difficult, 86 described themselves as rural and 123 as urban. Forty-two percent said that they had less money to pay for it, 25 percent said they must travel further to get it, 19 percent reported higher prices, and 14 percent said it was more difficult to find.

Among the subset who said getting drinking water became more difficult, 69 percent answered "Yes" to the question: "*In the past week, was there a day when you couldn't get enough water to meet your household's needs?*" This subset was nearly 25 percent of the entire sample. We do not know how this figure compares to pre-pandemic conditions.

Even with these stated water access difficulties, there evidence that water service had actually improved

THE HEATMAP IN FIGURE HOW RURAL AND URBAN WHO REPORTED WATER DIFFICULTIES CHANGED

WATER SUPPLY SERVICE AFTER THE ONSET OF THE PANDEMIC. THERE WAS A NOTABLE INCREASE IN THE REPORTED USE OF PIPED SERVICE AMONG URBAN RESPONDENTS, PERHAPS A FUNCTION OF MEASURES THE GOVERNMENT PUT INTO PLACE TO ALLEVIATE THE FINANCIAL STRESS OF CUSTOMERS. A DETAILED DISPLAY OF HOW CONSUMERS REPORTED THEIR CHANGE IN DRINKING WATER SUPPLY SOURCE IS PROVIDED IN

	Rural N=74	Urban N=108
Piped connection	4	11
Cart vendor	0	-1
Bottled water/sachet	0	1
Tanker	1	-2
Well	3	0
Rainwater	0	-3
River/pond	7	0
Spring	-15	-6

was also consumer-reported over the course of the crisis.

8 INDICATES CONSUMERS ACCESS THE MODE OF

Appendix . (We note that in the program document presenting its USD 100 million COVID-19 support package, the World Bank observed that water access in Mozambique had improved after the onset of the pandemic.)

Small private water providers are suffering financially, but thus far are finding ways to cope.

The existence of a publicly available, spatially explicit dataset of water service providers afforded us an unusual opportunity to identify and speak directly with suppliers and learn of their operational and financial challenges in the face of COVID-19. In collaboration with Mozambique's National Directorate of Water Supply and Sanitation (Direcção Nacional de Abastecimento de Água e Saneamento (DNAAS)), the USAID-funded Improving WASH Evidence-Based Decision-Making (IWED) program created Mozambique's National Water and Sanitation Information System (O Sistema de Informação Nacional de Água e Saneamento (SINAS)). Among the operational specifications associated with each water system in the database is the contact information of owners and operators. (There are roughly 1,600 FPAs in SINAS and a total of 1,876 water providers.)

Table 5. Provincial locations of interviewed FPAs.

Province	Number of FPA Interviews
Cabo Delgado	1
Nampula	1
Zambezia	1
Inhambane	8
Gaza	8
Maputo Province	9
Maputo City	2

We interviewed 30 small private water system providers, or FPAs, reached by phone after attempting to contact 89 randomly selected entries in the SINAS dataset between 10 August and 8 September 2020. Our interviews were structured, with 14 questions (see Appendix 4), and generally took between 10 and 20 minutes to complete in Portuguese (and thus excluded a number of non-Portuguese speakers who answered the phone). The geographic distribution of the interviewed FPAs is provided in Table 5 and Figure 9.

Roughly half (14 of 30) of the respondents operated piped networks exclusively, 20 percent (6 of 30) sold water through cash-and-carry via jerrycan, and a third (10 of 30) employed both modes. Roughly equal proportions of respondents reported supplying more water (9 of 29), less water (9 of 29), and unchanged amounts of water (11 of 29). 22 of 30 FPAs reported not changing their prices during the pandemic, but 25 of 30 FPAs reported some amount of revenue decline because some portion of their customers were either unable to pay, unwilling to pay, or requesting a delay in payments.

Meanwhile, with regard to supply chain issues (specifically, access to equipment, parts, and chemicals), nearly half (14 of 30) reported no issues; 4 of 30 reported some supply chain problems; and 11 reported access issues related to their own financial difficulties.

Finally, 13 of the 30 FPAs we interviewed reported aspirations of capital improvements and possible system expansions but were unable to proceed because of their current financial difficulties. Notably, none of the 30 had ceased operating, and only a few revealed any imminent concerns about the possibility of shutting down operations.

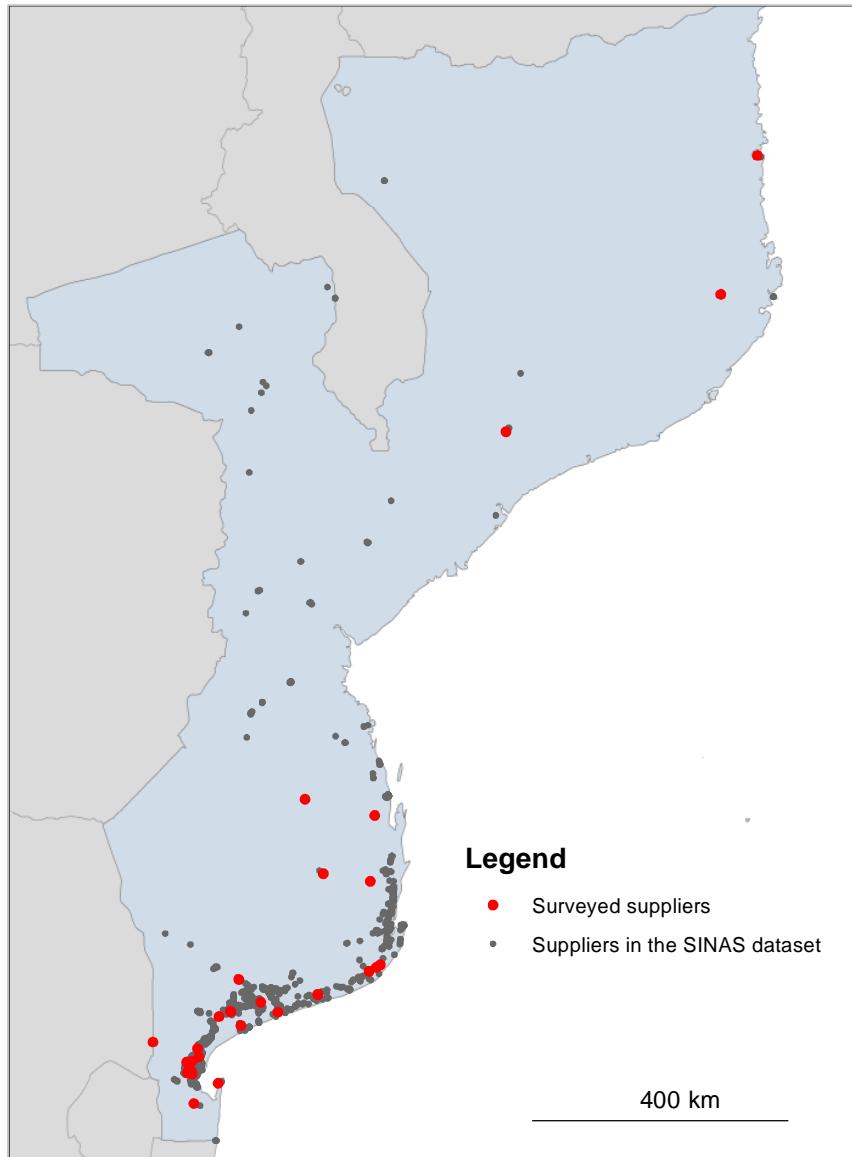


Figure 9. Locations of FPAs interviewed by phone as well the full SINAS dataset. Source: www.sinasmz.com.

4.2. SANITATION – CURRENT STATUS

As compared to water supply, our SMS surveys of consumers identified only marginal changes in reported sanitation access.

Modest numbers of respondents to our SMS survey reported increased usage of private toilets and less use of shared facilities (Figure 10). That very few SMS survey respondents reported changes in their sanitation situations is understandable, given that sanitation (which is primarily on-site) is not sensitive to sudden operational disruptions to the same degree as water supply systems (with the exception

	Rural N=211	Urban N=375
A private one at home	2	4
One I share	-2	-3
A public community toilet	0	1
None	0	-2

Figure 10. Percentage point change in reported sanitation modality after the onset of COVID-19 in Mozambique.

of piped sewer service, whose profile matches that of piped water supply, but which is enjoyed by an exceedingly small fraction of the populations under study).

This short-run good news is matched by a medium-term concern. Just under half of respondents (44 percent) reported having a septic tank (or latrine pit) and paying someone to empty it. Among this group, 17 percent had not been able to afford emptying since the onset of COVID-19 and another four percent stated that their pit emptying service is no longer available.

Household financial pressures appeared to lower demand for sanitation products and services to a greater extent in Mozambique than other countries that we investigated.

Broadly, employment and income trends did not predict a decrease in sanitation service level in Mozambique. However, lost employment and income did increase the probability that a respondent reported that they could not afford to purchase or upgrade a latrine, or empty a latrine pit or septic tank (Figure 11).

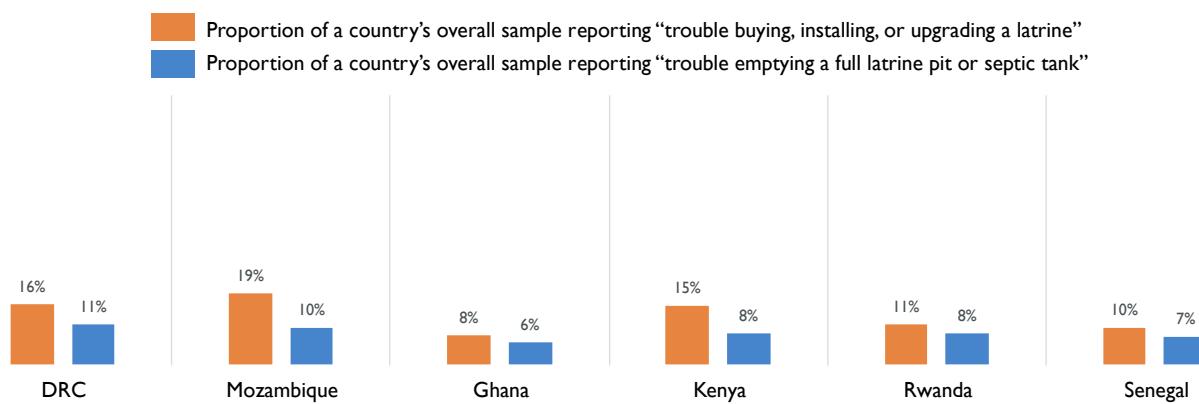


Figure 11. Indicators of sanitation service difficulties reported by respondents to the team's SMS surveys. N = 500+ participants per country.

In comparison to their responses with respect to water supply, participants in the SMS surveys across six countries reported modest pandemic-related difficulties around sanitation (both onsite containment and desludging). Overall, between 8 and 19 percent of respondents reported trouble buying, installing or upgrading latrines, and between 6 and 11 percent reported difficulties with desludging (see Figure 11); Mozambique had the highest proportion of respondents reporting such difficulties for sanitation product purchase and upgrade, and nearly the highest for desludging.

Meanwhile, among those reporting difficulty with purchase, installation, or upgrades of latrines, “I cannot afford it” was the leading reason given in five of the six countries surveyed (ranging from 54 percent of respondents in Rwanda to 87 percent in Mozambique).

4.3. HANDWASHING – CURRENT STATUS

The pandemic is correlated with a significant increase in hand-washing behavior in Mozambique.

Nearly two thirds (62 percent) of our SMS survey respondents reported that neighbors washed hands with soap “much more” than before COVID-19, the highest proportion of any country we investigated (see Figure 12). A majority report that it is either easier to obtain soap post-COVID-19 (29 percent) or about the same as before (42 percent), as compared to 30 percent who report it is more difficult to acquire soap.

We could not confirm any extended disruptions of soap availability or increases in consumer prices.

Mozambique imported USD 23.9 million worth of soap and soap-related goods in 2018: 40 percent from South Africa, nearly 27 percent from Indonesia, 10 percent from Malaysia, and 8.7 percent from Kenya.⁹ As mentioned above, the government of Mozambique eliminated VAT on soap in the interests of increasing affordability during a time of economic pressure. A major domestic manufacturer we interviewed reported that they had lowered prices in anticipation of reduced customer purchasing power.

Margins of large local suppliers are under pressure because of shifts away from luxury brands as well as a temporary spike in raw materials prices.

The domestic manufacturer we interviewed remarked that in Mozambique, “most of the middle class has been become the working class” because of the economic shock of COVID-19, and reported an initial profit margin decline of 30-35 percent when the pandemic first hit, with drops in high-margin sales combining with elevated raw materials prices. As of September, revenues had rebounded and stabilized. Notably, the manufacturer reported having made no layoffs during the period of contraction – a significant feat given that it employs over 1,500 staff across multiple factories (largely in the south).

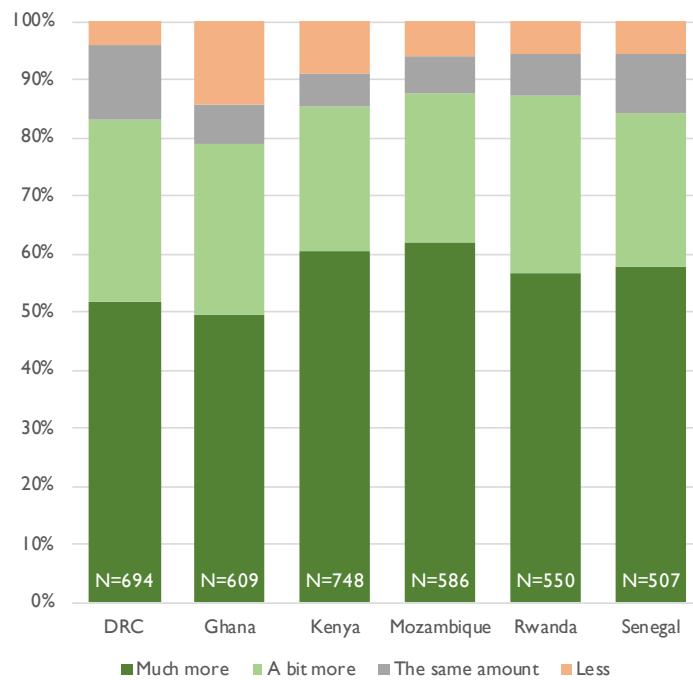


Figure 12. SMS survey response to the question, “Do you notice your neighbors and friends washing their hands with soap more often than before COVID-19?”

⁹ Observatory of Economic Complexity, <https://oec.world/en/profile/hs92/soap?redirect=true>.

5. FUTURE WASH ACCESS TRENDS IN MOZAMBIQUE

5.1. WATER SUPPLY

The financial stresses currently being endured by water suppliers at a range of scales are significant. The World Bank's COVID-19 proposed development policy grant package for Mozambique, totaling USD 354 million, includes USD 20 million earmarked for water and sanitation. The Bank's earlier Water Services and Institutional Support (WASIS) emergency relief to FIPAG for typhoon response reportedly has unspent funds on the order of USD 5 million, and the Bank already transferred USD 100 million in broader budget support to the government intended for a full fiscal year, of which USD 5.4 million was to be directed to FIPAG to cover free water via public standpipes for the first 5m³ of monthly consumption. It is difficult to determine the degree to which these funds will sufficiently shore up Mozambique's largest supplier; they do appear to be significantly lower than the needs spelled out by MPHRR in its contingency plans. One of our key informants highlighted that a key variable to track is whether World Bank funds flowing through the Ministry of Finance actually reach the agencies for which they were targeted. Nonetheless, these aid packages for Mozambique must be recognized as significant.

With respect to smaller providers, our own interviews with FPAs suggested a difficult situation, but one that had not yet manifested in service disruptions. (The resilience of these systems in their current financial state is worth monitoring closely, particularly if widespread movement restrictions are reinstated in response to future waves of COVID-19.) However, we also note that an interview with a key informant on the donor side reinforced our finding that smaller systems, while impacted, are managing to continue functioning: "if systems were failing in Nampule and Zambezia, we would hear definitely hear about it."

Finally, we highlight an aid intervention to monitor closely: the direct payment of electricity bills for water service providers as a means of assisting a fragmented sector of smaller operators. Mozambique has roughly 3,100 water supply systems (of which over 1,800 are private), serving 18.3 million consumers. USAID is currently supporting a UNICEF program to directly pay the electricity bills incurred by service providers to Mozambique's national power authority, Electricidade de Moçambique. If practical (specifically, if electric utilities maintain databases for which they easily identify their water utility customers), this intervention could represent an important effort for supporting small-scale providers. At the same time, it could also create perverse incentives leading to corruption and abuse, so it would have to be deployed with controls in place.

5.2. SANITATION

We did not interview sanitation value chain actors in Mozambique, but our SMS surveys indicated that sanitation businesses (both suppliers of latrine products and services, and desludging service providers) have seen declines in demand and sales resulting from the COVID-19 economic shock. We anticipate that, as we found in other countries we investigated, the subsector will track future economic recovery (or downturn).

5.3. SOAP

This subsector is probably the most difficult to forecast, largely because the changes in handwashing behavior that are indicated by our SMS surveys are to our knowledge unprecedented. Though there are indications of a modest decline in self-reported handwashing following an easing of concern regarding COVID-19 in low-income countries, we have no historical precedent on which to base an assumption

that the decline will continue rather than the change in behavior becoming entrenched as a durable social norms shift.

What we deem likely is that soap will become more affordable to consumers in response to income recovery from the COVID-19 shock. Whether increased consumer spending power will result in increased soap sales is uncertain; indeed, it certainly is possible that handwashing behaviors will decline again as the pandemic recedes. We do not see declines in soap access outside of the affordability challenges of reduced incomes; indeed, soap prices remain stable across our deep dive countries.

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APPENDIX I - LIST OF KEY INFORMANTS

Below is a list of the organizational affiliations of those key informants we interviewed. We interviewed multiple respondents at several institutions.

Category	Organization
Donor	Department for International Development (now the Foreign, Commonwealth & Development Office)
Donor	World Bank
Multilateral Institution	UNICEF
NGO	SNV
USAID Program	WASH-FIN (Tetra Tech)
Value Chain Actor	<i>Anonymized soap and vegetable oil manufacturer</i>

APPENDIX 2 - SMS SURVEY INSTRUMENT

English version

Q #	Q Name	English	Skip Pattern
NA	Opt-In-Incentive	GeoPoll: Reply 1 to answer questions on Coronavirus and earn #TOPUP# ! No cost to reply. For help reply HELP	I = BirthYear HELP = Help
NA	Help	GeoPoll is a global network of people shaping their community by answering short surveys. Free to respond. Reply STOP to Opt-Out. Visit GeoPoll.com for info	I = BirthYear STOP = Refusal
NA	Refusal	Thank you for your time, you will be removed from today's survey. For more information or to register for future surveys please visit GeoPoll.com	End poll declined
NA	Ineligible	You are ineligible for this survey. For more information on Coronavirus prevention visit who.int	End poll ineligible
I	BirthYear	In what year were you born? Reply with a four-digit number like 1980.	1900-1919 = Ineligible 1920-2005 = Gender 2006-2020 = Ineligible
2	Gender	Are you male or female? Reply with 1 or 2. 1)Male 2)Female	1-2 = ADM-I

Q #	Q Name	English	Skip Pattern
3	ADM-I	<p>What Province do you currently live in?</p> <p>1)Nampula 2)Zambezia 3)Tete 4)Sofala 5)Cabo Delgado 6)Manica 7)Inhambane 8)Gaza 9)Maputo 10)Niassa 11)Maputo City</p>	I-11 = Urban/Rural
4	Urban/Rural	<p>Do you live in a urban or rural area? Reply with 1 or 2.</p> <p>1)Urban area 2)Rural area</p>	<p>1 = Migrate 2 = Employment</p>
5	Migrate	<p>Has COVID-19 and the lockdown led you to move to a new home?</p> <p>1)Yes - Within my city/town 2)Yes - Outside of my city/town 3)No - I still live in the same place</p>	I-3 = Employment
6	Employment	<p>Has COVID-19 changed your employment?</p> <p>1)No - It is the same 2)Yes - I earn less money 3)Yes - I lost my job 4)Yes - I got a new job 5)Yes - I earn more money</p>	I-5 = Business1
7	Business1	<p>Before COVID-19, did you run a business (not a farm)? Reply with 1 or 2.</p> <p>1)Yes 2)No</p>	<p>1 = Business2 2 = WaterChange</p>

Q #	Q Name	English	Skip Pattern
8	Business2	How has COVID19 affected your business? 1)More income 2)No change 3)Income dropped a little 4)Income dropped a lot 5)I closed my business	1-5 = WaterChange
9	WaterChange	Has COVID-19 made it more difficult to get your drinking water? Reply with 1 or 2. 1)Yes 2)No	1 = WaterChangeHow 2 = Toilet
10	WaterChangeHow	How is it more difficult to get your drinking water? 1)I have less money to pay for it 2)Prices are up 3)It is harder to find 4)I must travel further to get it	1-4 = PreWaterSupply
11	PreWaterSupply	Before COVID-19, how did you get your drinking water? 1)Piped connection 2)Well 3)Bottled water/sachet 4)Tanker 5)Cart vendor 6)Rainwater 7)Spring 8)River/pond	1 = PipeDetails 2 = WellDetails 3 = BottledwaterDetails 4 = CurrentWaterSupply 5 = VendorDetails 6 - 8 = CurrentWaterSupply
12	PipeDetails	Where is the pipe that you use? Reply with 1 or 2. 1)In my home or compound 2)I must walk to it	1-2 = CurrentWaterSupply
13	WellDetails	Where is the well that you use? Reply with 1 or 2. 1)In my home or compound 2)I must walk to it	1-2 = WellDetails2

Q #	Q Name	English	Skip Pattern
I4	WellDetails2	How do you get your water from the well? 1)With a handpump 2)With a diesel pump 3)With a rope and bucket 4)Not sure/other	I-4 = CurrentWaterSupply
I5	BottlewaterDetails	Has getting bottled or sachet water changed since COVID arrived? 1)More expensive 2)Less expensive 3)Harder to find 4)Easier to find 5)No change	I-5 = CurrentWaterSupply
I6	VendorDetails	Has buying water from vendors changed since COVID arrived? 1)More expensive 2)Less expensive 3)Harder to find 4)Easier to find 5)No change	I-5 = CurrentWaterSupply
I7	CurrentWaterSupply	How do you get your drinking water now? 1)Piped connection 2)A well 3)Bottled water/sachet 4)Tanker truck 5)Vendor 6)Rainwater 7)Spring 8)River	I-8 = WaterService
I8	WaterService	What else makes getting water difficult now? 1)Fewer hours per day of service 2)Problems take longer to be fixed 3)I am afraid of waiting in a queue 4)No change	I-4 = WaterShort

Q #	Q Name	English	Skip Pattern
19	WaterShort	In the past week, was there a day when you couldn't get enough water to meet your household's needs? Reply with 1 or 2. 1)Yes 2)No	I-2 = Toilet
20	Toilet	Before COVID arrived, what kind of toilet did you use? 1)A private one at home 2)One I share with a few other households 3)A public community toilet 4)None	I-4 = Toilet2
21	Toilet2	What kind of toilet do you currently use? 1)A private one at home 2)One I share with a few other households 3)A public community toilet 4)None	I-3 = Toilet3 4 = Handwashing
22	Toilet3	Does the toilet you use most of the time include a septic tank or pit? 1)Yes 2)No 3)Not sure	I = PitEmptying1 2-3 = Handwashing
23	PitEmptying1	Do you pay someone to empty your latrine pit or septic tank when it is full? Reply with 1 or 2. 1)Yes 2)No	I = PitEmptying2 2 = Upgrade
24	PitEmptying2	Since COVID arrived, have you had trouble emptying your full latrine pit or septic tank? 1)Yes 2)No - I haven't tried to empty it 3)Pit/tank not yet full	I = PitEmptying3 2-3 = Upgrade
25	PitEmptying3	How has emptying your latrine pit or septic tank changed since COVID arrived? 1)I cannot afford it 2)The service is no longer available in my area 3)Other	I-3 = Upgrade

Q #	Q Name	English	Skip Pattern
26	Upgrade	Since COVID arrived, have you had trouble buying, installing, or upgrading a latrine? 1)Yes 2)No 3)Did not try to buy/install/upgrade since COVID arrived	I = Upgrade2 2-3 = Handwashing
27	Upgrade2	How has buying, installing, or upgrading a latrine changed since COVID arrived? 1)I cannot afford it 2)I cannot find anyone who is selling what I need 3)Other	I-3 = Handwashing
28	Handwashing	Do you notice your neighbors and friends washing their hands with soap more often than before COVID-19? 1)Much more 2)A bit more 3)The same amount 4)Less	I-4 = Handwashing2
29	Handwashing2	How do you usually wash your hands? 1)With water 2)With water and soap 3)With water and sand/ash/other	I-3 = Handwashing3
30	Handwashing3	Since COVID arrived, has it become easier or more difficult for your family to obtain any kind of soap to wash hands? 1)Easier 2)Harder 3)About the same	I = Handwashing4 2 = Handwashing5 3 = Close-out-Incentive
31	Handwashing4	What has made it easier to obtain soap for handwashing? 1)Lowered prices 2)Free give-away's 3)Other	I-3 = Close-out-Incentive

Q #	Q Name	English	Skip Pattern
32	Handwashing5	What has made it harder to obtain soap for handwashing? 1)Higher prices 2)Shops ran out of it 3)Shops don't sell it 4)Shops selling it have closed	1-4 = Close-out-Incentive
NA	Close-out-Incentive	GeoPoll: Thank you! You will receive #TOPUP# airtime credit within 2 days. For more information on Coronavirus prevention visit who.int	

APPENDIX 3 - SANKEY DIAGRAM FOR WATER SUPPLY MODALITY CHANGES

The Sankey figure presented below illustrates the change in water service type resulting from the COVID-19 pandemic, as reported by respondents of the SMS surveys. At left of the figure is the reported breakdown of supply modalities pre-COVID, and at right is the reported breakdown at the time the survey was administered. Modalities are arrayed vertically in decreasing levels of water service. Upward sloping curves from left to right indicate an increase in service level, and downward sloping curves indicate a decrease in service level. The steeper the curve, the more dramatic the service level change. Numbers within the columns refer to the total number of respondents reporting a particular service modality either pre-COVID (at left) or at present (at right). The pattern in Mozambique is largely driven by progress up the ladder (away from springs in rural Mozambique and in the direction of standpipes), but also modest amounts of decrease in service level below the JMP “Basic” level (the Spring and River categories at left).

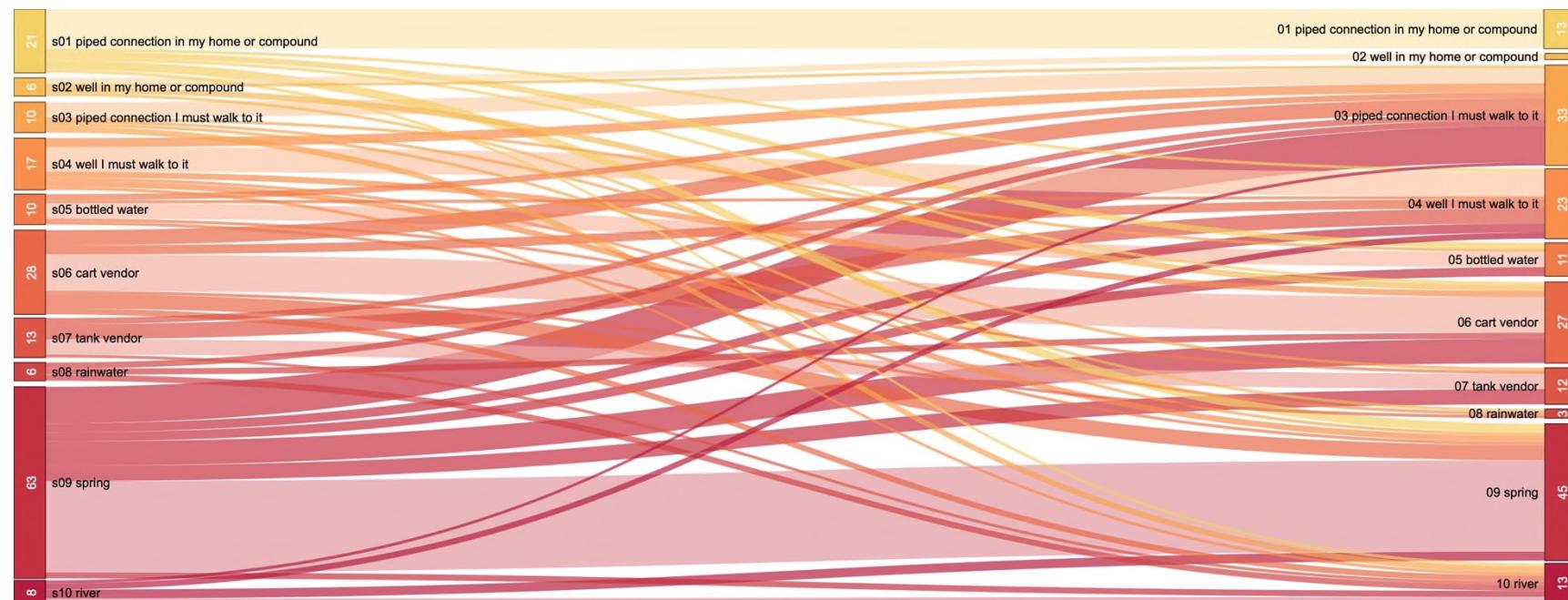


Figure 13. Sankey diagram displaying reported changes in water supply modality across all SMS survey respondents who reported difficulties in water supply related to the pandemic.

APPENDIX 4 - INTERVIEW QUESTIONNAIRE FOR SMALL PRIVATE WATER SYSTEM OPERATORS

ENGLISH VERSION

- Q1. Do you sell both via pickup and through the network?
- Q2. In response to COVID-19, has your pricing changed for jerrycan pickup? How has it changed for networked customers?
- Q3. Why has your pricing changed?
- Q4. Before the pandemic, how much did you sell via pickup and how did you sell through the network?
- Q5. How has the mix between pickup and jerrycan sales changed because of the pandemic?
- Q6. Overall, are you selling more or less water than before?
- Q7. IF MORE/LESS, why?
- Q8. Are your customers paying, and on time? Is there a difference between the two kinds of customers?
- Q9. Is the situation getting better or worse?
- Q10. Have you had difficulties getting access to supplies? Hardware, parts, consumables, chemicals?
Why?
- Q11. How have customers been affected (by quarantine, sheltering at home, migration, losses of income)?
- Q12. Who has been most affected? How so?
- Q13. Has your company received financial assistance from the government, donors, or banks? If so, what kind (loans, grants, equity)?
- Q14. What are your plans for the future?

PORTEGUESE VERSION

- Q1. Vendem água através de bidons e/ou rede de ligação às casas?
- Q2. Em resposta ao Coronavírus, o vosso preço alterou? Para os clientes que recolhem por bidon, ou o preço para a rede?
- Q3. Quais foram as alterações no preço?
- Q4. Antes do coronavírus, quanto é que vendiam por rede e quanto é que vendiam por bidons?
- Q5. Como é que isto foi afectado pela pandemia? Houveram alterações?
- Q6. No geral, está a vender mais ou menos água?

- Q7. Se mais/ou menos, porquê?
- Q8. Os consumidores estão a pagar? Dentro dos prazos? Existe alguma diferença entre os dois tipos de cliente?
- Q9. Sente que a situação está a melhorar/ piorar ?
- Q10. Sentiu alguma dificuldade no acesso a peças, equipamentos, químicos? Porquê?
- Q11. Como acha que os seus clients estão a ser mais afectados? (Por exemplo perda de rendimentos, confinamento,..)
- Q12. Quem é que tem sido mais afectado com esta situação na sua opinião? (mulheres, desempregados, mulheres solteiras..) E como?
- Q13. A vossa companhia já recebeu alguma ajuda financeira do governo, doações ou bancos? Se sim, de que tipo? (garantias, empréstimos, capital)
- Q14. Quais sao os seus planos para o future?

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