



# 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 - DRC

**MARCH 2021**

This publication was produced for review by the United States Agency for International Development. It was prepared by Tetra Tech.

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## **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## ACRONYMS AND ABBREVIATIONS

CDF	Congolese Franc
CNAEA	Comité National d'Action de l'Eau et de l'Assainissement - National Water and Sanitation Committee
COVID-19	Coronavirus Disease 2019
DAS	Direction Nationale de l'Assainissement - Directorate of Sanitation and Health
DHS	Demographic and Health Survey
DRC	Democratic Republic of Congo
FSM	Fecal Sludge Management
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH - German Society for International Cooperation
GWC	Global WASH Cluster
ICRC	International Committee of the Red Cross
JICA	Japan International Cooperation Agency
JMP	Joint Monitoring Programme of UNICEF and WHO
LMIC	Low-to-middle income country
MICS	Multiple Indicator Cluster Survey
NGO	Non-governmental organization
OD	Open defecation
PMUAIC	Programme Multisectoriel d'Urgence d'Atténuation des effets du COVID-19 - Multisectoral Emergency Mitigation Program for COVID-19
PPE	Personal protective equipment
RATPK	Régie d'Assainissement et des Travaux Publics de Kinshasa - Sanitation and Public Works Agency of Kinshasa
REGIDESO	Régie de distribution d'eau - Water Distribution Board of DRC
SDG	Sustainable Development Goals
SMS	Short Message Service - text message
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.<sup>1</sup> 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 the DRC.

There are indications that the COVID-19 pandemic control measures instituted by the government of DRC, largely in place from mid-March to mid-May 2020, did not result in the kinds of suspensions of economic activity documented elsewhere in sub-Saharan Africa. Still, the resulting economic shock in DRC was significant (with 31 percent of our survey respondents reporting a drop in earnings, and 27 percent reporting either losing their job or closing a non-farm business). The government declared two months of water tariff suspension for the entire country, but additional details of the terms and conditions of planned support to the WASH sector are less clear.

Our topline findings, by subsector, are as follows:

## WATER SUPPLY – CURRENT STATUS

**1) The government’s free water directive may have modestly mitigated challenges in accessing drinking water during the pandemic.** Still, Congolese households reported levels of pandemic-linked water access difficulties comparable to those of the other deep dive countries we surveyed.

**2) With financial support from the government yet to materialize, the main water utility, REGIDESO, is experiencing greater financial distress,** resulting in increased service disruptions

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<sup>1</sup> 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).

and possibly reduced water quality. The free water directive has further exacerbated the financial impact of COVID-19, as REGIDESO has yet to receive any of the committed funds from the government.

**3) REGIDESO has increased tariffs following the free water directive period**, as they are indexed to the US dollar, placing more financial hardship on urban utility customers.

**4) The countries’ “autonomous water systems” (AWSs) have also struggled because of the free water directive**, with half reporting financial difficulties, and consumers reporting higher prices in the months following tariff suspension.

**5) Rural respondents to our SMS surveys report high levels of pandemic-related water stress.** However, we note that rural Congolese populations are more heavily reliant on self-supply via unprotected groundwater and surface water sources and should thus be less vulnerable to economic shock effects.

## **SANITATION – CURRENT STATUS**

**6) As compared to water supply, our SMS surveys of consumers indicate only marginal change in reported sanitation access.** These consumer reports are reinforced by interviews with value chain actors who report little change in consumer demand.

**7) Household demand for pit emptying services reportedly remains stable. However, increasing operational costs from supply chain disruptions are driving down profit margins for private sector service providers.** These supply chain issues have meant that production costs have increased, and suppliers have elected to cushion their own losses with partial pass-through of cost increases in the form of higher consumer prices.

## **NEAR-TERM FUTURE TRENDS**

**8) We do not anticipate COVID-19 to result in significant service declines relative to pre-pandemic baselines.** Urban consumers do not yet report major service modality shifts, though they are now facing increased tariffs following the two-month tariff holiday. REGIDESO will absorb donor support to procure water treatment inputs, and the pandemic no doubt compounded efforts to improve its performance. Effects on non-piped water access in all settings are also likely to be less pronounced, with the exception of deep lift handpumps, whose down time may well increase if the declining revenues limit the resources available to operators for regular maintenance, though it is worth remembering that even in pre-pandemic circumstances, handpumps recover only on the order of 10 percent of the operating costs (McNicholl et al. 2019).

**9) 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 did not face severe demand declines, and should recover if and when economic activity rebounds. Moreover, limited household investment in wastewater and fecal sludge treatment may well persist in the medium to long term, given government prioritization of emergency response and health care in response to the pandemic.

**10) 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 DRC.

# 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 (e.g., restrictions of movement, closures of business, disruptions of supply chains, and so forth).<sup>2</sup>

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).

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

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<sup>2</sup> 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.

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.

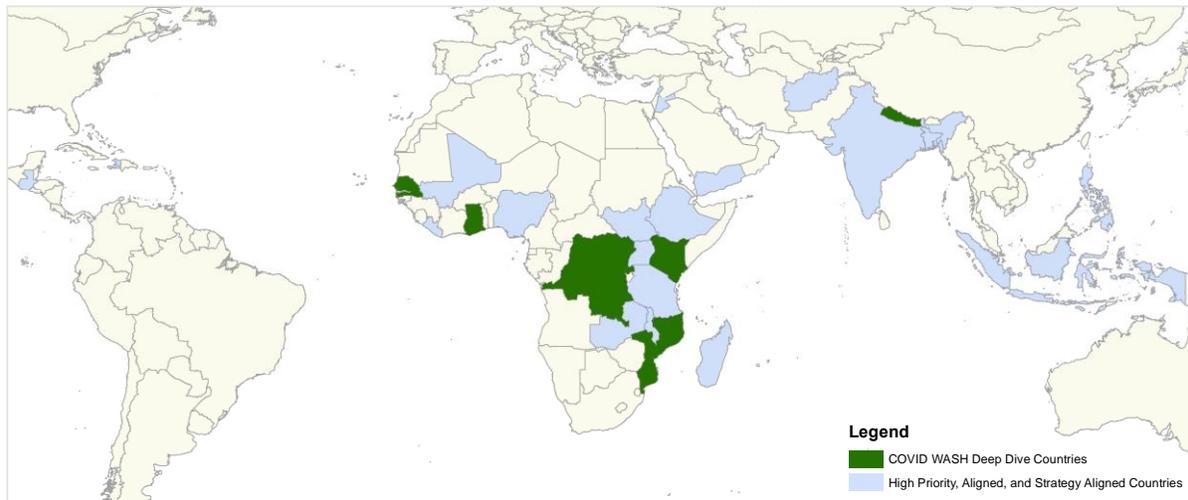
This report focuses on results of the deep dive activity. Details on the econometric model can be found in the [WASHPaLS COVID-19 WASH Synthesis Report](#).

**Table 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 the 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 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.

### 2.1 KEY INFORMANT INTERVIEWS

We conducted semi-structured interviews of 17 key informants via phone or videoconference in DRC, following pre-set interview guides for service providers, government regulatory and oversight officials, private sector actors, and program implementers. Our key informant interviewees included (see **Error! Reference source not found.**):

- 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
- multilateral and bilateral donors and implementers (such as the World Bank, UNICEF, KfW/GIZ and others)

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.

We developed interview guides for each key informant group. Questions for local and national government officials aimed 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 get introductions to other key actors who could offer meaningful information, particularly regional and local water service providers themselves. For WASH products and service providers, we focused on if and how provision of water supply and sanitation service and product delivery had been disrupted by the economic consequences of pandemic. We conducted all key informant interviews via internet teleconference.

## 2.2 SMS CONSUMER SURVEYS

We complemented our investigation of supplier perspectives on the WASH access effects from COVID-19 with those of consumers by way of cross-sectional SMS survey 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 (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 DRC, we offered the surveys in English, French, and Swahili.

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, are 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)<sup>3</sup>, which we attempted to address by setting a 50-50

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<sup>3</sup> GSM Association (2019). The Mobile Gender Gap Report.

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 two percent of 1,961 Congolese respondents refused the initial offer of phone credit in return for filling out the survey, and 25 percent filled the survey to completion during the latter half of August 2020, from 12 to 28 August. The sample of respondents was broadly representative of DRC. We had a range of ages, with 35 percent ages 15-24, 33 percent ages 25-40, and 31 percent over 40. By design, half (50 percent) of the respondents were female. Respondents were geographically dispersed in a manner representative of the broader population, with 14 percent in Kinshasa. Seventy-three percent of the respondents lived in urban settings.

## 3. DRC CONTEXT

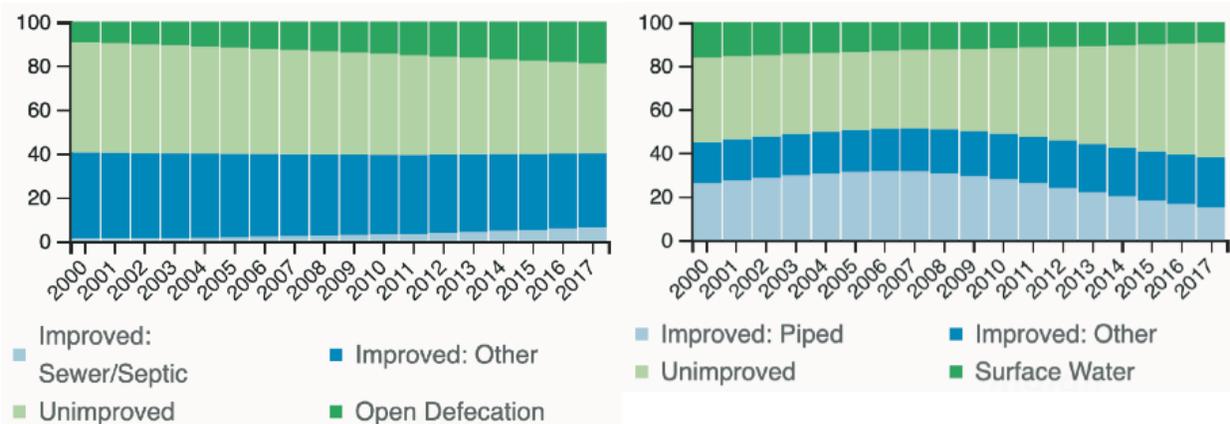
### 3.1 PRE COVID-19 WASH COVERAGE

Prior to the onset of COVID-19, DRC had the highest level of unimproved water supply coverage and third-highest level of unimproved sanitation coverage, respectively, of the USAID high priority or strategy-aligned countries, according to the UNICEF/WHO Joint Monitoring Programme (JMP)(WHO/UNICEF JMP 2019). The detailed breakdown of DRC’s water and sanitation service modalities are provided in Table 2.

**Table 2.** Summary of WASH Data from the 2017/2018 MICS. Source: Institut National de la Statistique, Enquête par grappes à indicateurs multiples, 2017-2018, rapport de résultats de l’enquête. Kinshasa, République Démocratique du Congo.

Indicator	Percentage (%)
<b>Proportion of population with access to improved water source</b>	59
<b>Sources of Improved Water</b>	
Piped water (including into dwellings, yard/plot, neighbors, and public tap/standpipe)	34
Tube-well/ borehole	5.8
Protected springs	15.8
Others (Bottled water, protected springs, tanker truck and cart with small tank)	3
Rainwater collection	0.9
<b>Sources of Unimproved Water</b>	
Unprotected springs	25.8
Unprotected wells	5.1
Surface water	9.7
<b>Proportion of population with access to improved sanitation</b>	33
<b>Types of Improved Sanitation Facilities</b>	
Flush/ pour flush to: i) Piped sewer system, ii) Septic tank, iii) Pit latrine, iv) other	11.4
Pit latrine with slab	20.4
<b>Types of Unimproved Sanitation Facilities</b>	
Pit latrine without a slab / open air	51.7
<b>Open Defecation</b>	12

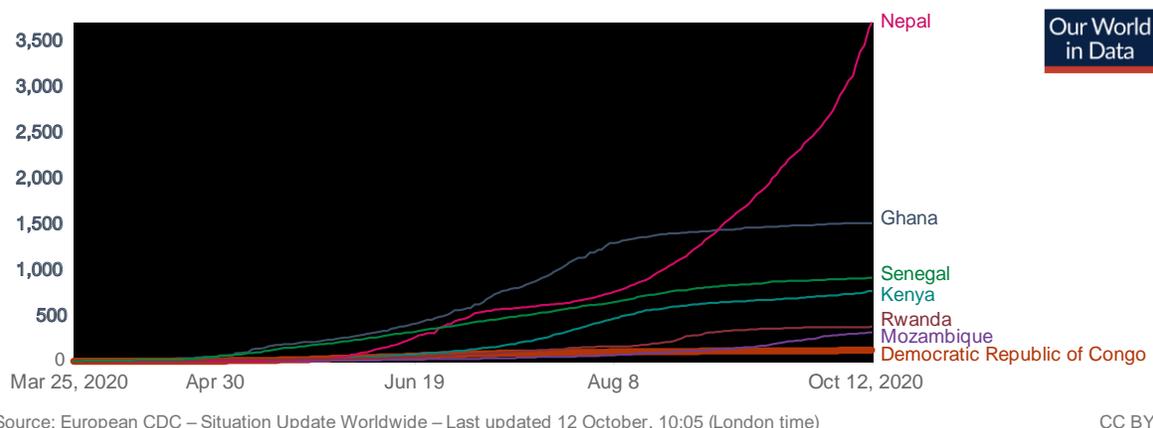
The 2000-2017 trends computed by (Deshpande et al. 2020)) in **Error! Reference source not found.** indicate declines in many key indicators; open defecation is estimated to have increased steadily since the year 2000, along with declines in piped water service connections and increases in unimproved water supply occurring since 2007. The 2017-2018 MICS reveals an extreme urban-rural split; on the sanitation side, the proportion of the urban population with improved sanitation is 54 percent, as compared to 16 percent of the rural population. Open defecation is reported at 4 percent in the cities, as compared to 18 percent in rural areas. Similarly, improved water coverage is reported at 91 percent for urban populations (with 70 percent accessing piped service to their dwelling/plot, a neighbor, or a public standpipe), and only 34 percent in rural areas (with only 5 percent access to piped service, almost entirely via public standpipes). Forty-two percent of rural dwellers rely on unprotected springs, 17 percent on surface waters, 7 percent from tube-wells/boreholes, and 5 percent from unprotected wells.



**Figure 2.** Trends in improved sanitation access (left) and water access (right) in DRC as estimated by Deshpande et al. 2020, drawn from interactive maps made available at <https://vizhub.healthdata.org/lbd/wash>.

### 3.2 COVID-19 SITUATION AND GOVERNMENT RESPONSE

As of mid-October, DRC had recorded a cumulative total of approximately 10,900 confirmed cases of COVID-19, corresponding to roughly 120 confirmed cases per million inhabitants, and 275 confirmed deaths; the cases per million inhabitants is the lowest of the countries that we analyzed (Figure 3).



**Figure 3.** Cumulative confirmed COVID-19 cases per million people. DRC highlighted in bold. Source: [Our World in Data](https://ourworldindata.org).

The DRC government implemented a number of pandemic response measures at the end of March, including: i) lockdowns of the Gombe Commune in Kinshasa (its economic hub), ii) closure of shops, restaurants, bars, banks, and churches, iii) suspension of all domestic and international flights, and iv) border closings. The government began relaxing these measures in mid-May, with the reopening of businesses and schools and resumption of domestic and international air travel. There are indications, however, that much commerce remained un-interrupted.<sup>4</sup>

In response to anticipated impacts of the COVID-19 on the economy, health and nutrition, and water sectors, the government developed a multisectoral program called PMUAIC-19, valued at USD 2.2 billion. Approximately 12 percent of these funds (USD 268 million) has been allocated to support the

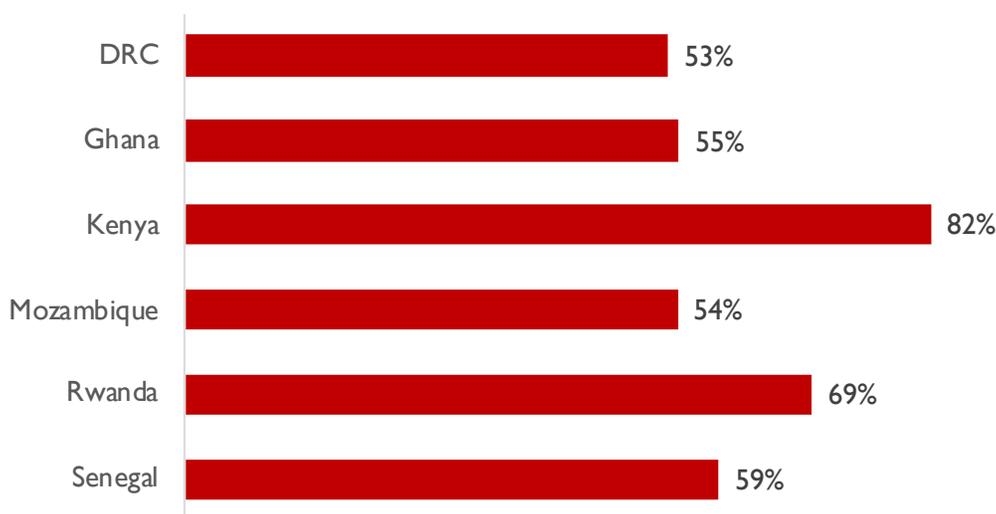
<sup>4</sup> M. Dizolele. 2020. "DRC Grapples with the COVID-19 Pandemic Shock." Center for Strategic & International Studies (CSIS). <https://www.csis.org/analysis/drc-grapples-covid-19-pandemic-shock>

WASH sector. The government declared two months of water tariff suspension for the entire country. Additional details of the terms and conditions of planned support to the WASH sector are not yet clear.

### 3.3 THE COVID-19 ECONOMIC SHOCK

The World Bank projects a decline in GDP in 2020, at 2.2 percent, stemming from weaker exports caused by the global economic downturn linked to COVID-19 (rather than from domestic declines in activity from movement restriction). The Bank also projects that the gradual recovery of global economic activity as the pandemic is brought under control, combined with the start of production of the Kamoakakula copper mine, should result in a recovery of economic growth to 4.5 percent in 2022.<sup>5</sup>

Our SMS surveys asked respondents how their employment had changed due to the pandemic (**Error! Reference source not found.**). Respondents reported that COVID has had a major effect on their incomes: about 22 percent reported losing their job and another 31 percent report earning less money. Among the 27 percent that ran a non-farm business, 25 percent closed their business. There was overlap in job losers and business closures, so 27 percent of respondents either lost a job or closed a business. These reported income and job losses are in line with other countries examined as part of our SMS surveys.



**Figure 4.** 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).

<sup>5</sup> <https://www.worldbank.org/en/country/drc/overview>, accessed November 2020.

## 4. FINDINGS

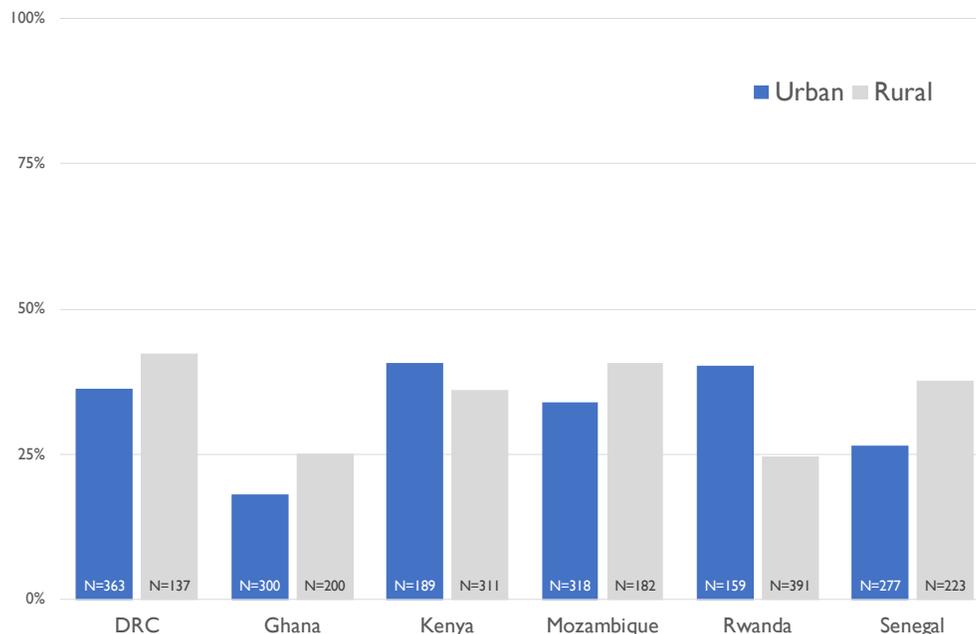
### 4.1 WATER SUPPLY – CURRENT STATUS

**There has been a marginal positive impact of the free water directive in mitigating challenges in accessing drinking water during the pandemic.**

Our SMS survey asked: “Has COVID-19 made it more difficult to get your drinking water?” Thirty-seven percent said COVID-19 has made it more difficult (Figure 5). This share was higher among job losers (47 percent) than among job keepers with no income loss (31 percent). Job keepers who lost income were in between (40 percent).

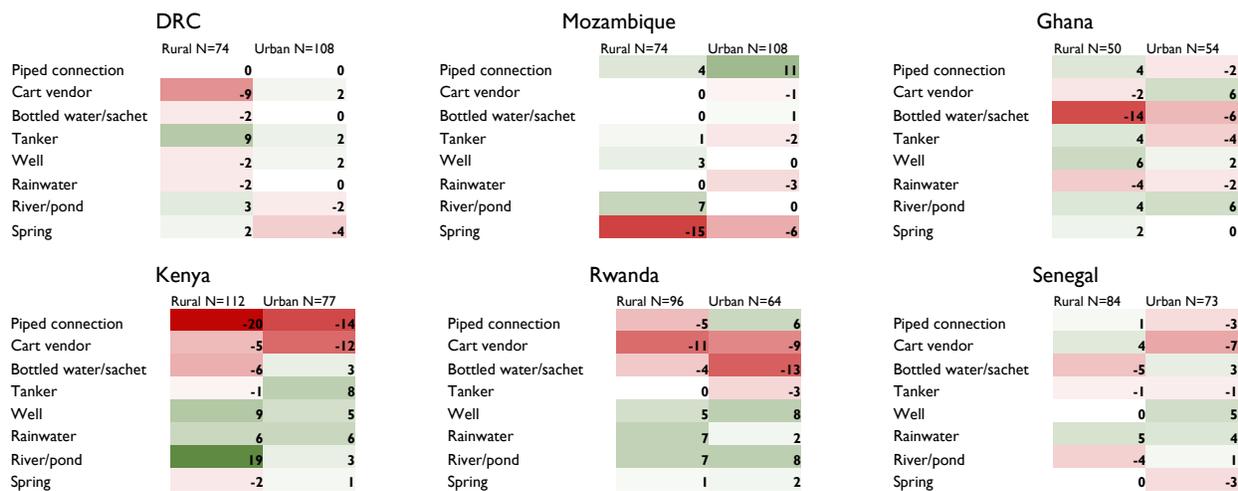
The most commonly reported reason for water being more difficult is longer travel time (with 29 percent reporting it). Having less money to pay for water (27 percent) and higher prices (22 percent) were the next most common reasons. Among the subset who said getting drinking water became more difficult, 80 percent answered “Yes” to “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 30 percent of the entire surveyed sample. We do not know how much higher this share is than pre-crisis.

Nationally, the government's two-month free water initiative appears to have had modest impact in mitigating challenges households face in accessing drinking water, based on what is reported in response to our SMS surveys. As of August 2020, the Congolese population we surveyed reported COVID-19 driven water access difficulties comparable to those of other countries we studied. Rural households reported higher levels of difficulty than their urban counterparts, a somewhat counter-intuitive result given how little piped water reliance there is in rural settings in DRC.



**Figure 5.** 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.

Our surveys also sought to learn how those reporting water access problems were experiencing them. Those who responded in the affirmative to the question, “Has COVID-19 made it more difficult to get your drinking water?” were then asked a series of questions of how they accessed drinking water before and after the onset of the pandemic. The results of those questions appear in



**Figure 6.** Heat map depicting percentage point changes in reported water service modality, pre-COVID-19 vs. at present, among those responding “Yes” to the question, “Has COVID-19 made it more difficult to get your drinking water?”

Those survey respondents reporting difficulties with drinking water access frequently reported changes in the means by which they acquired drinking water, though the changes in water supply modality in DRC were relatively muted as compared to other countries we surveyed (see ). A detailed display of how Congolese consumers reported their change in drinking water supply source is provided in Appendix 3.

Across all deep dive countries, an average of 3.7 percent of our SMS survey respondents reported falling below the “Basic” water service level defined by the JMP.<sup>6</sup> (This even as others moved up the ladder as well, including a progression from either surface water or unimproved services to Basic, where they may have been served by emergency distribution locations. What will happen when emergency distribution of drinking water stops is not clear.) In DRC, 2.6 percent report dropping below the Basic level, corresponding to about 2.1 million people.

**With financial support from the government yet to materialize, the main water utility – REGIDESO – is experiencing greater financial distress, resulting in increased service disruptions and potentially in degraded water quality.**

<sup>6</sup> The highest JMP drinking water ladder level is “Safely Managed” (from an improved water source on premises, available when needed and free from fecal and priority chemical contamination), followed by “Basic” (an improved source, provided collection time is not more than 30 minutes for a round trip including queuing). Levels below “Basic” are: “Limited” (from an improved source for which collection time exceeds 30 minutes for a round trip including queuing), “Unimproved” (from an unprotected dug well or an unprotected spring), and “Surface Water” (drinking water sourced directly from a river, dam, lake, pond, stream, canal, or irrigation canal). See

Prior to the COVID-19 pandemic, REGIDESO already was facing significant financial challenges. These were largely driven by low tariff recovery, non-payment of water bills by the government (which represents 32 percent of their revenues) and non-revenue water driven by poor infrastructure. The government’s directive to provide free water for two months further exacerbated the financial impact of COVID on the utility, as REGIDESO had yet to receive any of the committed funds from the government. The government directive covers 96 percent of all water connections and accounts for 68 percent of the utility’s revenue. Pandemic response measures, including the suspension of business activity, also contributed to revenue losses. The aggregate financial impact of COVID-19 on REGIDESO for the initial two months of the pandemic was estimated at USD 14.8 million. The deterioration in the financial state of REGIDESO from increased stress on working capital and cash flows, has resulted in service disruptions, poor water quality and non-payment of salaries of REGIDESO staff in Kinshasa.

Meanwhile, disruptions in supply chains restricted access to chemicals for water treatment. REGIDESO reported diminishing stocks of chlorine, declining to an only two-month reserve instead of the recommended six months. Our informants also reported serious concerns about the utility replenishing its chemical reserves due to border closures and insufficient cash to purchase on the local market. In response to these concerns, the World Bank provided financial support to cover the supply of chlorine for a two-month period, while KfW committed to provide water treatment chemicals for the entire country for six months at a cost of between USD 3.5 and USD 4.7 million. Although supply chains have largely recovered since the opening of borders, REGIDESO’s precarious financial position could continue to impact its ability to perform to standard.

**A surge in water tariffs increases urban households’ vulnerability in accessing drinking water, while rural populations who rely on self-supply experience far less dramatic water access effects.**

Our interviews yielded reports of increased water tariffs following the free water directive. Tariffs are fixed by the Ministry of the Economy (le Ministère de l’Economie Nationale) and indexed to the US dollar and were adjusted to reflect changes in the foreign exchange rates, which places stressed households into an even more vulnerable state. There are four different tariff rate blocks (0-10m<sup>3</sup>, 11-25m<sup>3</sup>, 26-40m<sup>3</sup> and > 40m<sup>3</sup>). New, post-free water directive tariffs increased between 13 and 16 percent (Table 3), but one of our interviewees shared that households may be seeing much larger increases (even a doubling) in their water bills, which have also been reported in the lay press. Some of the differential in tariffs paid by REGIDESO customers may also be a function of increased consumption that could have begun during the free water period, but we were unable to confirm this.

**Table 3.** February 2020 and July 2020 REGIDESO tariff structures.

Volume	February 2020	July 2020
	Water tariff	
0-10m <sup>3</sup>	CDF 498.7 – USD 0.25	CDF 572.7 – USD 0.29
11-25m <sup>3</sup>	CDF 894.2 – USD 0.46	CDF 1027.0 – USD 0.52
26-40m <sup>3</sup>	CDF 1135.0 – USD 0.58	CDF 1303.4 – USD 0.66
>40m <sup>3</sup>	CDF 1306.9 – USD 0.67	CDF 1500.9 – USD 0.77

Rural improved water coverage in the DRC is low, and existing schemes are not frequently well monitored, making it difficult to examine pandemic effects on rural populations. Sixty percent of rural populations rely on either a non-protected source or surface water.

In DRC, small Autonomous Water Systems (AWSs) have been described as playing a key role in water supply in rural (as well as urban) areas over the past three decades. Built and operated by an array of different entities (religious, non-profit, and private sectors), the AWSs supply water to at least 4 million people (de Waal et al. 2017). A key informant we interviewed described AWSs as already facing management and maintenance challenges prior to the pandemic. The COVID-19 economic shock has exacerbated their challenges: a survey conducted for USAID between September and December 2020 on 12 AWSs (out of over 769 such systems identified in Kasai and Lomami provinces) revealed that the free water directive caused additional financial stress; only two AWSs among the 12 interviewed had received a financial support from the government to cover their costs in the absence of revenue. Half of the interviewed AWSs reported a decrease in tariff collection (42% did not see any changes and only 8% reported an increase in revenues). Forty percent reported difficulties in collections, and a third have coped via cutting costs by reducing either their maintenance or their service hours.

On the consumer side, among the 1200 people interviewed by USAID, 25 percent reported an increase in tariffs and 15 percent reported a decline in service hours. Eight percent reported an increase in service hours, likely linked to the two-months of the free water directive, during which consumers switched to AWS from traditional surface water sourcing because tariffs had been temporarily lifted.

For the smaller fraction of households that rely on boreholes and mechanized pumps, challenges in sourcing spare materials for repairs of any pump breakdowns are likely, though we were not able to secure reliable objective evidence of this yet happening on a widespread basis. An additional factor likely for the seven percent of rural households that depend on these sources is operational cost increases from increases in fuel prices; a combination of the depreciation of the Congolese Franc against the US dollar and strikes by national oil-producing companies. These are lagging indicators and could present themselves in the near future. If widespread failures do occur, water sourcing is likely to revert to “traditional” sources: springs, shallow wells, or surface water sources at greater distances from household. This change will disproportionately burden women and girls, who are largely responsible for water collection.

## 4.2 SANITATION – CURRENT STATUS

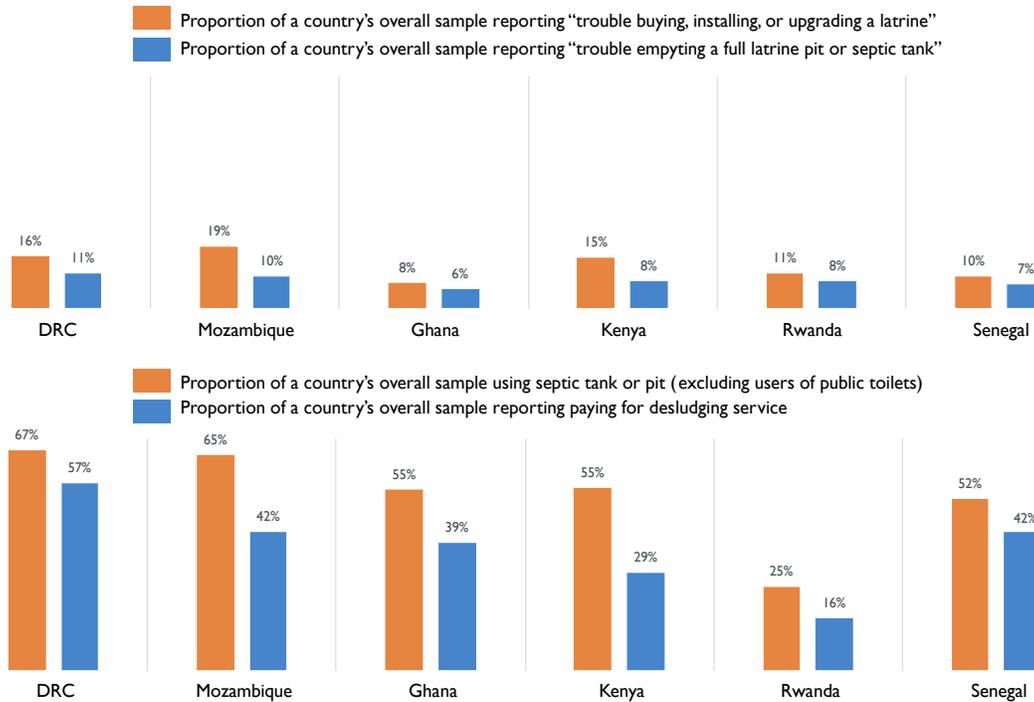
**As compared to water supply, our SMS surveys of consumers indicate only marginal change in reported sanitation access.**

The most notable result of our SMS surveys with respect to sanitation are slight rural shifts away from open defecation and shared sanitation toward use of private latrines, with effectively no changes in urban areas (Figure 7). 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), it is not surprising that consumer reports of sanitation service changes are minimal.

	Rural N=201	Urban N=493
A private one at home	5	0
One I share	-3	0
A public community toilet	1	0
None	-3	-1

**Figure 7.** Heat map depicting percentage point changes in reported sanitation service modality, pre-COVID-19 vs. at present.

Still, the numbers of Congolese respondents reporting difficulty in both latrine purchase, installation, and upgrade and obtaining desludging services was among the highest of the countries where we conducted SMS surveys (Figure 8).



**Figure 8.** Indicators of sanitation service difficulties reported by respondents to our SMS surveys. N = 500+ participants per country.

**Disrupted supply chains are slowly recovering, but prices for sanitation commodities remain elevated.**

Some NGOs and sanitation commodity suppliers confirm that COVID-19 has compromised supply chains. For cities like Bukavu, heavily depend on imports from Rwanda, border closures have restricted movement of all goods with the exception of food products. Lockdown measures in 15 high incidence areas, largely urban and semi-urban, also created challenges with internal movement of goods. One of the donors we interviewed reported difficulties in sourcing building materials for toilet construction in Kikwit (Kwilu province) and Mbuji-Mayi (Kasaï-Oriental province).

These supply chain issues have resulted in price increases of latrine construction materials on the order of 10 to 30 percent, with the important exception of cement, which was reported to have doubled in price. Since the easing of internal lockdown measures and border openings, supply chains are slowly recovering, but prices remain elevated, and suppliers are unsure if prices will revert to pre-COVID-19 levels as supply stabilizes. While fuel prices have remained fairly stable for the past 6 months, volatility of the Congolese Franc and limited access to foreign exchange markets are increasing transaction costs for suppliers of building materials for toilets.

**Because demand for sanitation commodities is reported to have remained largely steady, suppliers have experienced minimal impact on revenues; still, they report a contraction of profit margins, a small portion of which they are passing through to customers (meaning very small consumer price increases).**

Sanitation commodity suppliers we interviewed have largely maintained revenue levels and steady cash-flows, as the demand for toilet construction materials has remained relatively unchanged even with price increases. Some NGOs report recording an increase in household toilet construction and handwashing facilities. These surprising trends are observed in the provinces of Kinshasa, Katanga, and Nord-Kivu,

contradicting the assertion of some other informants who argued the decline in household income levels would further deprioritize the purchase of new toilet facilities.

While revenues reportedly remained steady from sustained demand, businesses are extracting lower profit margins due to increased transaction costs. They are choosing to only pass down a percentage of the increased costs to customers in order to maintain demand. They caution, however, that a moderate increase in fuel prices together with prolonged local currency depreciation will inevitably result in greater cost pass-through to customers. Suppliers we interviewed are unsure of how COVID will impact business viability in the future, but fear that macro-economic drivers such as currency depreciation, limited access to financing, lack of transport infrastructure, and high import taxes will have an even greater negative impact on their businesses.

Key informants also noted that COVID-19 is less likely to have a negative impact on rural household construction of new latrines as improved sanitation is considerably less expensive, even relative to rural incomes and assets, where latrines are built using local materials and communities contribute to the costs of latrines, making it more affordable.

**Household demand for pit emptying services remains stable, resulting in a minimal impact on private sector service providers revenues. However, increasing operational costs from supply chain disruptions are driving down profit margins.**

As context, fecal sludge management (FSM) is a barely developed subsector in DRC. In rural areas, construction of latrines without easy access for desludging as well as ample space to excavate new pits when old ones fill up, has limited demand for the service. Kinshasa is the only city with a dedicated Sanitation and Public Works Agency (Régie d'assainissement et des travaux publics de Kinshasa, RATPK). Established in 2008, RATPK is responsible for providing technical support and coordination for public cleanliness activities, including vector control, solid waste management, and fecal sludge emptying services. Although, sanitation is one of its five directorates, RATPK has almost exclusively focused its initiatives on solid waste management, which is more politically salient.

Small-scale private emptiers (approximately 10 companies with two to five trucks each) are filling the gap left by the absence of public sector involvement (together with the discouragement of manual desludging) to offer service to small numbers of urban and semi-urban households. Professional emptying and transport services are geared toward wealthier households. The costs of mechanized emptying ranges between USD 75 and USD 100, depending on the distance between location of service provision and final disposal site, as well as the volume of the containment system. Individual manual emptiers charge an average of USD 50 to USD 60. As shown in Table 4, 54 percent of urban Congolese households have never emptied their pits.

**Table 4.** Emptying and removal of excreta from facilities located in households (in percent). Source: Institut National de la Statistique, Enquête par grappes à indicateurs multiples, 2017-2018, rapport de résultats de l'enquête. Kinshasa, République Démocratique du Congo.

	Emptied by service provider for treatment	Emptied by service provider with unknown disposal or treatment site	Buried in covered pit	Disposed in dug trenches, open land, waterways	Other	Do not know where the waste is taken	Pit never emptied	Do not know if pit has ever been emptied
Total	2.6	4.0	20.2	1.3	0.1	1.1	67.0	3.7
<b>Place of residence</b>								
Urban	3.7	5.7	28.1	1.9	0.1	1.4	54.0	5.1
Rural	0.0	0.0	0.3	0.0	0.0	0.0	99.5	0.2

The decline in household income due to COVID-19 has not so far resulted in declines in pit emptying services, according to our interviews. There is also no observed shift in household emptying preferences, i.e., opting for manual emptying – a cheaper alternative to mechanized emptying. While emptying businesses experienced a contraction in household demand during the initial lockdown in Kinshasa and other large cities (Kinshasa, Lubumbashi, Mbuji-Mayi, Kananga, Bukavu, and Kindu), the Cesspit Emptiers/Vacuum Tankers Association in Kinshasa, consisting of 15 – 20 members, noted a swift recovery to their pre-COVID-19 averages of 40 trips/transactions per week.

Desludging is very much a luxury good in Kinshasa: the proportion of the highest wealth quintile who report desludging their pits/tanks when full is 57 percent, compared to less than 1 percent of households in the poorest wealth quintile, according to the 2017/2018 MICS. With steady demand from their wealthy customers, pit emptying businesses did not change their prices; the lowest-income customers, suffering from the highest degree of pandemic-related income shock, will find the service considerably less affordable.<sup>7</sup>

With no major decline in household demand, pit emptying businesses reported no impact on their revenues, but increasing operational costs (from PPE, hygiene inputs, and spare parts – the latter suffering from supply chain disruptions) is cutting into their profit margins. Supply chains for spare parts are underdeveloped in DRC. The lack of markets is broadly related to the country's general economic underdevelopment. Border closures and movement restrictions limited the sourcing of spare parts, with suppliers facing increased transaction costs. Prices of products such as motors and suction hoses have increased significantly by 20 to 50 percent and remain elevated even after border re-openings. Although prices for desludging services are unregulated, pit emptying businesses are currently not passing this cost increases down the value chain. Emptying businesses are, however, anticipating an increase in fuel prices in the very short term; and noted they would increase their service fees proportionally to remain profitable.

Private sector sanitation service providers did not report working capital challenges, but noted the critical role of government in facilitating access to affordable financing for purchasing new trucks. Pit emptying businesses have yet to receive any support from the government.

**Limited investment in wastewater and fecal sludge treatment will persist in the medium to long term, in view of government prioritization of emergency response and health care.**

Physical infrastructure for wastewater management is woefully underdeveloped in the DRC. There is no piped sewerage of scale, even in the largest cities, and there are no designated sites for safe disposal and treatment of wastewater and fecal sludge. Pit emptiers discharge fecal sludge generally into open areas and surface waters (including both streams and dry channels). In Kinshasa, some 400 m<sup>3</sup>/ day of fecal sludge are suspected to be discharged at the confluence of the Yolo and Kalumu rivers. Unregulated disposal has resulted in devastating consequences on the local environment, especially the impairment of surface and groundwater sources, and potentially undermining SDG related investments in safe drinking water supply and public health.

Urban sanitation, however, is the WASH subsector with the least funding either from central government or donors in the DRC, far outweighed by urban water and rural sanitation. The Sanitation Directorate (DAS) is responsible for excreta and wastewater management, but it lacks the financial means and capacity to implement any intervention at scale. The overall sanitation budget was reportedly USD 15 million in 2016. Despite the critical need for increased investment in wastewater treatment in DRC, the key informants we anticipated tightening of the national budget will likely result in a moderate to significant reallocation of budgetary resources from sanitation to emergency response and healthcare.

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<sup>7</sup> We note that this picture is somehow not reflected in our SMS survey results in Figure 8, where larger numbers of respondents report paying for desludging services than in other countries where we conducted SMS surveys. At present we have no explanation for the discrepancy.

in the context of COVID-19. Further de-prioritization of investments in urban sanitation, particularly FSM, could undermine health and environmental gains from increased household investment in improved sanitation facilities.

The World Bank is developing a USD 500 million urban WASH project for Kinshasa, with 40 percent of the budget allocated to water supply and sanitation, including the country's first fecal sludge treatment plant, and work to expand formalized fecal sludge emptying and transportation services in the city.

### **4.3 HANDWASHING – CURRENT STATUS**

**The pandemic has caused a significant positive shift in hand-washing behavior leading to an almost three-fold increase in demand for soaps from consumers and institutions.**

About half (52 percent) of our SMS survey respondents report that neighbors wash hands with soap “much more” than before COVID-19. A majority report that it is either easier to obtain soap post-COVID-19 (29 percent) or about the same as before (36 percent), as compared to only 35 percent who report it is more difficult to acquire soap and another 4 percent finding it harder to access because nearby stores have run out or have gone out of business.

## 5. FUTURE WASH ACCESS TRENDS IN DRC

### 5.1 WATER SUPPLY

While the economic effects of COVID-19 have put stress on both REGIDESO and the country's autonomous water systems, neither our SMS surveys nor our key informant interviews reveal widespread piped service disruptions relative to pre-pandemic levels (which of course must be recognized as being among the poorest among USAID high priority and strategy-aligned countries).

The biggest areas of concern are the chronic financial and operational challenges faced by both the national utility and the AWSs, for which the pandemic has compounded difficulties. Roughly half of DRC's urban population is vulnerable to performance failures REGIDESO could suffer in the near-term. Still, the broader issues are systemic in DRC (and reflected in the declines in water service coverage over the past decade), as opposed to a clear and direct outcome of the pandemic's economic shock.

The rural population is barely served by piped supply of any kind and remains largely reliant on unprotected groundwater sources and surface waters; we would not expect these populations to see much change from the pandemic shock. Still, higher proportions of the rural respondents to our SMS surveys reported COVID-19 related water access difficulties than did urban consumers. Some of this could be related to the benefits that urban consumers realized in the form of temporary tariff relief. The forthcoming survey being performed by USAID's DRC WASH program in Kasai and Lomami provinces will provide an important additional snapshot, with preliminary results suggesting some modest temporary improvement in satisfaction with water services associated with supply shifts linked to the two-month free water period but concerns about access connected to increased pricing as suppliers attempt to recoup losses.

Our main forecast with respect to COVID-19-linked water supply trends is that the performance of REGIDESO and the AWSs, already challenged, could be further hampered by Congolese currency declines and other factors related to COVID-19 economic shock.

### 5.2 SANITATION

Neither sanitation commodities nor desludging value chains suffered major declines in demand relative to pre-pandemic levels, though their profitability has declined modestly. Product suppliers we interviewed expressed some anxiety regarding currency values and fuel prices, but we foresee no immediate risks to these value chains in the near term. Product and service pricing may increase, based on supplier interviews, though the providers also understand that maintaining market share will force them to absorb some of the cost increases they endure in the immediate future.

Low investment in sanitation, particularly by urban households, is largely driven by the high cost of improved latrines, with USD 300–400 for simple pour-flush pit latrine and USD 1,400 for a septic tank, representing between 0.5 – 2.5 times the current per capita GDP of the DRC (World Bank, 2020). “This first step of hygienic separation of feces from human contact will be a financial stretch for most Congolese,” according to the World Bank (2017).

Others express pessimism: key informants we interviewed noted that the sanitation situation in the DRC was precarious prior to COVID-19, and do not anticipate any increased demand in household sanitation behavior nor increased government investment in the short-term. Indeed, they argue that urban households, in particular, will further deprioritize the purchase of new toilet facilities. They also speculate that open defecation will persist and could marginally increase with the growing fear among households of COVID-19 transmission with use of shared toilet facilities.

### **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.

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## APPENDIX I - 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
Bilateral program implementer	Chemonics / DRC WASH
Central Government	CNAEA (National Water and Sanitation Committee / Comité National d'Action de l'Eau et l'Assainissement)
Central Government	Department of Hygiene and Public Sanitation
Central Government	Directorate of Sanitation and Health (DAS)
Central Government	Ministry of Water Resources and Electricity
Donor	KfW/GIZ
Donor	World Bank
Donor	USAID
Multilateral Institution	UNICEF
NGO	Food for the Hungry
NGO	ICRC (International Committee of the Red Cross)
NGO	Mercy Corps
NGO	OXFAM
NGO	World Vision
Service Provider (Association)	Association of Pit Emptiers, Kinshasa
Service Provider (Association)	Association of Private Operators of Latrine Construction
Value Chain Actor	Ela Chemicals and Engineering;
Value Chain Actor	Établissement Shalom, distributor of toilet construction materials

## 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
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 province do you currently live in? Reply with the name of your province like Katanga.	Any response = Urban/Rural
4	Urban/Rural	Do you live in an urban or rural area? Reply with 1 or 2. 1)Urban area 2)Rural area	1 = Migrate 2 = Employment
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

Q #	Q Name	English	Skip Pattern
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

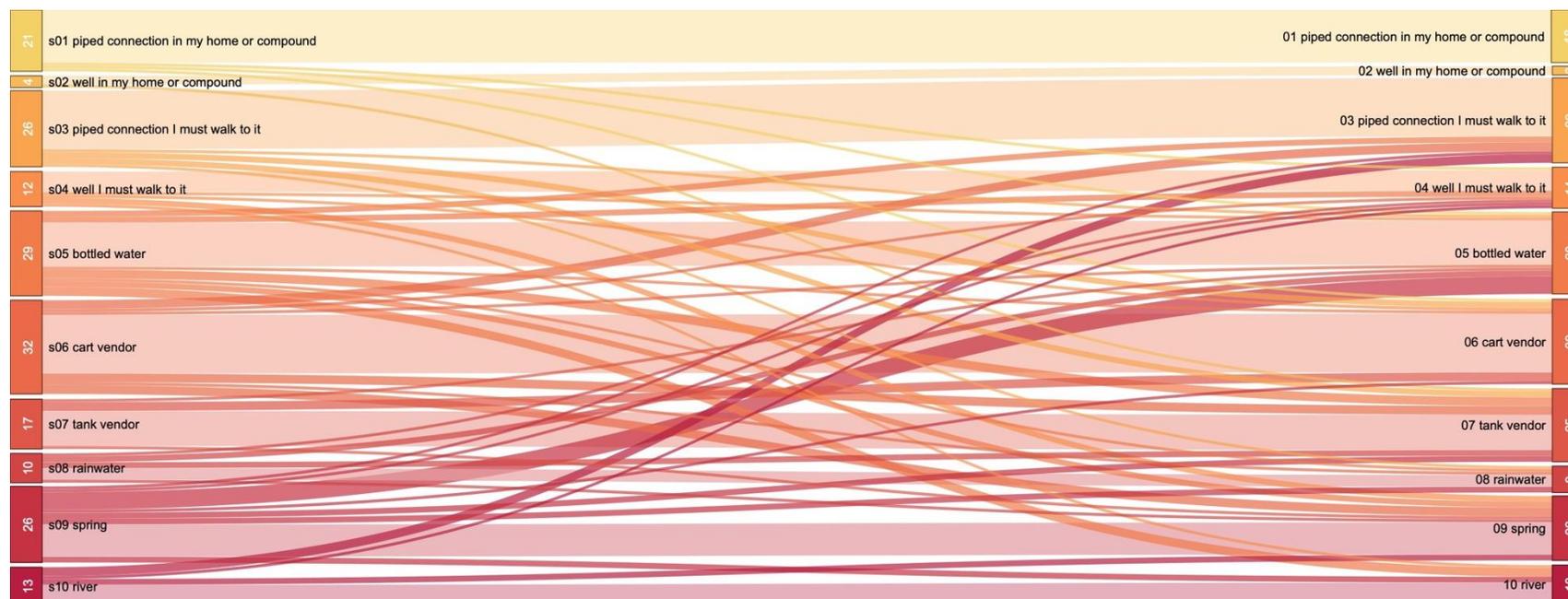
Q #	Q Name	English	Skip Pattern
18	WaterService	What else makes getting water difficult now? 1)Fewer hours per day of service 2)Problems take longer to be fixed 3)I am afraid of waiting in a queue 4)No change	1-4 = WaterShort
19	WaterShort	In the past week, was there a day when you couldn't get enough 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

Q #	Q Name	English	Skip Pattern
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
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

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	I-4 = Close-out-Incentive
NA	Close-out-Incentive	GeoPoll: Thank you! You will receive #TOPUP# airtime credit within 2 days. <a href="#">For more information on Coronavirus prevention visit who.int</a>	

## 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). We note here how comparatively little change Congolese report compared to the patterns in the other countries.



**Figure 9.** DRC Sankey diagram. Water modality changes reported by respondents to our SMS survey in DRC among the subset of respondents who reported pandemic-driven water supply difficulties.

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