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 - Senegal

FEBRUARY 2021

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ACRONYMS AND ABBREVIATIONS

ACCES	Projet Assainissement Changement de Comportement et Eau pour le Senegal (Behavior Change and Water for Senegal)
AFD	Agence Française de Developpement (French Development Agency)
ANSD	Agence Nationale de la Statistique et de la Démographie (National Statistics and Demographics Agency)
DHS	Demographic and Health Survey
DRC	Democratic Republic of the Congo
EDS	Enquête Démographique et de Santé Continue (Demographic and Health Survey)
GDP	Gross Domestic Product
GWC	Global WASH Cluster
IMF	International Monetary Fund
JMP	Joint Monitoring Programme of UNICEF and the World Health Organization
LMIC	Low-to-Middle Income Country
MICS	Multiple Indicator Cluster Survey
NGO	Non-governmental organization
OD	Open defecation
OFOR	l'Office des Forages Ruraux (the Office of Rural Drilling)
ONAS	l'Office National de l'Assainissement du Sénégal (the National Sanitation Office for Senegal)
PNES	National Water Partnership Senegal (PNES)
PPE	Personal Protective Equipment
SDE	Sénégalaise des Eaux (Senegal Water)
SEOH	Société d'Exploitation des Ouvrages Hydrauliques (Hydraulic Works Operating Company)
SMS	Short Message Service (Text Message)
SONES	la Société Nationale des Eaux du Sénégal (National Water Company of Senegal)
SWA	Sanitation and Water for All
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 Senegal.

The Senegalese government implemented a number of pandemic response measures at the end of March, including border closings, a nationwide closure of businesses, schools, places of worship, and suspensions of air travel. Nonetheless, relative to other countries we examined, Senegal's movement declines during March, April, and early May were modest. Relaxation of the pandemic response measures resulted in steady return toward baseline levels of mobility through July. Respondents to our SMS surveys reported that COVID-19 had a major impact on their incomes, with about 21 percent reporting losing their job and another 38 percent reporting earning less money. Among the 15 percent that ran a non-farm business, 19 percent closed their business. The government's COVID-19 "solidarity fund" committed US$5.9 million to the urban water sector, and the government also declared two months of tariff-free water for consumers with water consumption levels under 20m³/month.

Our topline findings, by subsector, are as follows:

WATER SUPPLY – CURRENT STATUS

1) Senegalese consumers report pandemic-related water access challenges comparable to other USAID high priority and strategy-aligned countries we studied. Thirty-one percent of

[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).

over 500 consumers surveyed via SMS responded that the pandemic had made accessing drinking water more difficult. Though more rural respondents reported difficulties than urban respondents, our key informant interviews and examination of rural sales data from two regions offer evidence of both increases and decreases in rural water system production.

2) Large water suppliers reported financial distress from a two-month government-mandated tariff suspension and slow government reimbursement, but we did not find evidence of widespread water supply system failures.

3) Disruptions in supply chains have not had major impact on water supply provision. Limited access to imported hardware led to pump maintenance delays during the period of the border closures, and procurement of flocculant/coagulants from South Africa was also cited as a difficulty, but these were reported as acute rather than chronic challenges. Several suppliers reported having ordered sufficient stocks of spare parts and chemicals in advance of border closings, thereby limiting disruptions.

SANITATION – CURRENT STATUS

4) Compared to the other countries we studied, Senegalese consumers report only modest difficulties in accessing latrine inputs. Enterprises reported declines in sales of latrines during the first two months of pandemic response, but sales have rebounded in some areas. Meanwhile, our surveys offered suggestive evidence of an increase in reliance on private latrines after the onset of the pandemic.

5) Household demand for desludging remains stable, resulting in minimal impact on private sector service providers' revenue levels. Fecal sludge value chain actors we interviewed did, however, anticipate increases in operational costs from supply chain disruptions that could significantly affect profitability in the near future.

HANDWASHING – CURRENT STATUS

7) Consistent with a number of studies, self-reported handwashing behavior is very high during the pandemic period.

8) Senegalese consumers report that soap access has gotten easier post-pandemic than those who reported that it has gotten more difficult, based on results of our SMS surveys.

NEAR-TERM FUTURE TRENDS

9) We do not anticipate that Senegal's large utilities will experience significant performance declines due to revenue losses from the free water directive. This is particularly so given the scale of international donor and lender response, as well as stated government commitments to properly manage additional support necessary.

10) We expect demand for sanitation products and services to track economic conditions. Unlike water supply, for which extended financial difficulties can result in both sudden and extended 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, the country may experience increasing levels of open defecation.

11) 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 Senegal.

1. 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 1).

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] 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.

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 the deep dive activity. Details on the econometric model can be found in the WASHPaLS COVID-19 WASH Synthesis Report.

Table 1: 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 be largely unaffected. Smaller providers, informal sector actors, and centralized community systems will have less "safety net"		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 consumers, supply chain disruptions could lead to product shortages.
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		

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 analyses 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 the Democratic Republic of the Congo (DRC), Ghana, Kenya, Mozambique, Nepal, Rwanda, and Senegal (Figure 1).

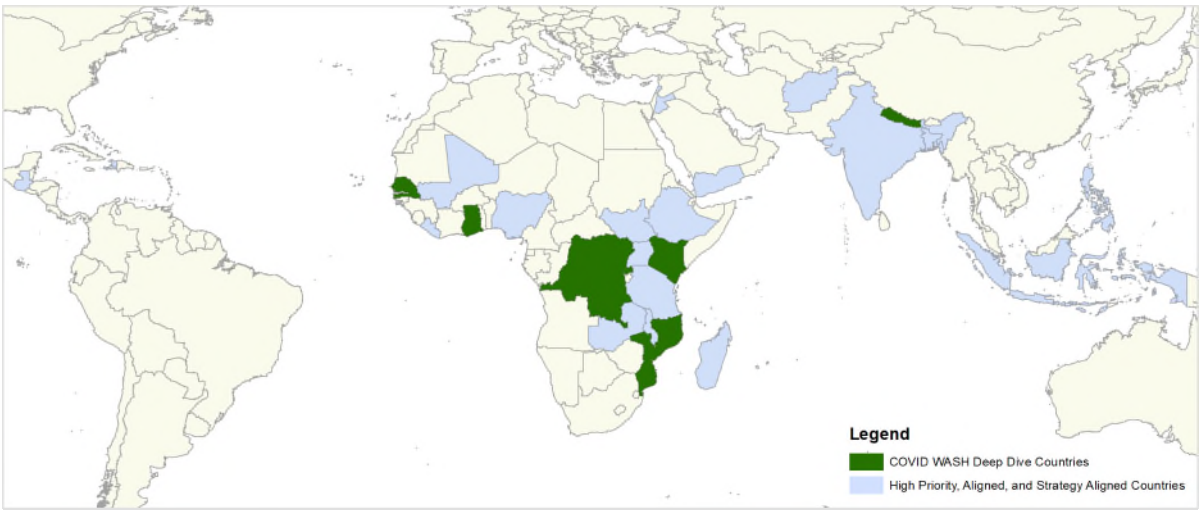

Figure 1. Highlighted countries are USAID high priority and strategy-aligned countries, with the deep dive countries in green.

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), 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.

As part of this process, we developed a list of possible key informants, which we submitted for review and revision by the USAID Mission in Senegal. To account for the unavailability of selected key informants and our interest in interviewing last-mile service providers, the team adopted a "snow-balling" approach by requesting initial key informants for introductions or contact details. For instance, we requested governmental entities and NGOs for introductions to their partners.

2.1 KEY INFORMANT INTERVIEWS

We conducted semi-structured interviews of 14 key informants in Senegal via phone or videoconference, using pre-set interview guides for service providers, government regulatory and oversight officials, private sector actors, and program implementers. 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 of 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 Appendix 1):

- government officials, both policymakers and regulators,
- operators of water supply systems,
- providers of sanitation products (latrine inputs) and services (pit/tank emptying, fecal sludge transport, and waste management),
- producers and distributors of hygiene products (mainly soap),
- implementers of donor-funded WASH programs, and
- multilateral and bilateral donors and implementers.

We developed interview guides for each key informant group. Questions for local and national government officials addressed the following goals: to confirm national-level policy responses with respect to water and sanitation service provision, including mandates on tariffs; to hear senior-level perspectives on the extent of financial and operational challenges faced by service providers and the access challenges faced by consumers; and to obtain introductions to other key actors who could offer meaningful information, particularly regional and local water service providers themselves. With respect to WASH products and service providers, we focused on if and how provision of water, sanitation service and product delivery had been disrupted by the economic consequences of pandemic. We conducted nearly all key informant interviews via internet teleconference, complemented with selected in-person meetings following social distancing and masking protocols.

2.2 SMS CONSUMER SURVEYS

We complemented our investigation of supplier perspectives on COVID-19 related challenges with those of consumers by way of 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 surveys using an instrument of our design (see Appendix 2).

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 we analyzed, GeoPoll was able to secure SMS survey responses from a sample with geographic and age distributions representative of the broader population of each 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 Senegal, we offered the surveys in French and Wolof.

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% 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 six percent of 914 potential Senegalese respondents refused the initial offer of phone credit in return for filling out the survey, and 55 percent filled the survey to completion during the latter half of August 2020, from 17 to 31 August. The sample of respondents was broadly representative of Senegal (though we note only 36 percent were female). We had a range of ages, with 48 percent between the ages of 15 and 24, 40 percent between ages 25 and 40, and 11 percent over age 40. Respondents were geographically dispersed (see Table 2). Fifty-five percent of the respondents lived in urban settings.

Table 2. Geographic distribution of our SMS survey responses.

County	Count	Percentage
Thiès	102	20%
Ziguinchor	45	9%
Diourbel	65	13%
Dakar	174	35%
Kaolack	28	6%
Fatick	22	4%
Saint-Louis	11	2%
Louga	32	6%
Tambacounda	9	2%
Kaffrine	10	2%
Matam	1	0%
Sédhiou	1	0%

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

3. SENEGAL CONTEXT

The Senegalese government established the current structure of the water and sanitation sector in 1995 (Law n°95-10, 7 April 1995), including the following key institutions to regulate and develop the sector:

- **SONES** (la Société Nationale des Eaux du Sénégal – the National Water Company of Senegal) is in charge of investment planning and management of water infrastructure,
- **Sénégalaise des eaux** (SDE), the former Senegalese water company, is the concessionaire to operate water supply systems in urban and peri-urban areas (replaced in January 2020 by **Sen'Eau**, a parastatal in which the French water services company Suez holds a 45 percent ownership stake),
- **ONAS** (l'Office National de l'Assainissement du Sénégal – the National Sanitation Office for Senegal) is responsible for operation and development of sanitation infrastructure (onsite and offsite sanitation and drainage), and
- **OFOR** (l'Office des Forages Ruraux – the Office of Rural Drilling) is responsible for rural water infrastructure management and development.

3.1 PRE COVID-19 WASH COVERAGE

According to 2018-19 Demographic and Health Survey (DHS) of Senegal, 76 percent of Senegal's overall population had access to improved sanitation, with 56 percent urban coverage and 96 percent rural coverage.[4] Thirteen percent of the population reported still practicing open defecation, with a major urban to rural split (one percent in urban areas vs. 24 percent in rural areas).

Eighty-six percent of Senegal's population had access to an improved source (piped or other) of water according to the 2018-19 DHS, with 77 percent and 96 percent coverage in rural and urban areas, respectively.

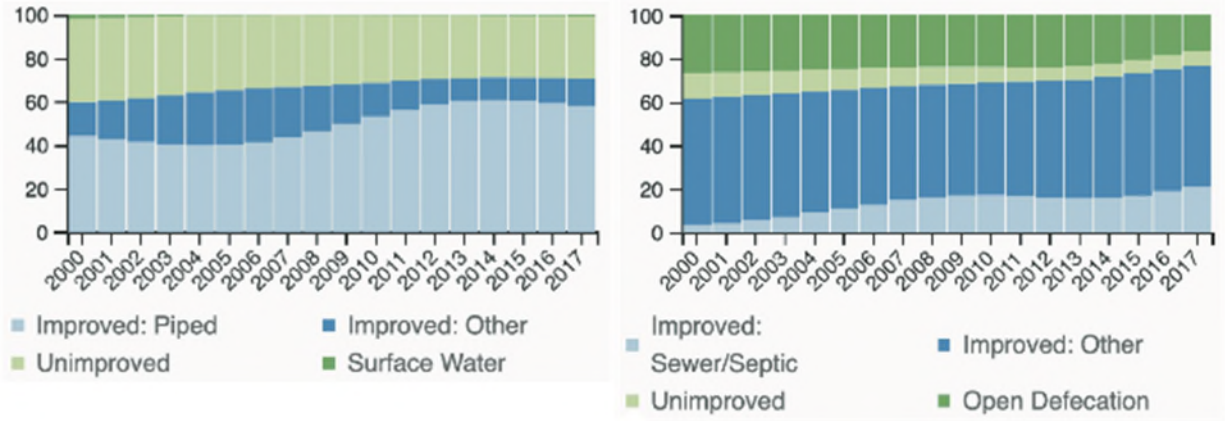

Figure 2. Trends for improved water (left) and sanitation (right), in Senegal between 2000 and 2017, estimated by Deshpande et al. 2020. Plots are extracted from interactive maps available at https://vizhub.healthdata.org/lbd/wash

[4] Agence Nationale de la Statistique et de la Démographie (ANSD) [Sénégal], et ICF. 2019. Sénégal : Enquête Démographique et de Santé Continue (EDS-Continue 2019). Rockville, Maryland, USA : ANSD et ICF.

Water supply access has been effectively stable since 2011, albeit with more recent small declines in access to piped supplies. The sanitation trend has been more encouraging, with steady declines in reported open defecation and increases in improved sanitation over the same time period (Figure 2)

Overall, 41 percent of the population had handwashing facilities according to the 2018-19 DHS, corresponding to 57 percent of urban respondents and 29 percent rural respondents, though only 48 percent of urban households and 37 percent of rural households were observed to have soap available.

There are significant disparities in WASH access in Senegal, with relatively low levels of access to sanitation in the southern and eastern regions, and to water supply the south (Sédhiou and Kolda regions). The handwashing distribution diverges a bit from the water and sanitation picture, with a more distinct coast-to-interior gradient (Figure 3). Table 3 offers the breakdown of improved water and sanitation modality nationwide in Senegal.

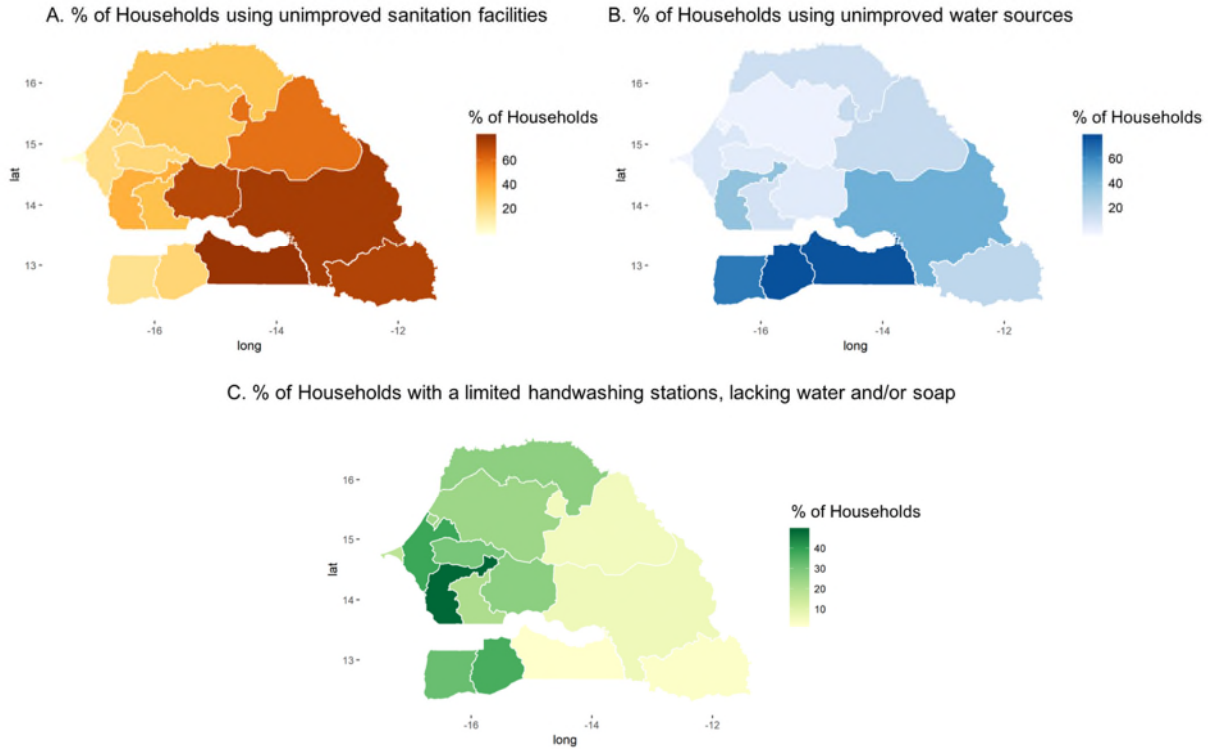

Figure 3. Regional variations in sanitation (Panel A), water (Panel B), and handwashing (Panel C), according to the 2017 DHS.

Table 3. Summary of WASH Data from the 2018/2019 DHS. Source: Agence Nationale de la Statistique et de la Démographie (ANSD) [Sénégal], et ICF. 2019. Sénégal : Enquête Démographique et de Santé Continue (EDS-Continue 2019). Rockville, Maryland, USA : ANSD et ICF.

Indicator	Percentage (%)
Proportion of population with access to improved water source	86
Sources of Improved Water	
Piped water (including into dwellings, yard/plot, neighbors, and public tap/standpipe)	68.3
Tube-well/ borehole	4.0
Bottled water	5.5
Protected well	2.9
Tanker truck and cart with small tank	5.4
Proportion of population with access to improved sanitation	75.9
Types of Improved Sanitation Facilities	
Flush/ pour flush to: i) Piped sewer system, ii) Septic tank, iii) Pit latrine, iv) other	58.3
Ventilated improved pit latrine	8.8
Pit latrine with slab	8.7
Composting toilet	0.1
Proportion of population with access to handwashing facilities	41
Urban	57
Rural	29

3.2 COVID-19 SITUATION AND GOVERNMENT RESPONSE

As of mid-October 2020, Senegal had recorded a total of nearly 15,300 confirmed cases of COVID-19, corresponding to over 910 confirmed cases per million inhabitants (see Figure 4), and 315 confirmed deaths. In August, Dakar was the most impacted city, accounting for 75 percent of the total reported cases (RFI, 2020). Cumulative confirmed cases and deaths have been stabilizing since end of September.

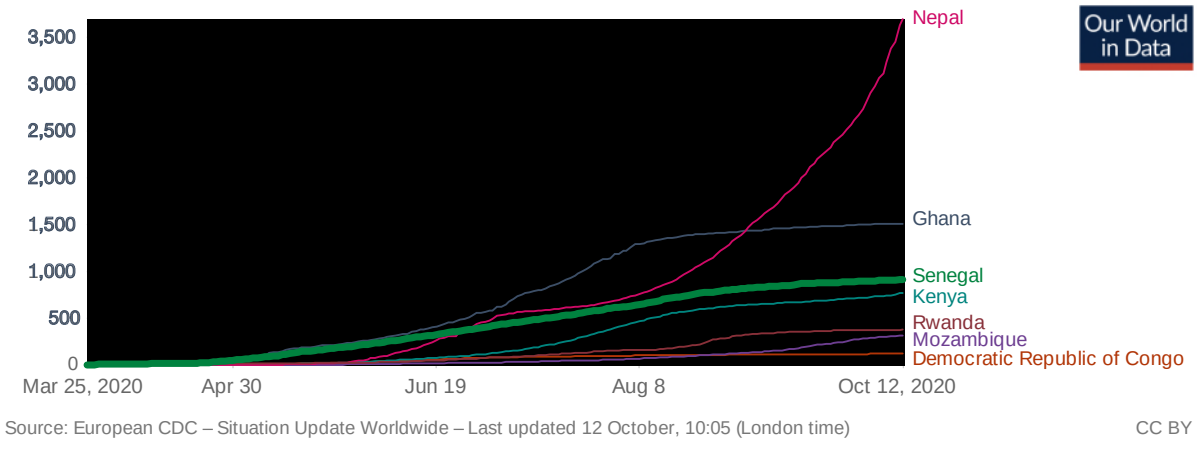

Figure 4. Cumulative confirmed COVID-19 cases per million people. Senegal highlighted in bold. Source: Our World in Data.

The Senegalese government implemented a number of pandemic response measures at the end of March, including: i) a nationwide curfew from 20h00 to 06h00, ii) closure of businesses, schools, places of worship, iii) suspension of all domestic and international flights, and iv) border closings. The government began relaxing these measures in end of June, with the reopening of businesses and schools and resumption of domestic and international air travel.

Relative to other countries we examined in our analysis, Senegal's increases in residential cellular mobility (time spent at home) during March, April, and early May were modest (see Figure 5). Relaxation of the pandemic response measures resulted in steady return toward baseline levels of mobility through the month of July. With the exception of a temporary return of time spent in residential settings associated with the celebration of Eid al-Adha (known locally as Tabaski in the Wolof language), movement restrictions in Senegal have been the some of the lowest among the countries we analyzed, suggestive of a much less pronounced economic shock (Figure 5).

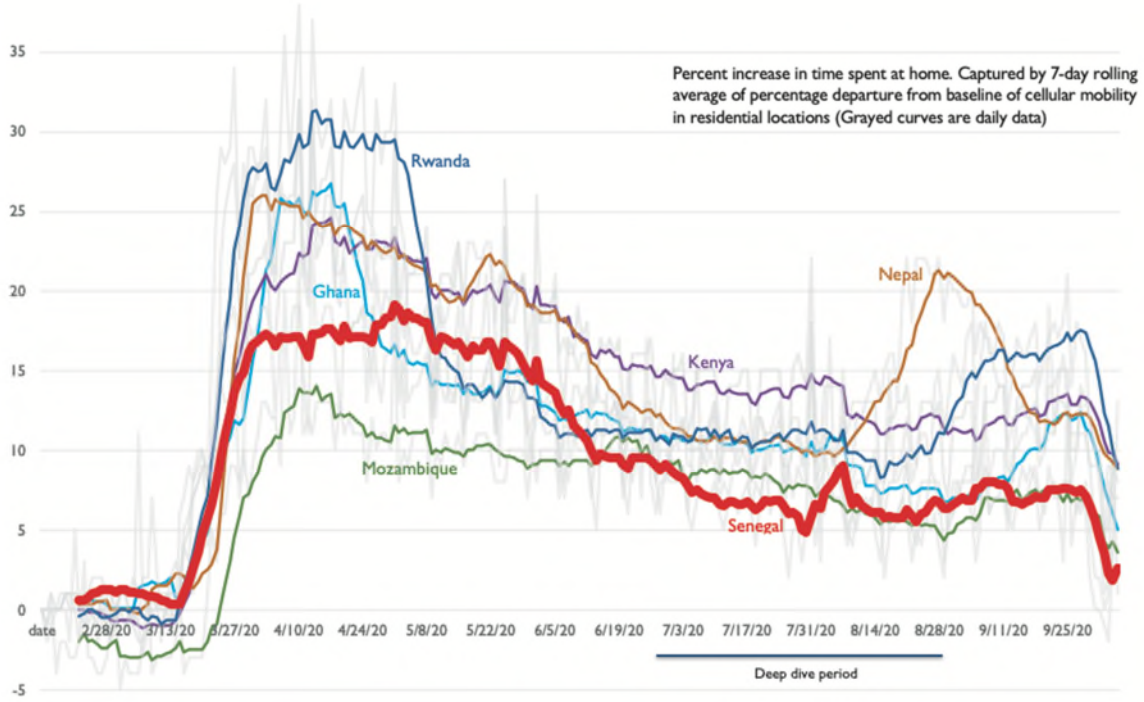

Figure 5. Percent departure from baseline mobile phone mobility, residential category, February to early October 2020. Periods of our SMS survey and deep dive interviews are noted. Senegal is highlighted in bold. The higher the value, the more time the cell phone user spends at home (and less time at commercial, industrial, or other non-residential locations) relative to baseline. Source: Google COVID-19 Community Mobility Reports.

In response to anticipated economic impacts of the pandemic, the Government of Senegal developed a "solidarity fund" valued at US$1.8 billion to support businesses, households, and the diaspora. Approximately five percent of these funds has been allocated to emergency food aid; while it was not immediately clear how much direct financial support would be directed at the WASH sector as a whole, US$5.9 million was committed for the urban water sector. The government also declared two months of tariff-free water for consumers with water consumption levels under 20m³/month in a press release on 6 April 2020.[5]

[5] http://www.energie.gouv.sn/mesures-sociales-sur-leau-et-lelectricite/

Senegal also received substantial international support, including a US$20 million World Bank loan to support emergency response interventions[6] and a disbursement of US$442 million from the International Monetary Fund (IMF) under its Rapid Credit Facility Instrument.[7]

3.3 THE COVID-19 ECONOMIC SHOCK

Results from the key informant interviews and SMS surveys (presented in detail in sections below) indicate economic distress among households, operators of water supply systems, and providers of sanitation and hygiene products and services. 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: 59 percent reported either losing their job or earning less money, comparable to responses we received in other deep dive countries (Figure 6). About 21 percent of the survey respondents reported losing their job and another 38 percent reported earning less money. Among the 15 percent of the respondents who reported running a non-farm business, 19 percent closed their business. There was overlap in job losers and business closures, so 23 percent of respondents either lost a job or closed a business. These reported rates of income and revenue loss suggest a larger economic contraction than the World Bank and IMF forecast. For example, in June 2020 the World Bank forecasted 2020 GDP growth of 1.3 percent for Senegal, about five percent below the GDP growth of 6.5 percent per annum in 2019.[8]

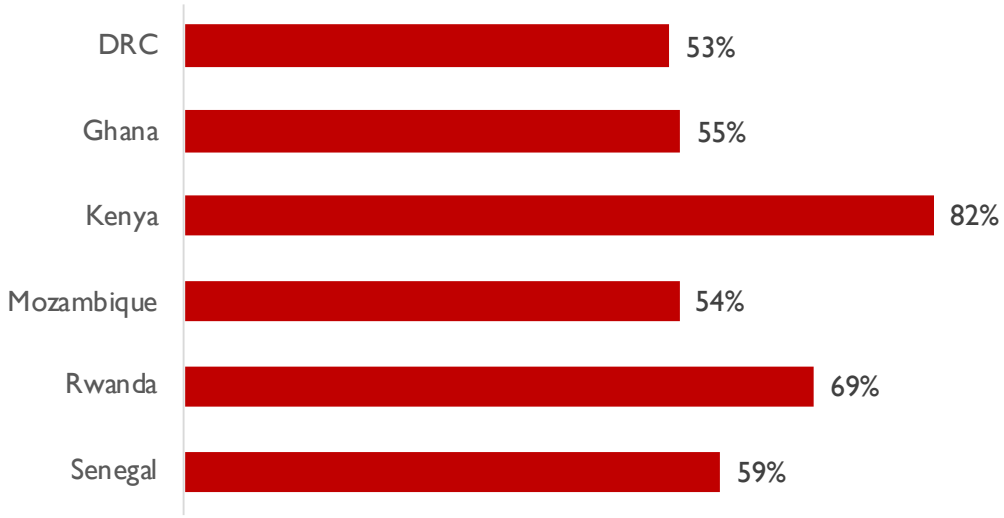

Figure 6. Percentage of respondents answering, *"I lost my job"* or *"I earn less money"* to the question, *"How has COVID-19 changed your employment?"* Source: SMS surveys conducted in August 2020 (except for Rwanda, which was conducted in October 2020).

[6] https://www.worldbank.org/en/news/press-release/2020/04/02/world-bank-approves-20-million-for-senegal-to-fight-covid-19

[7] https://www.imf.org/en/News/Articles/2020/04/13/pr20152-senegal-imf-exec-board-approves-us-442-million-disbursement-under-rcf-and-purchase-under-rfi

[8] www.worldbank.org/en/publication/macro-poverty-outlook/mpo_ssa

4. FINDINGS

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

4.1 WATER SUPPLY – CURRENT STATUS

Senegalese consumers report water access difficulties commensurate with what we have observed in other countries we analyzed.

Our SMS survey asked: *"Has COVID-19 made it more difficult to get your drinking water?"* Roughly 31 percent said COVID-19 has made it more difficult, with the share higher among job losers (40 percent) than among job keepers with no income loss (25 percent); job keepers who lost income were at 35 percent. The most common reason offered for water being more difficult to access was having less money to pay for it (39 percent). Longer travel times (23 percent) and higher prices (15 percent) were the next most common reasons.

Among the subset who said getting drinking water became more difficult, 68 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 is nearly 21 percent of the entire sample of 500. We do not know how much higher this share is than pre-crisis.

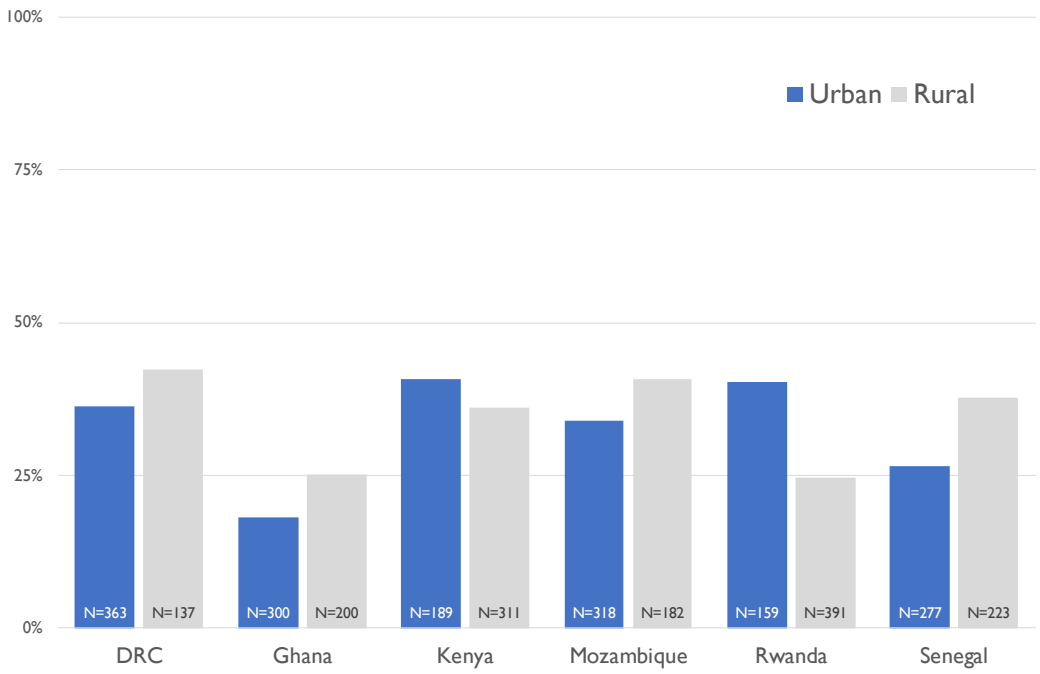

Figure 7. Percentage of respondents answering "Yes" to the question, *"Has COVID-19 made it more difficult to get your drinking water?"* Source: our own SMS surveys, conducted in August 2020 (except for Rwanda, which was conducted in October 2020). Sample sizes for each country segment shown at the base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

The proportion of urban respondents to our SMS surveys reporting water access difficulties was lower than the average across the countries we analyzed, but the proportion of rural respondents was higher (Figure 7).

The heatmap in **Error! Reference source not found.** indicates how rural and urban consumers who reported water access difficulties saw their mode of water supply service change after the onset of the pandemic. Compared to modality changes we observed in other deep dive countries, these are modest. The most noteworthy declines are in purchase from cart vendors among urban responders and bottled water among rural respondents. A detailed display of how consumers reported their change in drinking water supply source is provided in Appendix 3, where post-pandemic transitions to standpipes and wells are the most pronounced effects.

	Rural N=84	Urban N=73
Piped connection	1	-3
Cart vendor	4	-7
Bottled water/sachet	-5	3
Tanker	-1	-1
Well	0	5
Rainwater	5	4
River/pond	-4	1
Spring	0	-3

Figure 8. Percentage point change in reported water service modality after the onset of COVID-19 in Senegal among those reporting pandemic-related water access difficulties.

With financial support from the government yet to materialize, water utilities are experiencing financial distress, though with significant international support on the way.

To better support economically vulnerable populations, the Government of Senegal committed to pay water bills for a "first social block" of consumers (those using less than 20 m^3 per month) for a period of two months (April and May 2020). The Senegalese national water company, SONES (which contracts operations to Sen'Eau) reports that they have yet to receive any payments or financial support from the government. This has led to some confusion between customers and the water service providers, as households have been largely unwilling to pay their bills for the months the government committed to cover. SONES and the private sector operators Sen'Eau, SEOH (Société d'Exploitation des Ouvrages Hydrauliques) and FLEX'EAU reported having to bill their customers and collect payments to maintain their bottom line. Their plans are to credit households' water bills once they receive the relief fund reimbursement from the government. Each category of water suppliers reported experiencing significant bill payment defaults during this period, which they attributed to declines in household income and households' expectation of government support. Although under significant financial distress, both SONES and the private operators SEOH and FLEX'EAU committed to supplying water to their customers without disruption over a period of four months to reduce households' vulnerability in accessing drinking water.

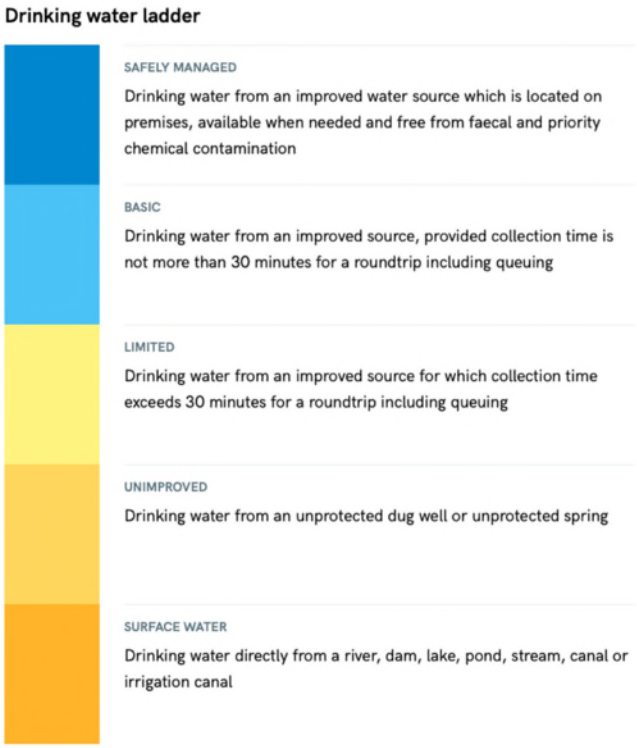

Figure 9. The UNICEF/WHO JMP drinking water ladder. https://washdata.org/monitoring/drinking-water

Data from a survey implemented by the USAID WASH-FIN project of 13 larger water and sanitation providers in Senegal found that 70 percent had suffered COVID-19-related losses, and 60 percent reported a 50 percent decrease in revenues compared to the same period in 2019 (WASH-FIN, 2020). None reported an increase in their revenue. These trends are largely driven by a decrease in water supply and cash flow challenges from bill payment defaults.

Some donors have committed additional financial support for water infrastructure development and emergency response. SONES has received support from the World Bank, the European Investment Bank, the Agence Française de Developpement (AFD), and the West African Development Bank that includes direct support to poor households to help pay for connection fees; AFD committed €50 million (US$59 million), including €20 million (US$23.6 million) as a contribution to the two-month free water directive, as well as €300,000 ($US350,000) to cover personal protective equipment (PPE) for SONES and OFOR.

Disruptions in supply chains appear so far to have had minimal impact on provision of water supply services.

SONES reported that supply chains for spare parts were initially affected due to border closures, halting the importation of key spare parts and other inputs. With 75-90 percent of water infrastructure spare parts being imported, SONES reported some difficulty in sourcing these inputs during the period of the border closures, which resulted in disruptions in water supply (water cut-offs) when there were pump breakdowns. Disruptions in supply chains also restricted access to chemicals for water treatment such as alum for flocculation/coagulation, typically imported from South Africa. SEOH and FLEX'EAU reported anticipating the border closures at the start of the pandemic and ordered sufficient stocks of spare parts, water treatment chemicals and other inputs to weather the closed border period, and thus, experienced minimal impact on service provision. Our interviews did indicate that supply chain disruptions had created some delays in new construction and system expansion, however**.**

The rural water supply situation is complex, with some regional variation apparent in the data that we were able to examine directly.

While our SMS surveys indicated greater water access problems among rural populations than urban ones (see Figure 7), the lack of monitoring for rural water systems in Senegal makes it difficult to draw any conclusions on performance from the supplier side. Data from organizations we interviewed indicate that rural households are unwilling to revert to traditional water sources such as non-protected sources or surface water well and thus are continuing to pay for water from water kiosks, a pattern that we identified in other countries as well. This is a powerful expression of consumer valuation of reliable water supply, as rural households have experienced a decline in income from closures of weekly markets, which represent an important source of income for them (and could be part of the explanation for the increase in water access difficulties – its decrease in affordability). The implementers and funders of rural water supply programs we were able to interview (ACCES,[9] World Vision, UNICEF) reported minimal changes in service at their water distribution points (kiosks).

These verbal results were partially confirmed from data obtained on four water kiosks in two regions (Kolda and Sédhiou) from the ACCES project. We observe a constant increase in the water demand for the region of Kolda, but a decrease for the region of Sedhiou after June (Figure 10). Water is sold at US$ 0.70m^3. In Kolda, before the construction of boreholes, rural households typically only had one

[9] Senegal Projet Assainissement – Changement de Comportement et Eau pour le Senegal (ACCES), is a program funded and overseen by USAID/Senegal's SENWASH portfolio intended to significantly increase sustainable access to improved water and sanitation services and adoption of hygiene practices in targeted communities. It is implemented by Natural Resources Consulting Engineers, Inc. (NRCE), in partnership with Catholic Relief Services (CRS), Population Services International (PSI), IMPAQ International, and Stantec.

shallow well in the village as their main water source. In Sédhiou, on the other hand, households relied on multiple wells (still in use), prior to the construction of new boreholes or whilst awaiting connections. These differing contexts may explain the differences in water consumption between these two regions. The observed decrease in water demand for Sédhiou in June and July may be indicative of households reverting to use of wells and/or increased rainwater harvesting[10], but these are not reflected in our SMS survey data.

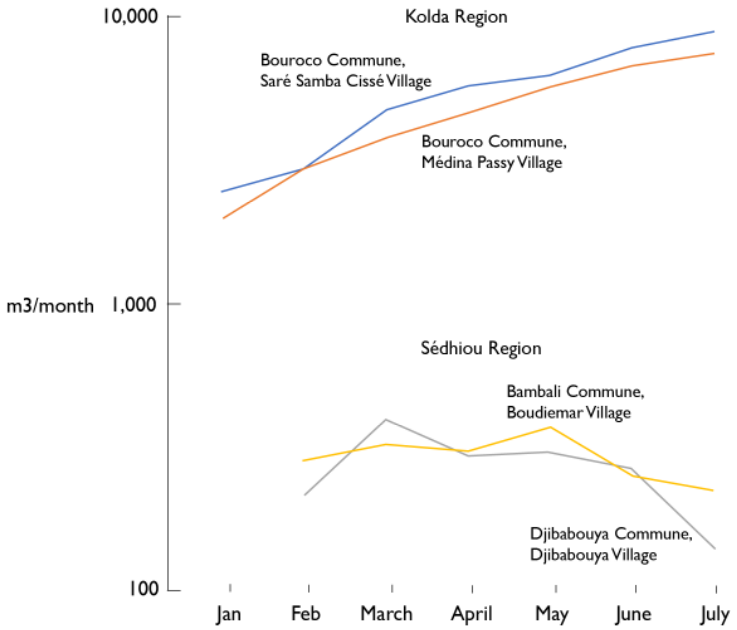

Figure 10. Water consumption at four water kiosks in the regions of Kolda and Sédhiou. Note log scale. Source: Project ACCES.

4.2 SANITATION – CURRENT STATUS

The pandemic may be driving a modest increase in use of private latrines.

	Rural N=225	Urban N=282
A private one at home	4	6
One I share	-3	-3
A public community toilet	0	-1
None	0	-2

Figure 11. Percentage point change in reported sanitation modality after the onset of COVID-19 in Senegal.

Few SMS survey respondents reported changes in sanitation service modality, which is understandable, given that sanitation is not sensitive to sudden operational disruptions as can happen with water supply systems (with the exception 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). Though the numbers were small, both the rural and urban respondents to our SMS surveys reported increases in use of private latrines as compared to the pre-pandemic period (Figure 11).

Almost half of respondents (42 percent) reported both reliance on a septic tank (or latrine pit) and paying someone to empty it. Among this group, 14 percent have not been able to afford emptying since the onset of COVID-19; only one percent reported that pit emptying services were not available.

[10] June/July marks the beginning of the raining season.

Compared to other countries we studied, a comparatively small fraction of Senegalese respondents reported trouble with new latrine purchase or upgrades as well as de-sludging (see Figure 12).

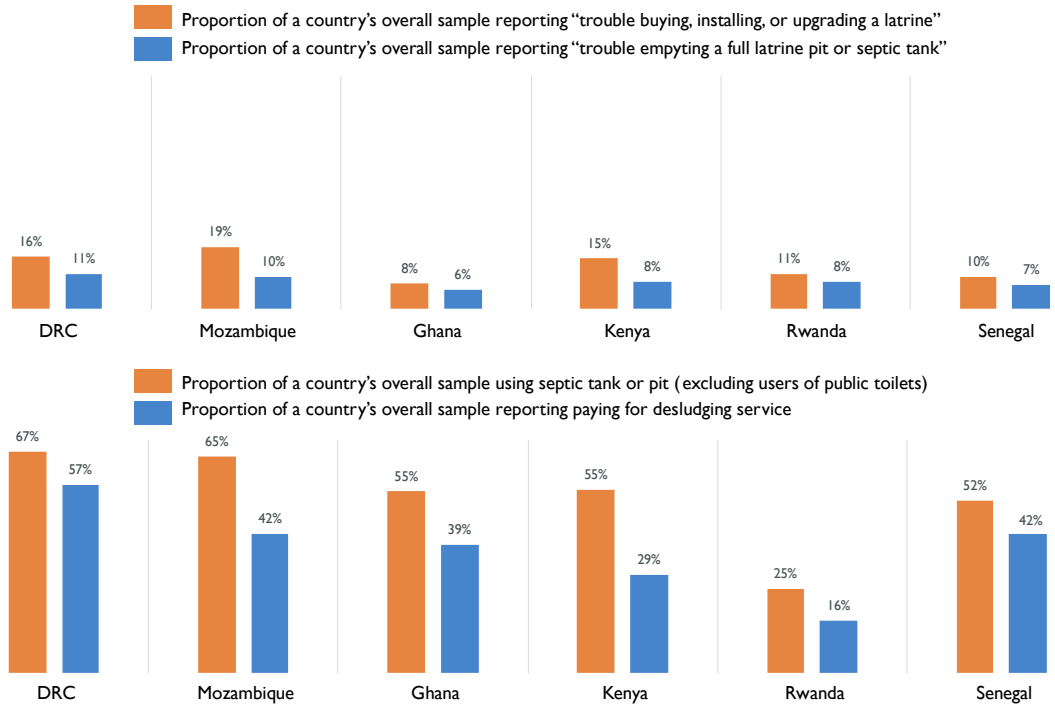

Figure 12. Indicators of sanitation service difficulties reported by respondents to our SMS surveys. N = 500+ participants per country.

Household are deprioritizing the purchase of new sanitation facilities due to income decline and savings depletion, though with regional variation possibly linked to differences in respective agricultural income engines.

Household finances have been deeply impacted by the pandemic, and reports from value chain actors indicate that households are indeed de-prioritizing purchasing sanitation facilities. All the organizations we interviewed reported a net decrease in the sale of latrines. Sales dropped by 30 to 40 percent from March to May in the southern regions of the country, though they recovered in June and July, with revenues for July comparable to the same month in recent years. By contrast, in the Northern regions latrine sales have continued to decrease and have dropped by more than 60 percent. The principal economic activity in the north is livestock farming, which was severely impacted by the pandemic and has yet to recover, in contrast to fruit and nut production in the south, which was less affected.

Figure 13 depicts the evolution of latrine sales from one value chain actor, which shows a steep decline after April 2020. Our key informant attributed this largely to a "hunger gap" and the festival of Eid Al Adha (Tabaski), both of which contribute to a decline and a shift in households expenses. In addition, mobility restrictions limited the ability to participate in traditional credit and savings groups, further limiting funding available for investment in sanitation facilities. The observed peaks in December and April are linked to donor funding from World Vision, Enabel, Shelter, and the Bank of Africa Foundation, which supports the poorest households.

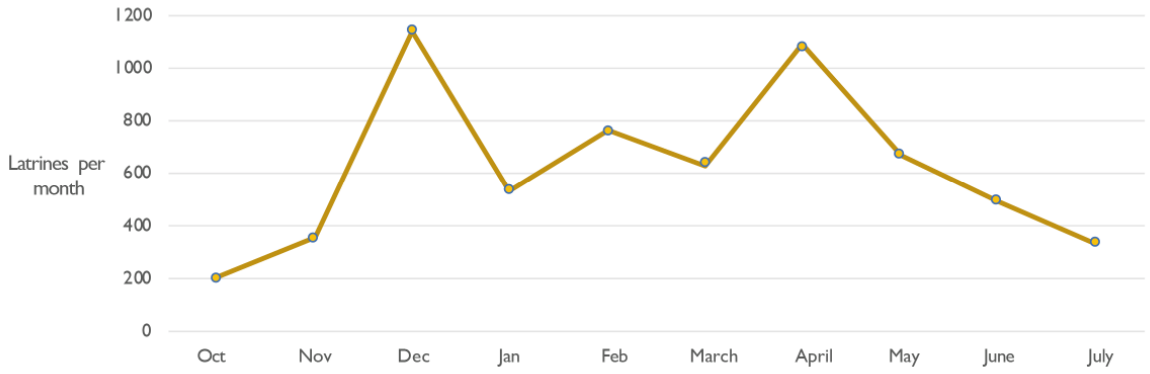

Figure 13. Sagal latrine sales figures between October 2019 and July 2020.

New latrine construction has also been impacted by mobility restrictions: masons were unable to travel and provide services, and input prices from supply chain disruptions also increased – price of cement rose by 20 to 30 percent and iron by 40 percent. Supplies of products like the SaTo Pan, which is imported from Bangladesh, were also disrupted.

Household demand for desludging remains stable, resulting in a marginal impact on private sector service providers' revenue levels, but an anticipated increase in operational costs from supply chain disruptions could affect bottom lines.

Urban households in Senegal rely on both onsite and sewered sanitation, with the former more prevalent. Fees for sewered sanitation services are included in the water bill, and thus sewered households indirectly benefited from the two-month free water directive. While there were no direct benefits for non-sewered households, we observe minimal to no change in household demand for pit emptying services.

The Delvic Company, which provides onsite sanitation services in three cities in Senegal – Dakar, Thies and Diourbel – did not report any decrease in revenues for its sludge treatment plant, indicative of unchanged household demand. Delvic reported no changes in margins in Dakar, as well as breaking even in the Thies and Diourbel markets.

However, with the price of pit emptying services fixed by ONAS and changing during the pandemic, any declines in household demand in Thies and Diourbel could significantly impact Delvic's bottom line. Supply chains for spare parts and chemicals imported from South Africa have been disrupted due to the border closures. While they initially had reserves, their stocks are running low and note having to pay a premium if purchased on local markets – significantly lowering profit margins.

4.3 SOAP – CURRENT STATUS

Consumers report very high levels of handwashing behavior in Senegal.

We did not interview hygiene product supply side actors in Senegal, but our SMS surveys did include questions on handwashing and access to soap. In an attempt to minimize courtesy bias, we asked about respondents' perceptions of their neighbors and friends handwashing behavior. In Senegal, 84 percent responded that they noticed more handwashing, the average across the six countries where we studied (Figure 14).

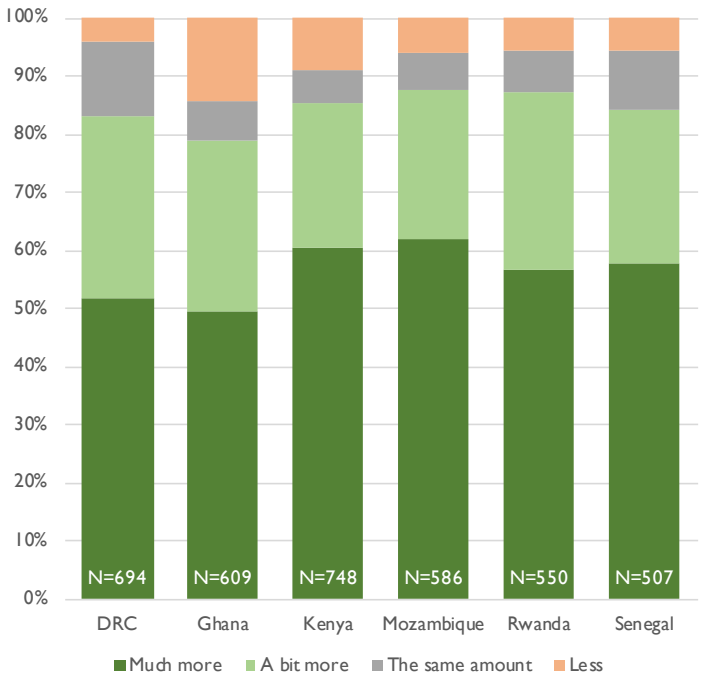

Figure 14. SMS survey response to the question, *"Do you notice your neighbors and friends washing their hands with soap more often than before COVID-19?"*

Consumers in Senegal report the lowest disruptions in access to soap of countries we analyzed.

We also asked how access to soap had changed as a result of COVID-19. Overall across our deep dive countries, 36 percent of respondents reported soap access getting more difficult, but in Senegal only 16 percent reported more difficulty. Conversely, across the six deep dive countries, 28 percent report that access had gotten easier; that number was 31 percent in Senegal (Figure 15).

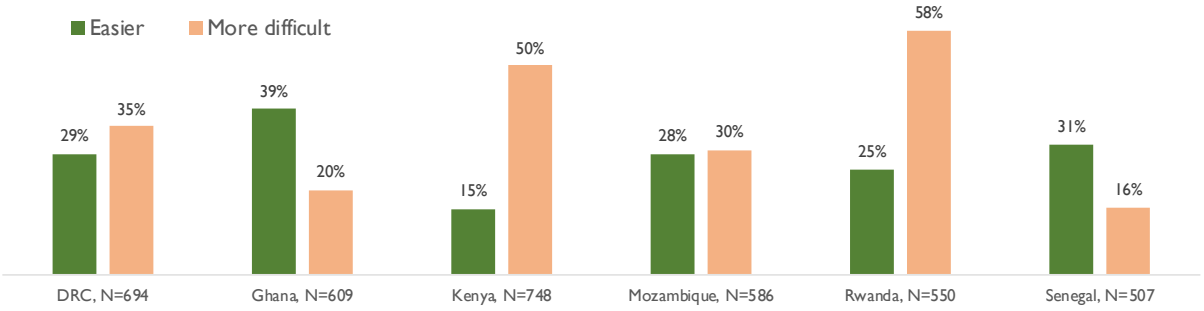

Figure 15. SMS survey response to the question, *"Since COVID arrived, has it become easier or more difficult for your family to obtain any kind of soap to wash hands?"* Fractions reporting "no change" are not displayed, but in each case equal the remainder to reach 100%.

5. FUTURE WASH ACCESS TRENDS IN SENEGAL

5.1 WATER SUPPLY

The COVID-19 pandemic and the government of Senegal's response has placed pressure on large water service providers, but the limited duration of tariff suspension, together with a robust international donor response, suggests that in urban settings, water service provision will in the immediate term remain resilient.

The degree to which financial rescue funds directed to the water sector will reach smaller systems is uncertain. Meanwhile, our interviews and analysis of rural water system performance data indicate that water sourcing behavior by consumers is linked to how agricultural subsectors have been differentially affected. There are encouraging signs that consumers served by rural systems are aware that the reimbursement of the service providers has been slow enough to threaten performance, and thus have been willing to continue paying for service despite the economic effects of the pandemic out of fear of the losses of service. (In other words, continuity of service may well be valued more highly than free water.) This is a subsector that should be monitored over the next 6-12 months.

5.2 SANITATION

In Senegal, financial constraints could continue to cause households to de-prioritize the purchase of sanitation-related products and services. Some sanitation businesses have seen sales recover as movement restrictions have been lifted. The sanitation sector's near-term trajectory is tied much more directly to economic conditions than the water sector, whose performance risks are compounded by extended periods of utility revenue declines. As economic activity recovers, we believe that rebounds in income will bring about a return to the markets for both sanitation inputs**.** In Senegal, where desludging seems to have weathered the COVID-19 income shock fairly well, there still remain possibilities of margin pressure from increased costs of inputs from disrupted material and chemical supply chains.

5.3 SOAP

This subsector is probably the most difficult to forecast, largely because the increases in handwashing behavior that are indicated by our SMS surveys and echoed by our interviews with value chain actors 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 (or returns to luxury brands at rates that restore the margins of manufacturers) is uncertain; indeed, it certainly is possible that handwashing behaviors will decline again as the pandemic recedes, but again, this is not supported by any strong evidence we could find of how handwashing has either increased in response to a crisis (e.g., Ebola) or faded as the crisis diminishes. We do not see declines in soap access outside of the affordability challenges of reduced incomes.

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APPENDIX 1 - LIST OF KEY INFORMANTS

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

Category	Organization
Central Government	National Sanitation Office of Senegal (ONAS)
Central Government	National Water Company of Senegal (SONES)
Central Government	Office of Rural Drilling (OFOR)
Donor	French Development Agency (AFD)
Multilateral Institution	UNICEF
NGO	OXFAM
NGO	World Vision
Service Provider	DELVIC
Service Provider	FLEX'EAU
Service Provider	National Water Partnership Senegal (PNES) - Global Water partnership West Africa
Service Provider	SEOH
USAID Program	ACCES (NRCE)

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	1 = 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	1 = 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
NA	Language	Which language do you wish to proceed with? 1)French 2)Wolof	1 = BirthYear [French] 2 = BirthYear [Wolof]
1	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-1
3	ADM-1	What region do you currently live in? Reply with the name of your region, like Kaffrine.	Any response = Urban/Rural
4	Urban/Rural	Do you live in a urban or rural area? Reply with 1 or 2. 1)Urban area 2)Rural area	1 = Migrate 2 = Employment

Q #	Q Name	English	Skip Pattern
5	Migrate	Has COVID-19 and the lockdown led you to move to a new home? 1)Yes - Within my city/town 2)Yes - Outside of my city/town 3)No - I still live in the same place	1-3 = Employment
6	Employment	Has COVID-19 changed your employment? 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	1-5 = Business1
7	Business1	Before COVID-19, did you run a business (not a farm)? Reply with 1 or 2. 1)Yes 2)No	1 = Business2 2 = WaterChange
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 = BottlewaterDetails 4 = CurrentWaterSupply 5 = VendorDetails 6 - 8 = CurrentWaterSupply

Q #	Q Name	English	Skip Pattern
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
14	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	1-4 = CurrentWaterSupply
15	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	1-5 = CurrentWaterSupply
16	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	1-5 = CurrentWaterSupply
17	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	1-8 = WaterService
18	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	1-4 = 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	1-2 = 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	1-4 = 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	1-3 = 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	1 = 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	1 = 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	1 = 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	1-3 = Upgrade
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	1 = 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	1-3 = Handwashing

Q #	Q Name	English	Skip Pattern
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	1-4 = 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	1-3 = 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	1 = 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-aways 3)Other	1-3 = Close-out-Incentive
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	

French Version

Q #	Q Name	fr_French	Skip Pattern
NA	Opt-In-Incentive	GeoPoll: Tapez 1 pour repondre aux questions sur le Coronavirus et gagner du credit #TOPUP# ! Participation gratuite. Pour de l'aide repondez AIDE	1 =Language HELP = HELP
NA	Help	GeoPoll est un reseau de citoyens volontaires aidant la societe a travers des sondages. Tapez STOP pour sortir. Plus d'informations sur GeoPoll.com	1 = Language STOP = Refusal
NA	Refusal	Merci, vous allez etre retire de l'enquete d'aujourd'hui. Pour plus d'informations, ou pour vous inscrire a de futures enquetes, veuillez visiter GeoPoll.com	End poll declined
NA	Ineligible	Vous n'etes pas eligible pour cette enquete. Pour plus d'information sur les mesures de prevention contre le Coronavirus allez sur who.int	End poll ineligible
1	Language	Dans quelle langue souhaitez-vous proceder? 1)Francais 2)Wolof	1 = BirthYear [French] 2 = BirthYear [Wolof]
2	BirthYear	Quelle est votre annee de naissance? Repondez par un nombre a quatre chiffres. Ex: 1980	1900-1919 = Ineligible 1920-2005 = Gender 2006-2020 = Ineligible
3	Gender	Etes vous un homme ou une femme ? Tapez 1 ou 2. 1)Homme 2)Femme	1-2 = ADM1
4	ADM1	Dans quel region vivez-vous actuellement? Repondre par le nom de votre region actuelle, comme Kaffrine.	Any Response = Urban/Rural
5	Urban/Rural	Vivez vous en milieu urbain ou rural? Repondez par 1 ou 2. 1)Milieu urbain 2)Milieu rural	1 = Migrate 2 = Employment

Q #	Q Name	fr_French	Skip Pattern
6	Migrate	Avez vous du demenager a cause de la COVID-19 et de la fermeture des villes? 1)Oui - dans ma ville 2)Oui - en dehors de ma ville 3)Non - je vis au meme endroit	1-3 = Employment
7	Employment	Est-ce que la COVID-19 a change votre emploi? 1)Non 2)Oui-baisse du salaire 3)Oui-j'ai perdu mon emploi 4)Oui - j'ai eu un nouvel emploi 5)Oui - je gagne plus	1-5 = Business1
8	Business1	Avant la COVID-19, dirigiez vous une entreprise? (pas une ferme)? Reply with 1 or 2 1)Oui 2)Non	1 = Business2 2 = WaterChange
9	Business2	La pandemie a-t-elle affecte votre entreprise? 1)Plus de revenus 2)Aucun changement 3)Faible baisse des revenus 4)Forte baisse des revenus 5)Fermeture	1-5 = WaterChange
10	WaterChange	Est-ce que la COVID-19 a rendu votre acces a l'eau potable plus difficile? Repondez par 1 ou 2. 1)Oui 2)Non	1 = WaterChangeHow 2 = Toilet
11	WaterChangeHow	En quoi l'acces a l'eau potable est il plus difficile? 1)J'ai moins d'argent 2)Augmentation des prix 3)Plus rare 4)Je dois aller plus loin pour en trouver	1-4 = PreWaterSupply

Q #	Q Name	fr_French	Skip Pattern
12	PreWaterSupply	Avant le COVID, quelle etait votre source d'eau ? 1)Reseau canalise 2)Puits 3)Eau en bouteille 4)Camion citerne 5)Vendeur 6)Eau de pluie 7)Source 8)Riviere/lac	1 = PipeDetails 2 = WellDetails 3 = BottlewaterDetails 4 = CurrentWaterSupply 5 = VendorDetails 6 - 8 = CurrentWaterSupply
13	PipeDetails	Ou se situe le branchement que vous utilisez? Repondez par 1 ou 2. 1)Chez moi ou dans ma cour 2)Je dois marcher	1-2 = CurrentWaterSupply
14	WellDetails	Ou se situe le puits que vous utilisez? Repondez par 1 ou 2. 1)Chez moi ou dans ma cour 2)Je dois marcher	1-2 = WellDetails2
15	WellDetails2	Comment puisez vous l'eau du puits? 1)Avec une pompe a main 2)Avec une pompe a diesel 3)Avec un seau et une corde 4)Je ne sais pas/autres	1-4 = CurrentWaterSupply
16	BottlewaterDetails	L'acces a l'eau en bouteille/sachet a-t-il change depuis le COVID? 1)Plus cher 2)Moins cher 3)Plus rare 4)Plus facile a trouver 5)Pas de changement	1-5 = CurrentWaterSupply
17	VendorDetails	Comment l'acces a l'eau aupres des vendeurs ambulants a change depuis le COVID? 1)Plus cher 2)Moins cher 3)Plus rare 4)Plus facile a trouver 5)Pas de changement	1-5 = CurrentWaterSupply

Q #	Q Name	fr_French	Skip Pattern
18	CurrentWaterSupply	Quelle est votre principale source d'eau? 1)Reseau canalise 2)Puits 3)Eau en bouteille/Sachet 4)Camion citerne 5)Vendeur 6)Eau de pluie 7)Source 8)Riviere	1-8 = WaterService
19	WaterService	Pourquoi l'acces a l'eau est difficile depuis la COVID-19? 1)Diminution du service 2)Reparer prend plus de temps 3)Peur de faire la queue 4)Aucun changement	1-4 = WaterShort
20	WaterShort	La semaine passee, y'a-t-il eu un jour ou vous n'avez pas eu assez d'eau pour subvenir aux besoins de votre famille? Repondez par 1 ou 2. 1)Yes 2)No	1-2 = Toilet
21	Toilet	Avant la COVID-19, quel type de toilettes utilisez vous? 1)Prive a la maison 2)Partage avec d'autres menages 3)Toilettes publiques 4)Aucun	1-4 = Toilet2
22	Toilet2	Quel type de toilettes utilisez vous en ce moment? 1)Prive a la maison 2)Partage avec d'autres menages 3)Toilettes publiques 4)Aucun	1-3 = Toilet3 **4 = Handwashing**
23	Toilet3	Est-ce que les toilettes que vous utilisez le plus comprennent une fosse ou une fosse sceptique? 1)Oui 2)Non 3)Pas sur	1 = PitEmptying1 2-3 = Handwashing

Q #	Q Name	fr_French	Skip Pattern
24	PitEmptying1	Payez vous quelqu'un pour faire la vidange ou vider la fosse sceptique quand elle est pleine? Repondez par 1 ou 2. 1)Oui 2)Non	1 = PitEmptying2 **2 = Upgrade**
25	PitEmptying2	Depuis la pandemie du COVID, avez-vous eu des problemes pour faire la vidange ou vider votre fosse sceptique? 1)Oui 2)Non 3)La fosse n'est pas pleine	1 = PitEmptying3 2-3 = Upgrade
26	PitEmptying3	Est-ce que l'acces a la vidange a change depuis le COVID? 1)Je ne peux plus le payer 2)Le service n'est plus disponible dans mon quartier 3)Autres	1-3 = Upgrade
27	Upgrade	Depuis le COVID avez-vous eu des problemes a acheter/installer/restaurer vos toilettes? 1)Oui 2)Non 3)Je n'ai pas essaye d'acheter/de restaurer mes toilettes	1 = Upgrade2 2-3 = Handwashing
28	Upgrade2	Comment acheter/installer/restaurer les toilettes a change depuis la pandemie? 1)Je ne peux pas payer 2)Je ne trouve pas ce dont j'ai besoin 3)Autres	1-3 = Handwashing
29	Handwashing	Est-ce que vos voisins/amis se lavent les mains avec du savon plus qu'avant? 1)Beaucoup plus 2)Un peu plus 3)Pareil qu'avant 4)Moins qu'avant	1-4 = Handwashing2
30	Handwashing2	Comment vous lavez vous les mains d'habitude? 1)Avec de l'eau 2)Avec de l'eau et du savon 3)Avec de l'eau et du sable/cendre/autres	1-3 = Handwashing3

Q #	Q Name	fr_French	Skip Pattern
31	Handwashing3	Depuis la pandemie, est-il plus difficile d'obtenir du savon pour le lavage des mains? 1)Plus facile qu'avant 2)Plus difficile qu'avant 3)Pareil qu'avant	1 = Handwashing4 2 = Handwashing5 3 = Close-out-Incentive
32	Handwashing4	Qu'est ce qui a rendu l'acquisition du savon plus facile? 1)Faibles prix 2)Echantillons gratuits 3)Autres	1-3 = Close-out-Incentive
33	Handwashing5	Qu'est ce qui a rendu l'acquisition du savon plus difficile? 1)Prix eleves 2)Rupture de stock 3)Magasins qui n'en vendent pas 4)Magasins qui ont fermes	1-4 = Close-out-Incentive
NA	Close-out-Incentive	L'enquete est terminee #TOPUP# airtime credit dans les 2 jours. Pour plus d'information sur les mesures de prevention contre le Coronavirus allez sur 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).

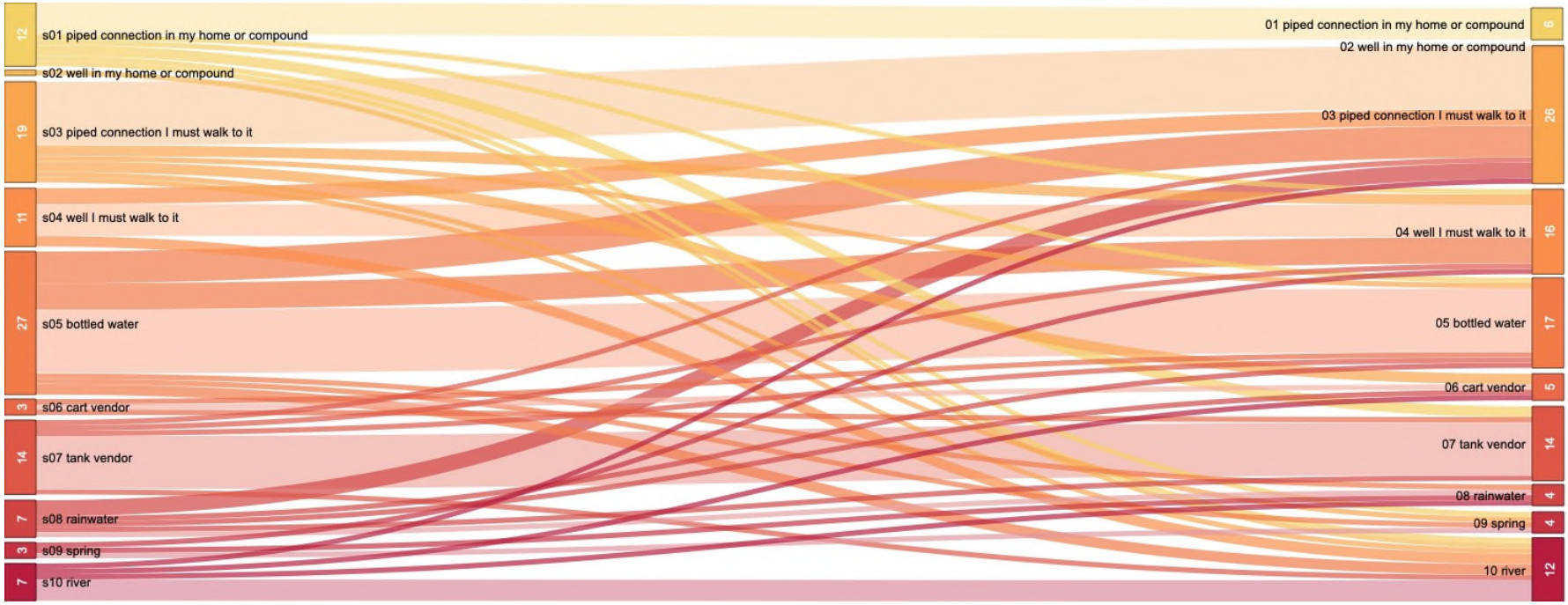

Figure 16. Sankey diagram displaying reported changes in water supply modality across all SMS survey respondents who reported difficulties in water supply related to the pandemic.

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