



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 - Nepal



FEBRUARY 2021

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ACRONYMS AND ABBREVIATIONS

ADB	Asian Development Bank
COVID-19	Coronavirus Disease 2019
CRS	Catholic Relief Services
DHS	Demographic and Health Survey
DWSSM	Department of Water Supply and Sewerage
ENPHO	Environment and Public Health Organization
FSM	Fecal Sludge Management
FSTP	Fecal Sludge Treatment Plant
GDP	Gross Domestic Product
GWC	Global WASH Cluster
HDPE	High density polyethylene
INGO	International non-governmental organization
JICA	Japan International Cooperation Agency
JMP	Joint Monitoring Program of UNICEF and WHO
KUKL	Kathmandu Upatyaka Khanepani Limited
MHM	Menstrual hygiene management
MICS	Multiple Indicator Cluster Survey
NGO	Non-governmental organization
OD	Open defecation
ODF	Open defecation-free
PPE	Personal protective equipment
WASH	Water, Sanitation and Hygiene
WASH-FIN	Water, Sanitation and Hygiene Finance
WHO	World Health Organization
WSUC	Water and Sanitation Users' Committees
WWTP	Wastewater treatment plant

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 month) 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.² 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 Nepal.

The COVID-19 pandemic control measures instituted by the Government of Nepal resulted in major restrictions on mobility that were sustained for longer periods than most other countries we investigated. The economic shock of the pandemic has been severe: in World Food Program telephone surveys of 4,400 households in April and August 2020, roughly 30 percent of respondents reported a reduction in income over the previous 30 days in both survey waves. We learned of no government interventions on water provision and pricing, and comparatively little international donor response has been directed at the WASH sector in Nepal.

Our topline findings, by subsector, are as follows:

WATER SUPPLY – CURRENT STATUS

I) Urban and peri-urban/small town water service providers report pandemic-linked financial and operational challenges. An assessment of 10 small-to-midsize water utilities conducted by the USAID-funded Water, Sanitation and Hygiene Finance (WASH-FIN) project revealed widespread financial losses, with four reporting having collected no revenues whatsoever from March through July. In our own interviews, several water user committees in rural areas reported having been unable to collect tariffs over the course of the pandemic and associated response period, conveying

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).

² Unlike the countries we studied in Africa, we could not locate a service provider of SMS-based consumer surveys. GeoPoll, the firm which conducted our SMS surveys in the other deep dive countries, only conducts live call surveys in Nepal.

anxiety about sustainability in the absence of external financial support. In Kathmandu, water tankers reported massive (over 90 percent) declines in business, with estimates of more than 70 percent of tankers suspending operations. Operators of enterprises producing treated water delivered in 20 L containers (known locally in Nepal as “jar water”) reported demand declines of more than 50 percent due to out-migration from Kathmandu immediately prior to the lockdown, as well as drops in institutional demand. This has led to several treatment facilities temporarily significantly scaling back production or shutting down. Meanwhile, key informants reported local governments diverting funds away from water and towards COVID-19 response efforts, e.g., building quarantine and isolation centers.

2) Operations, scheduled maintenance and new construction has been impacted by lack of availability of key inputs, transport restrictions, and reduced availability of labor. Jar water manufacturers face several supply-side challenges, such as increase in electricity costs during lockdown, and difficulty in importing inputs (e.g., plastic required for making container seal caps) from India and China.

SANITATION – CURRENT STATUS

3) Value chain actors selling both onsite sanitation inputs and desludging services saw reductions in demand, and those we interviewed reported concern about continuing viability. Few rural sanitation entrepreneurs were operating in Nepal prior to the pandemic, as the sanitation business was not often found to be viable due to the sparse population. (Demand for new toilets was also reported to be low since Nepal declared itself ODF.) The current challenges are going to discourage future entrants into the market

HYGIENE – CURRENT STATUS

4) The pandemic has led to a significant increase in handwashing behavior, based on interviews with suppliers as well as a household survey of 370 households conducted by the Nepal-based NGO MITRA Samaj with support from WaterAid Nepal. We also heard concerns regarding affordability and availability of soap and water for a few disadvantaged groups (e.g., certain marginalized caste groups in the Terai and residents of urban low-income localities).

5) Soap manufacturers report challenges with increasing production costs, supply chain difficulties for inputs, and transport restrictions. Soap manufacturers reported keeping prices fixed and taking a hit on margin (as, for example, consumers shifted away from more expensive luxury brands), but other informants reported retailers increasing consumer prices. Manufacturers also faced additional challenges unrelated to the pandemic (e.g., transport disruptions due to flooding and landslides).

5) Menstrual hygiene management (MHM) product manufacturing costs have increased, but prices remain stable. Manufacturers report absorbing cost increases to maintain market share.

NEAR-TERM FUTURE TRENDS

6) We do not anticipate COVID-19 to result in significant service declines relative to pre-pandemic baselines. Urban piped service in the capital was already insufficient to meet demand, and the private vendor market, while affected by the March-July lockdown, appears resilient enough to have weathered the worst of economic shock. Rural and small-town providers seem also to be in position to maintain service, though a repeated and extended deep lockdown (and associated economic shock) could prove very difficult for the smaller actors. 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% of the operating costs (McNicholl et al. 2019).

7) 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, we may see a reversion to open defecation.

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

I. INTRODUCTION

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

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

We proceeded on the assumption that direct health effects of the pandemic in USAID high priority and strategy-aligned countries would be exceeded by the economic shock of measures taken to contain the pandemic (restrictions of movement, closures of business, disruptions of supply chains, and so forth).³

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 are playing 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:

³ 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 Nepal⁴); 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		

⁴ Unlike the countries we studied in Africa, we could not locate a service provider of SMS-based consumer surveys. GeoPoll, the firm which conducted our SMS surveys in the other deep dive countries, only conducts live call surveys in Nepal.

2. METHODS AND DATA

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

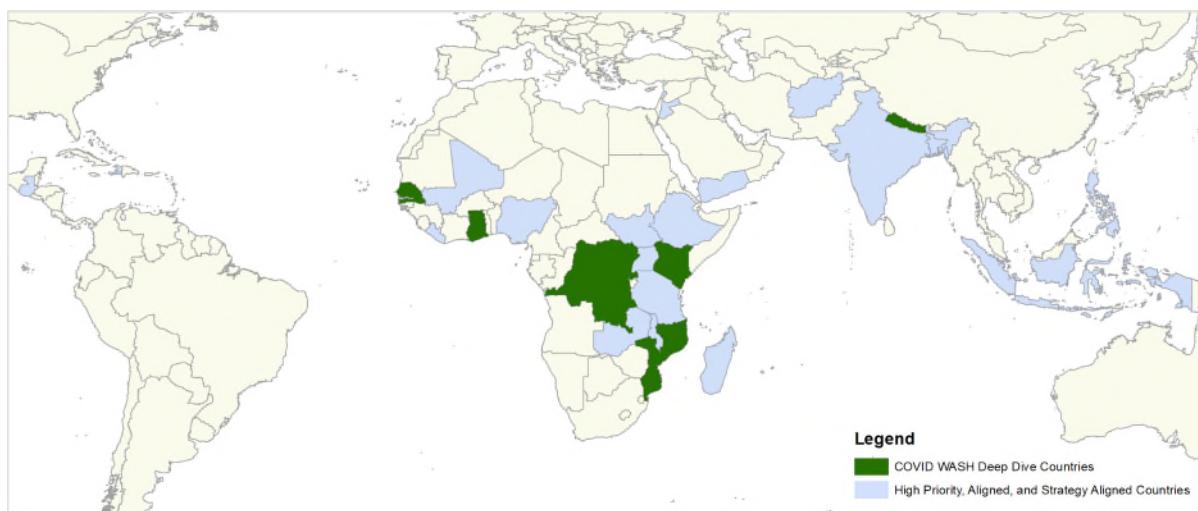


Figure 1. Highlighted countries are USAID high priority and strategy-aligned countries, with the deep dive countries in green.

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

- an overview of the key actors and institutions participating in water and sanitation service provision, including the distribution of legal and regulatory responsibilities,
- consultation of most recent UNICEF/WHO Joint Monitoring Program (JMP) data, UNICEF MICS, USAID DHS for the country,
- consultation of publicly available government response trackers and vulnerability estimates for the country,
- examination of import/export numbers for soap and chlorine, and
- web searches for news stories and public reports on WASH in the context of the pandemic.

We conducted semi-structured interviews of 66 key informants in Nepal via phone or videoconference. We consulted the USAID Mission in Nepal for guidance and recommendations, who assisted in identifying key organizations and individuals from across all seven provinces in Nepal. We also consulted personal contacts in the business sector. The purpose of these interviews was twofold: first, to secure macro-level insights from well-positioned observers (essential during a period in which in-country visits were rendered impossible), and second, to hear directly from suppliers of WASH products and services regarding their present and anticipated financial and operational challenges. We also hoped that the

interviews would contribute to predictions of future trends and help us to make sense of differences we observed between countries.

Our key informant interviewees included (see **Error! Reference source not found.**):

- national and local 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 (such as the World Bank, UNICEF, DfID, JICA, and others).

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 and sanitation service and product delivery had been disrupted by the economic consequences of the pandemic. We conducted nearly all key informant interviews via internet teleconference, complemented with selected in-person meetings following social distancing and masking protocols. The subsector distribution of key informants is provided in *Table 2*.

Table 2. Distribution of key informants interviewed.

Key Informants Interviewed	Category	Number
Government	- National and local government officials	8
Service providers	<ul style="list-style-type: none"> - Large scale municipal utilities - Smaller-scale formal and informal providers - Village-level community-managed systems - Health care providers 	8
Value Chain Actors	<ul style="list-style-type: none"> - Medium and small-scale formal and informal manufacturers and suppliers of toilet components (latrine hardware – interface, sub-structure, and super structure), plumbing supplies, hygiene products - Medium and small-scale formal and informal providers of latrine construction and maintenance services, and pit emptying to customers with onsite sanitation in urban, peri-urban areas and small towns - Businesses engaged in installation and maintenance of latrines, pit emptying, operation and maintenance of wastewater/ fecal sludge treatment plants 	9
Development Partners	Bilateral and multilateral donors, UNICEF, WHO	10
NGOs	International and Nepal-based WASH program implementers	30
Academia	Research and capacity development in WASH	1
	Total	66

3. NEPAL CONTEXT

3.1 PRE COVID-19 WASH COVERAGE

In September 2019, the Government of Nepal (GoN) declared all 77 districts of the country to be free from open defecation (OD). In 2011 the GoN initiated its nationwide Sanitation and Hygiene Master Plan, which aimed to achieve 100% nationwide access to improved sanitation. A particularly significant improvement in access to toilets took place in reconstruction activities following Nepal's 2015 earthquakes, after which the government announced that it would lead a new national campaign on total sanitation to sustain the open defecation free (ODF) achievement, addressing long-term behavioral change and social norm transformation.

Indeed, according to the 2019 MICS, 95 percent of Nepal's population had access to improved sanitation, with six of seven provinces above 90 percent (though with Province 2 in the Terai lowlands, Nepal's second most populous province, representing a lagging outlier at 84 percent; see Figure 2). These latest data reflect a dramatic increase from the MICS 2014, for which the reported proportion with improved sanitation was only 72 percent (along with 26 percent practicing open defecation). Across Nepal, these sanitation gains appear to have been dramatic and steady since 2003; we include estimates of that increase published by Deshpande et al. (2020), in Figure 3.

Fecal sludge management (FSM) providers typically operate only in large urban centers of Nepal, whereas rural populations typically opt for twin-pit latrines and construct a new toilet once it fills up. Manual pit emptying is predominant, and there are very few mechanized operators in Nepal. A number of FSM operators dump fecal sludge into surface waters or farm lands in peri-urban areas. Lack of easy access to a treatment plant is a key reason for this practice, as currently there are only three operational fecal sludge treatment plants in Nepal: in Jhapa, Gulariya (Bardia), and Mahalaxmi Municipality (BORDA 2016).

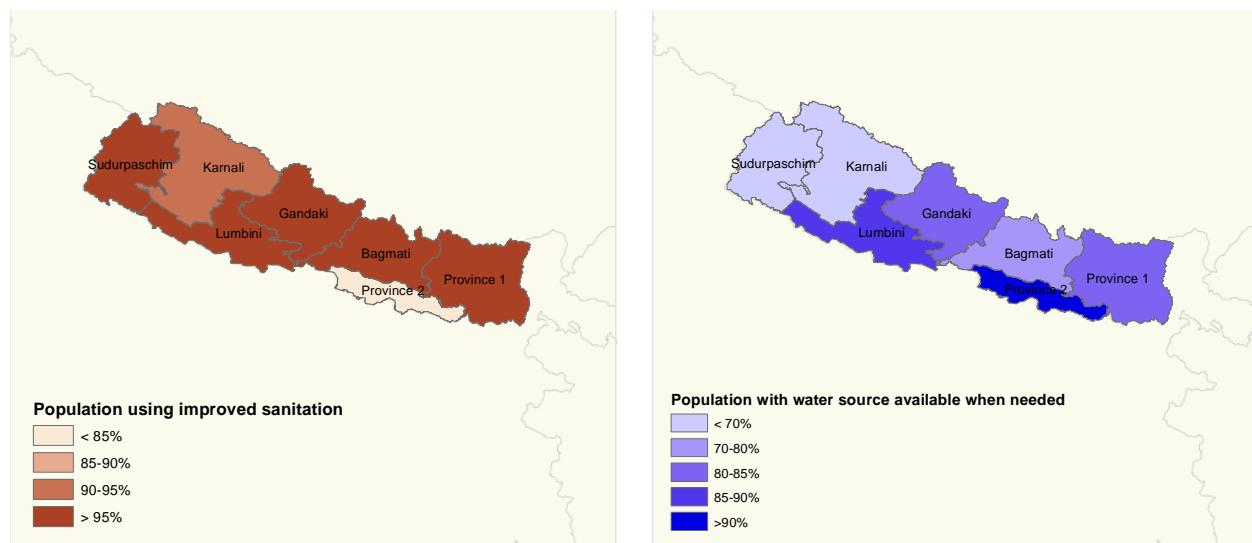


Figure 2. Percentage of population using improved sanitation (left) and with water available when needed (right), by Province. Source: Government of Nepal, National Planning Commission, Bureau of Statistics. Multiple Indicator Cluster Survey (MICS 2019), Key Indicators Report. Kathmandu.

Nepal's water supply situation is more complex. The 2019 MICS estimates 97 percent of Nepal's population to be "using improved sources of drinking water;" at the same time, it reports only 80 percent of the population to have "a water source that is available when needed," with some provinces considerably lower (only 60 percent in Karnali and 67 percent in Sudurpaschim; see Figure 2).

The 2000-2017 trend for water supply improvement offered by Deshpande et al. (2020) in Figure 3 is much flatter than for sanitation, as improved water coverage was already estimated at near 90 percent in the year 2000. According to the 2014 MICS, just over 45 percent nationally were served by piped connection (27 percent into a dwelling, yard/plot, or to a neighbor, and 19 percent via public tap/standpipes); and 43 percent nationally rely on tube-well/boreholes. The urban-rural split is extreme: nearly 60 percent of the Kathmandu valley were served by piped connection into a dwelling or yard/plot, as compared only 20 percent in areas classified as rural throughout the rest of the country. Conversely, only 10 percent of the Kathmandu valley relied on tube-well/boreholes, as compared to over 20 percent of rural residents.

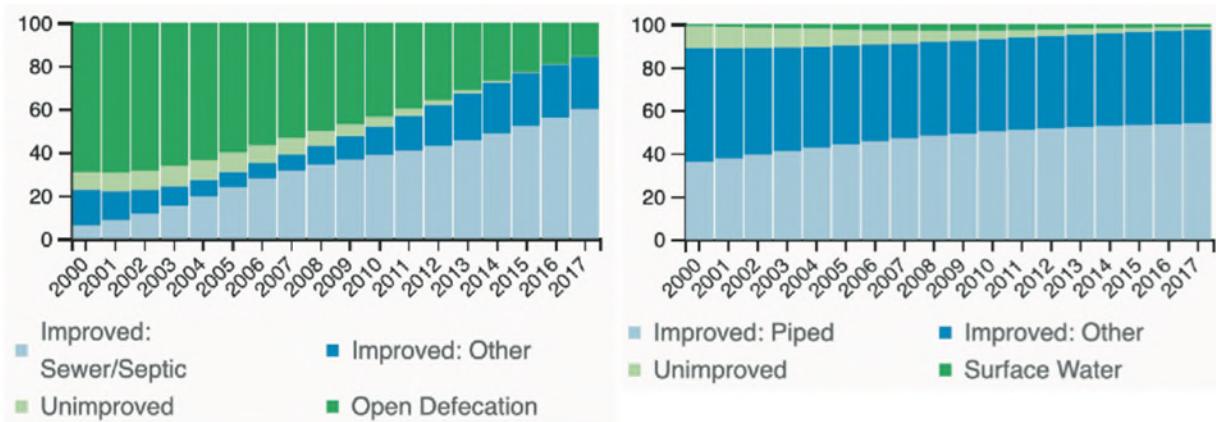


Figure 3. Trends in improved water and sanitation access in Nepal as estimated by Deshpande et al. 2020, drawn from interactive maps made available at <https://vizhub.healthdata.org/lbd/wash>.

Understanding the reliance of urban populations on piped systems is essential to understanding the effects of COVID-19 on water access in Nepal, due to the challenges faced by the various authorities responsible for water supply in Kathmandu.⁵ Specifically, Kathmandu Upatyaka Khanepani Limited (KUKL), the asset operator, has not been able to meet Kathmandu's increasing water demand since 2006; indeed the utility could only meet 25-40 percent of demand in 2015 (Ojha et al. 2018). (The Melamchi Water Supply Project, a river diversion project initiated in 1998 which would double KUKL's supply capacity, is not yet complete.) KUKL's inability to meet Kathmandu's demand for piped services means that private vendors who deliver water via tanker truck and 20 L jugs fill an essential gap; the seemingly impressive improved water supply coverage indicated in the MICS data – even with the lower numbers captured by the "available when needed" statistic – do not capture that intermittency of supply in the Kathmandu valley can be extreme, as little as one hour per week (Schwartzstein 2020).

There had been significant improvement in access to basic hygiene in Nepal in the few years prior to the pandemic. Nationally, the proportion of households with access to basic hygiene (i.e., availability of

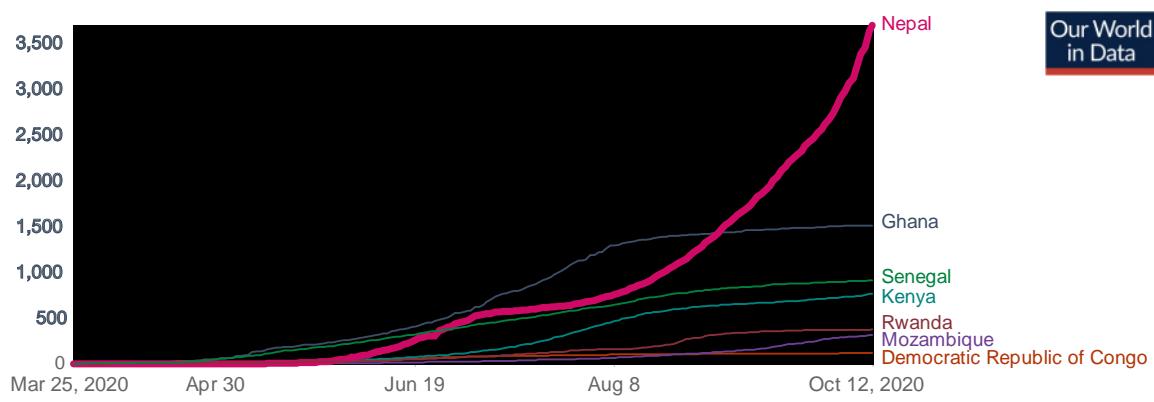
⁵ According to Ojha et al. (2018) "The Kathmandu Valley Water Supply Management Board (KVWSMB) acts as the owner of the assets of the water and wastewater systems inside Kathmandu Valley and the Kathmandu Upatyaka Khanepani Limited (KUKL) operates the assets. The Water Tariff Fixation Commission (WTFC) is responsible for tariff regulation and fixation... the Groundwater Resource Development Board (GRDB), the Ministry of Environment (MoE) and Water and Energy Commission Secretariat (WECS) are also involved in groundwater management of Kathmandu Valley."

a handwashing facility on premises with soap and water) increased from 48 percent in 2017 to over 80 percent in 2019, albeit with significantly lower coverage in selected provinces (55 percent in Karnali and 58 percent in Sudurpaschim) (MICS, 2019).

A similar improvement has been observed in access to menstrual hygiene materials as a result of greater attention being paid to menstrual hygiene in Nepal since the exposure of the *chhaupadi* practice in a *New York Times* article in 2018 (Gettleman, 2018). The GoN is currently engaging in several policies and initiatives that affect MHM in the country, including the MHM in Schools program. The percentage of women aged 15 to 49 years who reported menstruating in the last 12 months, and using menstrual hygiene materials⁶ with a private place to wash and change while at home is 83 percent (UNICEF, et al., 2019).

3.2 COVID-19 SITUATION AND GOVERNMENT RESPONSE

As of mid-October, Nepal had recorded a cumulative total of approximately 108,000 confirmed cases of COVID-19, corresponding to roughly 3,700 confirmed cases per million inhabitants, and 636 confirmed deaths.



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

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Figure 4. Cumulative confirmed COVID-19 cases per million people. Nepal highlighted in bold. Source: [Our World in Data](#).

The National WASH Cluster has been functional since the 2015 earthquakes and now falls under the Joint Secretary of the Ministry of Water Supply (MoWS). Since its creation, the National WASH Cluster has focused mostly on coordination of cluster partners, mobilizing them and building their capacity. Prior to the onset of COVID-19, the National WASH Cluster worked on building local level capacity at the Nagar and Gaun Palika and Provincial levels. However, since March 2020, their entire attention has shifted to working on WASH facilities in holding, quarantine and isolation centers across the country and coordinating with the Palikas on COVID-19 management and mitigation.

The GoN issued a strict nationwide lockdown from 24 March to 21 July 2020, prohibiting domestic and international travel, instituting border closures, and suspending non-essential services. Thereafter, it allowed the reopening of shops and restaurants as well as limited local public transport, but re-imposed restrictions in Kathmandu Valley on 19 August following an increase in local transmission attributed in part to large-scale entry of travelers from India when the border re-opened (*Nepali Times*, 20 August 2020). The scale of restrictions corresponded to high levels of mobility restriction, with a gradual

⁶ Menstrual hygiene materials include *kapra* or old cloth in many cases

decline through the end of the first lockdown period, with a return to May levels of home confinement in late August (see Figure 5).

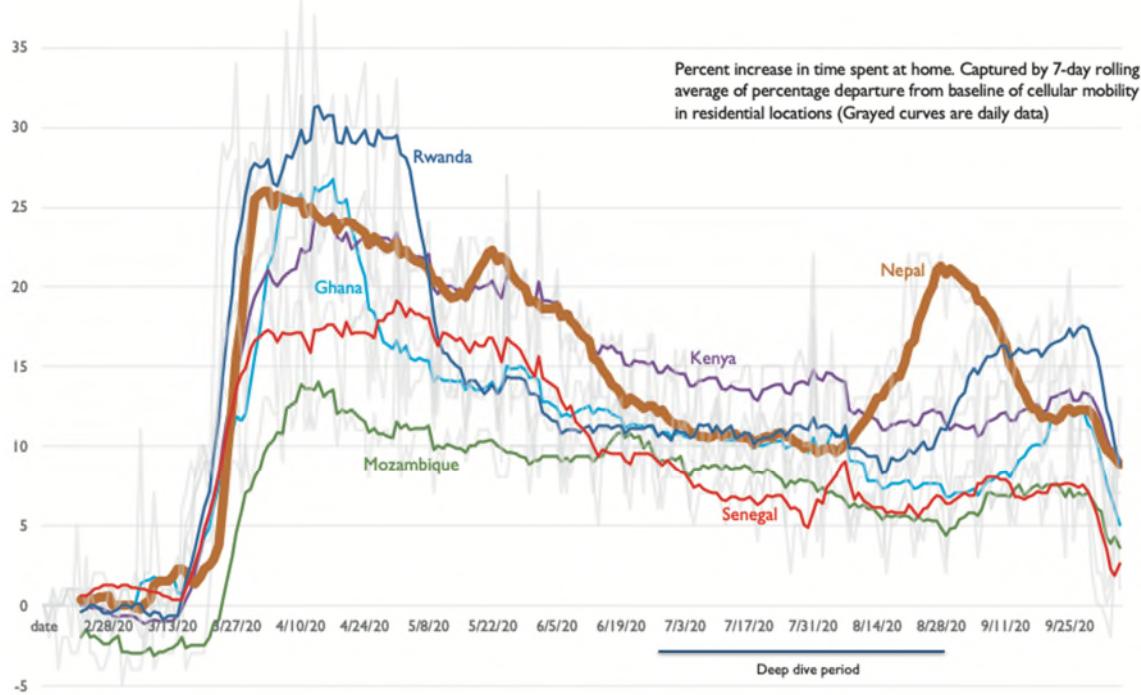


Figure 5. Percent departure from baseline mobile phone mobility, residential category, February to early October 2020. Periods of our SMS survey and deep dive interviews are noted. Nepal is highlighted in bold. The higher the value, the more time the cell phone user spends at home (and less time at commercial,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

3.3 THE COVID-19 ECONOMIC SHOCK

As a result of the impact of COVID-19, GDP growth in Nepal is estimated to be 1.8 percent in fiscal year 2020, dropping from seven percent in FY2019 (World Bank Group 2020). The country's economic challenge is compounded by a near cessation of tourism as well as more than a 25 percentage point decline in capacity utilization of industry by early June 2020 and a 64.7 percent (y/y) drop in credit provision to the private sector during the two-month lockdown period, that significantly affected industrial and agricultural production (World Bank Group 2020). The World Bank's July 2020 Nepal Development Update asserts:

COVID-19 has increased external and fiscal pressure by reducing foreign currency inflows and revenues. As a result of the pandemic, services exports, goods exports, and remittances contracted by 57.4 percent, 62.1 percent, and 43.4 percent, respectively, between March and May 2020 compared to the same period in the previous year. The resulting pressure on foreign reserves was moderated by a substantial decline in goods and services imports, which decreased by 59.6 percent and 59.5 percent, respectively, between March and May 2020, year-on-year. As a result, the current account deficit is estimated to decrease to 7.2 percent of GDP in FY2020 from 7.7 percent in FY2019. While Nepal was able to contain external pressures resulting from COVID-19, the pressure on its finances has been rising. Government revenues contracted by 51 percent between March and May 2020 compared to the same period in the previous year. At the same time, COVID-19 relief measures have increased government spending and are estimated

to result in a fiscal deficit of 7.3 percent of GDP in FY2020, compared to 2.6 percent in the previous year. The government aims to finance the deficit through concessional resources from international development partners and domestic borrowing.

Notably, however, remittances recovered strongly through the summer, such that the decline as of August was only 0.5 percent (following year-on-year increases in remittance totals of 7.9 percent in 2017/18 and 14 percent in 2018/2019.⁷

The World Food Program's mobile Vulnerability Analysis and Mapping (mVAM) project, which conducted phone interviews with over 4,400 households in April 2020 and over 4,600 in August 2020 across all seven provinces, provides some insight on the pandemic's impact on household income. In the April survey, over 30 percent reported a reduction in income over the previous 30 days, and 4 percent reported a severe loss; in the August survey, roughly the same percentage reported any kind of income reduction, but those reporting severe loss increased to 11 percent (World Food Program 2020a, 2020b). The Rastra Bank (Nepal's central bank) estimated job losses to have been suffered by 22.5 percent of Nepal's population as of August.⁸

⁷ Upasana Khadka, "Defying predictions, Nepal's remittances still high." *Nepali Times*. 25 August 2020. <https://www.nepalitimes.com/banner/defying-predictions-nepals-remittances-still-high/>

⁸ Ramesh Kumar, "Economic cost of 5 months of Nepal lockdown." *Nepali Times*. 25 August 2020. <https://www.nepalitimes.com/banner/defying-predictions-nepals-remittances-still-high>

4. FINDINGS

4.1 WATER SUPPLY – CURRENT STATUS

The private vendors who fill major gaps in utility service in Kathmandu are struggling.

Our key informants reported that in Kathmandu, hotel, restaurant and business closures drove demand for tankered water down by 70 percent during the lockdown that extended from March through the third week of July. At the time of our interviews in July and August, we heard estimates of only about 30 percent of Kathmandu's tanker businesses being operational. One interviewee suggested that prior to the COVID-19 lockdown, a tanker might receive 30 orders per day, but during the lockdown they would field a single order every 2-3 days.

A related water supply-related service that has been threatened during the lockdown is the cleaning of water storage tanks, which was not included as “essential.” We interviewed an operator who, prior to lockdown, sanitized an average of 90 10m³ water tanks per month; his operations were halted entirely during the lockdown period.

“Jar” water suppliers of 20 L jugs in the Kathmandu valley reported more than 50 percent reductions in sales resulting largely from out-migration from the city immediately prior to the lockdown. Major decreases in institutional/commercial demand and losses of disposable income among daily wage workers, especially women and minorities who are a major part of the informal workforce, also contributed to the declines.

While not commonly mentioned, some jar water manufacturers we interviewed did note a shortage of production inputs, most notably jug caps and seals, forcing a reliance on temporary seals with associated concerns about leakage and contamination of purified water during transport. The cost of producing jar water has risen with increases in monthly electricity bills, but the added cost has been absorbed by producers, distributors, and retailers, and not to the consumers, as the maximum retail price is printed on the containers.

Meanwhile, operators of the small water treatment facilities supplying the jar water distribution chain reported a cessation in collection of payments from retailers, especially as some have had to shut down their shops and leave Kathmandu. Many reported challenges in making payments to operational staff, including drivers, plant technicians, and custodial staff. Some have not paid regular salaries and are covering only staff living expenses. Also, despite a central bank order to cease loan collection, jar water enterprises we interviewed reported pressure from lenders and have been forced to take personal loans from relatives and friends. The GoN did not impose penalties on business owners who were late paying taxes during lockdown, but did not forgive or reduce the tax burden.

Other urban and small town centralized systems consistently suffered revenue losses during the lockdown period, and though they did not report full service disruptions, are vulnerable to future performance problems if there are additional lockdowns of extended duration.

To understand the operational and performance effects of the pandemic on water service provision, the USAID-funded Water and Sanitation and Hygiene Finance (WASH-FIN) project surveyed a sample of 10 utilities in July 2020, in consultation with the Department of Water Supply and Sewerage Management (DWSSM).⁹ The assessment sought to capture a balance of management models geographies, and scales (from less than 1,000 to more than 30,000 customers) within the country.

⁹ USAID 2020. WASH-FIN Nepal COVID-19 Impact Assessment Report. September 2020.

Nine of the 10 utilities surveyed reported revenue losses, with four reporting a complete halt to collections, and the remaining five reporting 25-50 percent revenue declines. Service continuity was varied: half reported no change, but the three operators located in the mountainous regions reported modest (less than 25 percent) production drops because limited mobility precluded personnel from performing regular inspection and maintenance.

Supply of chemicals and hardware was not widely reported; two of the 10 providers surveyed reported challenges in local market availability, but were able to address these by sourcing materials from elsewhere in the country.

Recognizing that the assessment is limited in scope (having sampled roughly 10 percent of the country's water service providers) and covered a period four months into the pandemic, the report is circumspect in its finding that COVID-19 had not resulted in "serious" effects, concluding that "both operational and financial impacts of COVID-19 pose serious threats to the ability of service providers to maintain a sustainable operation without long-term damaging slippages." Concerns with cash flow and staff mobility for meter reading were noted, as were concerns (largely not yet realized) about the availability of plumbing hardware as well chemical inputs for disinfection.

Only half of the operators interviewed by WASH-FIN reported maintaining cash reserves sufficient to weather the revenue losses and operational cost increases. In our own interviews, one key informant argued that urban Water and Sanitation Users Committees (WSUCs) typically do have adequate cash reserves because they receive regular support from municipal governments and are not heavily reliant on tariffs collected from users. They are thus unlikely to face financial challenges in ensuring water supply in the immediate term, though as WASH-FIN suggests, longer term performance will depend upon the magnitude and duration of pandemic economic shocks.

4.2 SANITATION – CURRENT STATUS

Suppliers of latrine products and installation services suffered acutely during the initial lockdown period.

Multiple key informants commented that rural sanitation entrepreneurs, particularly cement ring manufacturers and sanitation marts, saw such dramatic demand declines and supply shortages during the lockdown period that their continued operations and very viability are threatened. Several expressed concern that the rural sanitation value proposition – already thin due the sparse population in the regions of rugged terrain (as well as limited demand for new toilets following the significant gains of the past decade) – would be tested further from the pandemic shock, discouraging future entrants into the market in the near term.

Supply chains of most inputs (e.g., cement, HDPE pipes) were disrupted during lockdown, and have not returned to normal yet. Most NGO implementers of market-based sanitation programs were forced to delay implementation of their ongoing projects (e.g., toilet upgrade programs, or community toilet construction) by 6-9 months. One implementer reported a 4-5-fold increase in the cost of construction for a typical WASH station during the lockdown period. Supply bottlenecks are likely to track intermittent lockdowns over time in the towns bordering India, where most production facilities are located.

Consumers may well settle for lower-quality solutions in the immediate future.

While a majority of new toilets constructed over the past several years included a septic tank due to the government's guidelines for constructing improved pour-flush water seal latrines, with sub-structure of bricks or cement rings, this is prohibitively costly for many consumers going forward in the near-term. A number of key informants observed that due to reduced incomes, households are likely to construct lower-cost toilets (e.g., unlined pit latrines) when the current facilities fill up, and there is even a risk of reversion to OD in cases where a household cannot afford a new latrine.

There are open defecation risks among migrant populations.

Several key informants reported signs of OD being observed among migrant households who have returned to Nepal during the pandemic and do not have access to a toilet, as they may have not been covered under the reconstruction schemes implemented in Nepal in the years prior to the pandemic. Many returning migrants were likely currently using shared toilet facilities at isolation centers (e.g., schools), whose sanitation facilities are frequently insufficient (with a single toilet for 50 individuals or more), suggesting that open defecation may be practiced. Some informants asserted that there is a lack of emphasis on maintenance of these facilities, and cautioned of full pits looming.

Urban desludging has seen a demand contraction, but we received no reports of enterprises terminating operations entirely.

There are currently approximately 30 fecal sludge trucks in operation in the Kathmandu Valley area. During the first lockdown as there were initially reports of the COVID-19 spreading through fecal sludge leading to complete cessation of operations. DWSSM provided guidance to selected operators for conducting safety and security training, which enabled a resumption of pit and tank emptying. Operators worked to make households aware of transmission risks and requested them not to engage with staff carrying out their work.

Operators we interviewed reported disposing of fecal sludge into the sewer network leading to the Guheshwori wastewater treatment plant at Gaurighat, Kathmandu, because of the limited capacity of the fecal sludge treatment plant (FSTP) in Mahalaxmi. The Mahalaxmi fecal sludge treatment facility ceased receiving fecal sludge starting in March because the operator had heard WHO reports of associated COVID-19 risks. Prior to COVID-19, it had processed its capacity of two to three trucks each week, but as of August had only just returned to operation.

Desludging was declared an “essential service” and allowed to continue during the March to July lockdown, but operators endured significant revenue and cost challenges. Demand dropped roughly 50 percent, because of income shocks, outmigration from Kathmandu, and aversion to allowing pit-emptying personnel operators to enter homes out of fear of COVID-19 transmission. Interviewed operators also reported difficulty with personal protective equipment (PPE) acquisition costs, but did not report layoffs or pay cuts for staff. Meanwhile, desludging operators on payrolls as ward or municipal personnel or employed by NGOs have fared better than those who operate independently, as would be expected.

Quarantine centers face sanitation challenges.

UNICEF estimated that 70-80 percent of toilets at schools-based quarantine, holding and isolation centers are not functional and in need of major repair. Hospitals and quarantine centers pose a major challenge for sanitation as they lack basic sanitation infrastructure and waste disposal facilities, and fecal sludge management has been grossly unaddressed. UNICEF’s own assessment of 16 healthcare facilities in Province 2 found none to have proper fecal sludge and waste management facilities.

4.3 HYGIENE – CURRENT STATUS

The pandemic has caused a significant positive shift in hand-washing behavior.

Our interviews with soap manufacturers and some reports suggest that hygiene promotion campaigns during the pandemic have led to a significant increase in handwashing behavior of households. This was observation was reinforced by a WaterAid assessment that included phone surveys of 380 households across the country conducted in July in which 97 percent reported increasing their handwashing behavior post-COVID. There were some affordability and availability barriers for selected vulnerable groups, such as marginalized casts in the Terai (MITRA Samaj 2020).

According to an interview with Unilever Nepal, suppliers have seen a movement in demand from premium brands of soap (e.g., Dove and Lux), which have functional benefits beyond hygiene (such as, beauty and moisturizing), to more hygiene-oriented brands (e.g., Lifebuoy). According to interviews with government stakeholders, demand for liquid soap has increased as the GoN requires that all handwashing stations at quarantine and isolation centers, government offices, and public spaces use only liquid soap.

Soap manufacturers report challenges with increasing production costs, supply chain difficulties for inputs, and transport restrictions.

The evolving lockdown situation continues to cause supply-side challenges for soap value chain actors (e.g., shut-down of manufacturing plants, restrictions on movement of goods), which are further exacerbated by a few challenges unrelated to the pandemic, such as transport disruptions due to flooding and landslides. Manufacturers suspended production in most parts of Nepal due to re-imposed lockdown. Most distributors of soap and other fast-moving consumer goods in Nepal were reported to have buffer stock, and were not facing supply shortages at the time of our interviews. Concerns remained about restrictions on inter-district movement of goods due to impositions of lockdowns as well as monsoon-related road closures due to landslides and floods.

Our interviews point to soap manufacturers experiencing margin contractions because prices of key inputs increased by 30-40 percent due to reduced raw materials supplies from India and a significant global rise in price of palm oil, affecting all markets including Nepal.

Manufacturers appear to have largely not passed on the burden of increased input costs to customers, but it emerged from interviews with donors that in markets where there is reduced availability of soap (e.g., remote rural areas), end-retailers have increased margins and are charging higher prices.

We heard that a few unbranded soap manufacturers have been driven out of the market due to the rise in input costs and transport restrictions. Several of these were manufactured in Uttar Pradesh or Bihar in India, and have been unable to bring product into Nepal due to lockdowns.

Hand Sanitizers are seeing demand increases in urban areas.

Sanitizers were widely available in Nepal prior to the pandemic, but use was limited. The increased focus on hand washing and sanitary behavior has led to higher demand for hand sanitizer, and several new manufacturers have started production in the last few months. One key informant who started manufacturing hand sanitizers in March in response to the increased demand reported that there are several uncertified products that have entered the market and are being sold at low price points. The market for sanitizers is exclusive to urban and peri-urban areas, and particularly skewed towards institutional customers (e.g., hospitals, government offices, private sector companies) and middle- and high-income communities. Rural areas are not viewed as a viable market for sanitizers, where they are largely unaffordable at current price points.

MHM production prices have increased, but consumer prices have remained stable.

The production cost of disposable sanitary pads has increased considerably due to an increase in raw material costs and cost of COVID-19 prevention measures in manufacturing (e.g., provisioning of masks, sanitizers, soap) put in place by factories. Following the onset of COVID-19, the cost of the non-woven raw material has increased 15 percent as a result of the currency declines and increases in the demand for the raw material (since it is the same product used to make masks). The government of India had banned the export of non-wovens for a period even prior to the lockdown, and only lifted the prohibition in August 2020. During the ban, one of our key informants, the owner of a large sanitary napkin manufacturing factory in Biratnagar, used perforated fabric which is 1.5 times the price of non-woven materials. Meanwhile, a return of non-woven imports from India has been accompanied by about a 15 percent price increase.

During the lockdown, transportation costs almost doubled and many of the dealer points were closed. Additionally, factories had to invest in COVID-19 prevention measures to protect factory workers and prevent extended factory shutdowns required following positive tests. Additional costs included those for sanitizers, masks, and handwashing units. An MHM product manufacturer reported: “because our product is of a personal hygiene nature, we have to be very careful.” While the cost of production went up significantly, the price of their sanitary pads did not change, as many producers have not transferred the increased cost to consumers. One particular factory has decided to absorb the cost increase, stating that “we cannot transfer the cost to the consumer because we don’t want to lose our market share.” Another sanitary napkin manufacturer has begun producing and selling hand sanitizer to offset losses from sales of sanitary pads.

There were several supply-side challenges in the initial phases of the lockdown (e.g., stoppage of production as sanitary pads were not designated an essential item). Eventually a number of factories were re-opened, but during the down period a number of NGOs and communities pushed to manufacture reusable sanitary pads locally, especially in rural areas and quarantine, isolation and holding centers.

5. FUTURE WASH ACCESS TRENDS IN NEPAL

5.1 WATER SUPPLY

While the economic effects of COVID-19 have put stress on water service providers, our deep dive did not reveal widespread service disruptions relative to pre-pandemic levels. It is important to note that the Kathmandu valley has endured chronic shortages and extremely limited piped service for years, and will continue to do so until the completion of the Melamchi Project. The tanker and jar water industries that fill gaps in municipal utility service clearly suffered during the initial lockdown period, in large part due to out-migration from the capital early in the crisis, but we anticipate that these will recover as economic activity recovers.

The situation facing smaller network providers is more tenuous, and requires monitoring. While impacts of the initial lockdown were significant, they did not result in widespread service disruptions; operators reported confidence in longer term prospects if returns to movement restrictions at the scale reached during the March through July period can be avoided.

5.2 SANITATION

While providers of onsite containment products and services as well as desludging suffered from demand declines and operational cost challenges during the March to July lockdown period, we similarly learned of no widespread sanitation access reductions, which is what we would expect given the resilience of non-sewered sanitation to short-term economic shocks as compared to centralized water supply. COVID-19 effects on sanitation are more likely to appear as a lagging indicator, whereby septic tanks and pits are not emptied because of income constraints. It is plausible that Nepal's encouraging sanitation coverage trajectory depicted in *Figure 3* could slow, as some of the key informants suggested.

5.3 HYGIENE

This subsector is probably the most difficult to forecast, largely because the changes in handwashing behavior that are indicated by consumer 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 premium brands at rates that restore the margins of manufacturers) is uncertain. We do not see declines in soap access outside of the affordability challenges of reduced incomes; indeed, soap prices remain stable across our deep dive countries.

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APPENDIX I - KEY INFORMANTS

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

Category	Organization
Central Government	Department of Water Supply and Sewerage Management
Central Government	Ministry of Health
Central Government	Ministry of Physical Infrastructure Development
Central Government	Ministry of Water Supply
Central Government	National WASH Cluster Secretariat
Donor	Asian Development Bank
Donor	Embassy of Finland
Donor	Islamic Development Bank
Multilateral Institution	UNICEF
Multilateral Institution	World Bank
Multilateral Institution	World Health Organization
NGO	Environment and Public Health Organization (ENPHO)
NGO	iDE Nepal
NGO	KIRDARC (Karnali Integrated Rural Development and Research Center)
NGO	MHM Alliance
NGO	MITRA Samaj
NGO	Nepal Water for Health
NGO	OXFAM
NGO	Plan International
NGO	SAFAA PAANI
NGO	Save the Children
NGO	SNV
NGO	WaterAid
NGO	Women for Human Rights
Researcher	Tribhuwan University
Service Provider	Fecal Sludge Treatment Plant: Lubhu (Mahalaxmi)
Service Provider	Fecal Sludge Truck Operator
Service Provider	Janakpur Zonal Hospital, Janakpur, Province 2
Service Provider	Koshi Zonal Hospital, Biratnagar Province 1
Service Provider	Nepal CRS Company
Service Provider	Nilakantha Natural Spring Water
Service Provider	RVWRMP (Rural Village Water Resources Management Project)

Category	Organization
Service Provider (Association)	Nepal Water Tanker Transportation Association & Siddhartha Khanepani Transportation Services
USAID Program	TAYAR (DAI)
Value Chain Actor	Asian Pharmaceutical Pvt. Ltd & Universal Formulation Pvt. Ltd
Value Chain Actor	Cement Distributor, Pokhara
Value Chain Actor	Gangajal Minerals Pvt. Ltd.
Value Chain Actor	Greenberry Minerals Industries
Value Chain Actor	Jasmine Hygiene
Value Chain Actor	Karmacharya Group
Value Chain Actor	Mahashakti Soap and Chemicals
Value Chain Actor	Mott McDonald
Value Chain Actor	Radha Paudel Foundation
Value Chain Actor	Sonapur Cement
Value Chain Actor	Unilever Nepal

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