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UNDERSTANDING THE WASH RESPONSE TO COVID-19 IN SUB-SAHARAN AFRICA

Technical Report

October 2021

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SUMMARY

The COVID-19 pandemic is an unprecedented event in the present age that has raised questions about the national emergency Water, Sanitation, and Hygiene (WASH) response in Africa. In February 2020, the United States Agency for International Development (USAID) tasked the Water for Africa through Leadership and Institutional Support (WALIS) Program to understand how coordination, finance, monitoring, and organizational capacity influenced the WASH response to the COVID-19 pandemic. The study is meant to provide valuable information on the critical WASH responses that African country leaders have undertaken during the COVID-19 pandemic up to July 2021; how those decisions were reached; the degree to which evidence informed those decisions – or not; and what lessons can be drawn to inform a better response to future crises and to build back better.

Three broad research questions were used to guide the study. What "official acts" were effectively employed by governments and utilities to respond to the COVID-19 crisis? What other measures have governments, utilities, and other African WASH organizations used to respond to the COVID-19 crisis? And, why were these official acts and other measures effective or perceived to be effective in the response to the COVID-19 crisis and how could they be leveraged to support a better response to future crises and to build back better? As the study progressed, more detailed and nuanced questions were developed which further framed the study team's analysis. These new questions were born out of not only the changing pandemic, but also the selection of target countries to further focus the study.

Starting with a subset of USAID's high-priority WASH and strategy-aligned countries in sub-Saharan Africa, the study team conducted a literature review, a survey of WASH stakeholders in eight countries, and key informant interviews (KIIs) and a more focused literature review in three of the eight countries surveyed. The purpose of the interviews was to gather greater depth of qualitative information, triangulate information on the WASH response gathered from the literature review and survey, and understand the experience and opinions of the different stakeholders on the effectiveness of the response. The countries targeted for in-depth interviews and analysis for which individual case studies were developed and can be found separate from this report were Liberia, Madagascar, and Malawi.

The study found that Liberia, Madagascar, and Malawi responded quickly to the COVID-19 pandemic. All three countries developed national COVID-19 response plans using a multi-sectoral framework that included WASH. The WASH responses focused on handwashing and infection prevention and control (IPC) measures in healthcare centers, and prioritized country regions with high COVID-19 transmission rates. The study found that prior and systemic weaknesses were exacerbated by the pandemic. Exiguous WASH and COVID-19 data coordination between the government WASH agencies and the public health and lead pandemic response structures was weak. Funding for WASH response actions was sparing if at all and it was difficult to track budget allocations and disbursement for WASH. Finally, human resources and national preparedness for WASH emergencies remain elusive.

To prepare for future emergencies of similar nature and magnitude, the study team identified opportunities for national governments and their partners to amplify the strengths and address the weaknesses identified in the study. The study team also recommends a comprehensive evaluation of the WASH response to the pandemic across the collective sub-Saharan Africa region. Extracting and disseminating the lessons learned is the first step to informing the development of more responsive and representative coordination structures while developing preparedness, response, and recovery plans.

INTRODUCTION

The United States Agency for International Development (USAID) attaches great value to evidence-based decision-making and is supporting its country partners to build linkages among research, learning, and effective action. One of the mechanisms USAID has employed to understand and forge these linkages is the Water for Africa through Leadership and Institutional Support (WALIS) Program. Against the backdrop of the COVID-19 crisis,[1] the WALIS Program developed this study to understand how African regional institutions, utilities, and partner governments have accessed data to make informed decisions in response to the COVID-19 crisis. The study is meant to provide valuable information on the critical WASH responses that African country leaders have undertaken during the COVID-19 pandemic up to July 2021; how those decisions were reached; the degree to which evidence informed those decisions – or not; and what lessons can be drawn to inform a better response to future crises and to build back better.

Three broad research questions were used to guide the study. As the study progressed, more detailed and nuanced questions were developed which further framed the study team's analysis. These new questions were born out of not only the changing pandemic, but also the selection of target countries to further focus the study. These three broad questions were:

- What "official acts" were effectively employed by governments and utilities to respond to the COVID-19 crisis?[2]
- What other measures have governments, utilities, and other African WASH organizations used to respond to the COVID-19 crisis?[3]
- Why were these official acts and other measures effective or perceived to be effective in the response to the COVID-19 crisis and how could they be leveraged to support a better response to future crises and to build back better?[4]

By using these three broad research questions, the study captured lessons learned on the supporting functions[5] for the WASH response to the COVID-19 pandemic to inform how national and local governments, regional agencies, water sanitation service providers, and their partners could improve their preparedness to respond to and recover from future emergencies of similar nature and impact. To help answer the questions the study sought to a) identify the WASH measures put in place to respond to the COVID-19 pandemic, b) understand the coordination, finances, monitoring, and organizational

[1] Defined as both the COVID-19 pandemic caused by the SARS-CoV-2 virus and the secondary economic impacts attributable to the pandemic.
[2] "Official acts" are defined as new or existing legislation, policy, strategy, and budget allocation actions taken to respond to the COVID-19 crisis. Utilities include water and sanitation service providers in urban, peri-urban areas, and towns.
[3] Defined as new or existing interventions including technical assistance, use of data to support decision-making around "measures," collaborative approaches across professional or other sector networks not easily categorized as formal government measures. Each leverage human resource capabilities within and across lead WASH organizations. African WASH organizations are defined as country or regional organizations that may have provided some means of measurable/observable support to governments.
[4] While measuring effectiveness is difficult at this stage of the crisis response, as much information as possible will be captured within the constraints of the exercise including how readily was data to make decisions, what data was missing, and which pre-existing enabling environment factors including political economy factors are playing a role – whether by creating barriers or having a positive impact.
[5] For the purposes of this study, the study team framed the WASH response in terms of coordination, finances, monitoring, and organizational capacity. These supporting functions are a portion of what is commonly known as the enabling environment, but do not comprise all of the interrelated sector functions of the enabling environment. In particular, political leadership, legal and regulatory, service delivery arrangements remained outside of the scope of this study.

capacity supporting the WASH response to the COVID-19 pandemic, and c) assess the effectiveness of these supporting elements based on the perspectives of in-country stakeholder groups.

METHODOLOGY

To achieve the aim of the study, the methodology included a sample of countries in Africa to target the study, a literature review, a survey, and key informant interviews focused on three countries: Liberia, Madagascar, and Malawi.[6] The methodology was adapted to the COVID-19 context and responded to the opportunities in the countries of focus.

COUNTRY SELECTION

The study team narrowed the total number of countries in sub-Saharan Africa to achieve as high a quality of information as possible to conduct its analysis of the WASH responses. Starting with USAID's FY21 high-priority and Water for the World Act strategy-aligned countries for assistance for safe water, sanitation, and hygiene list in sub-Saharan Africa,[7] the study team further narrowed target countries based on consultations with USAID staff and country conditions conducive for future programming in the WASH enabling environment. This included removing countries that were already subject to studies of a similar nature, removing countries where national governments have publicly denied the gravity of COVID-19 and/or did not participate in COVID-19 case tracking, and removing countries that are restricted or cannot receive US foreign assistance other than emergency assistance. This selection process resulted in eight countries to focus further literature review and receive an online survey developed by the study team – Kenya, Liberia, Madagascar, Malawi, Nigeria, Senegal, Uganda, and Zambia.

Based on the results of the survey and a variety of criteria, the study team further narrowed the number of target countries to participate in key informant interviews. The result of this further sampling was three countries – Liberia, Madagascar, and Malawi.[8] The criteria used included national government and service provider staff responses to the online survey willing to take part in in-depth interviews, a diversity of institutional arrangements in each country's WASH sector,[9] history of "biological disasters" in the ten years prior to COVID-19,[10] and each country's 2019 population and Gross Domestic Product (GDP).

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[6] Because the study targeted for in-depth analysis these three countries it should be noted that they each had different COVID-19 responses and their responses cannot be considered representative of the whole continent of Africa, but rather provide an insight into the different ways the coordination, finance, monitoring, and organizational capacity impacted the WASH response to COVID-19.
[7] Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Nigeria, Rwanda, Senegal, South Sudan, Tanzania, Uganda, and Zambia.
[8] These three countries were to be the subject of three decision pathway analyses, however, ascerting decisions (including attribution, a clear decision pathway, and rational) was difficult given the limitations of the study. It should also be noted that because the study targeted for in-depth analysis these three countries it should be noted that they each had different COVID-19 responses and their responses cannot be considered representative of the whole continent of Africa, but rather provide an insight into the different ways the coordination, finance, monitoring, and organizational capacity impacted the WASH response to COVID-19.
[9] For a qualitative case study analysis, diversity in the institutional arrangements in the WASH sector for administration, regulation, financing, and service delivery (urban vs. rural, centralized vs. devolved) was considered a desirable trait to ensure a rich comparative analysis between countries.
[10] EM-DAT, CRED / UCLouvain, Brussels, Belgium, www.emdat.be (D. Guha-Sapir), Version 2021-06-22, File creation: Wed, 23 Jun 2021 01:09:23 CEST.

LITERATURE REVIEW

The study started with a literature review of the global WASH response to COVID-19, focusing on sub-Saharan Africa and the eight selected USAID high priority or strategy-aligned countries. The literature review was conducted throughout the study as the pandemic continued to evolve and new resources were made available. Once the three case study countries were selected, the study team focused the literature review on Liberia, Madagascar, and Malawi.

The study team conducted structured online database searches and snowball searches using search strings to identify literature. The search focused on relevant and credible sources such as:

- **Government policies and press releases:** COVID-19 response plans and associated press releases were valuable resources to understand the WASH response and the chronology of events.
- **Financial and technical partner resources:** NGOs and donors regularly share updates on their projects and programs (e.g., newsletters, articles, project reports, country strategies, etc.) allowing for an improved understanding of the WASH measures implemented thus far in the pandemic as well as opinion pieces on the general progress in the sector. The World Health Organization (WHO) sources for information on COVID-19 rates, transmission routes, etc. were also consulted.
- **Social media:** While government websites are not always easy to navigate and are not frequently updated with information and resources, social media accounts of both organizations and individuals (e.g., Twitter, Facebook) proved to be a valuable resource in some countries. The accounts provide frequent updates on policy changes, initiatives, and events.
- **Research papers and studies:** As expected, there were only a few published resources on the WASH response to the COVID-19 pandemic, however, these were very informative and research is accelerating.
- **Newspapers:** Keeping in mind the biased nature of newspapers, news articles provided an insight on popular opinions.

SURVEY

A survey was designed based on the study objectives and the literature review. The purpose of the survey was to collect a large quantity of data from various stakeholders in each country on the WASH response to COVID-19. The survey was adapted to five stakeholder groups: national government, local government, service providers, NGOs, and donors. All surveys included three sections: the COVID-19 response, decision-making, and preparedness. The survey was designed to ensure high response rates and reduce survey fatigue. All questions were closed, with the option to add additional information for most questions. See Annex A for the survey questions.

The distribution list was developed based on contact information provided by USAID missions in each country, as well as online searches and available mailing lists for each country's WASH Clusters. The survey was disseminated in both English and French using DAI Collect, and the data analyzed using Excel and PowerBI. The survey was sent to approximately 600 stakeholders in the initial eight countries with a 28% response rate across all countries. The survey was active between May 24 and June 10, 2021.

KEY INFORMANT INTERVIEWS

The study team conducted semi-structured interviews with key informants from Liberia, Madagascar and Malawi. The purpose of the interviews was to triangulate information on the WASH response and understand the experience and opinions of the different stakeholders on the effectiveness of the response. The interviews focused on coordination, finances, monitoring, and capacity development. For each section, the objectives were to understand what happened, what influenced decision-making, what worked, and what could be improved for future emergencies. Interview guides were developed to support the interviewer (See Annex B for interview guide). Interviewers adapted questions prior to the interviews based on the role of the key informant and the information collected from previous interviews. Questions were also adapted during the interview based on the information provided by the key informants.

The key informant list was based on the survey distribution list and screened if respondents selected "yes" to the survey question, "Are you interested in participating in an interview to provide more detailed information on your experience during the COVID-19 pandemic?". The study team prioritized government officials and service providers. The interviews were conducted remotely due to travel restrictions, using Zoom, although WhatsApp was sometimes used in situations with poor internet connection. Interviews were recorded, transcribed, and summarized. For reasons of anonymity, individuals' names are not identified in the study, however their organizations are identified. The interviews were conducted from July 14 to August 27, 2021 with a limited number of follow-up questions to KIIs where necessary.

RESEARCH LIMITATIONS

The study team encountered limitations associated with conducting research during a pandemic, while case study countries were faced with or preparing for future COVID-19 outbreaks and waves. "Global health emergencies by their nature are challenging environments in which to conduct research. They involve disruption and great health need, among multiple urgent needs, and may often be accompanied by time pressure to act, competing lines of accountability, uncertainty, and distress."[11] Acknowledging the specific context, the study team identified risks and mitigation strategies to adapt to changes as the pandemic evolved. Under these circumstances, the study's limitations include:

- **An evolving situation:** The study captures the changes in the WASH response from the start of the pandemic to August 2021, however, the response can change rapidly depending on various factors such as case numbers and politics. Furthermore, the COVID-19 pandemic is still occurring at the time of the writing of this report.

- **Availability of key informants:** The number of interviews was lower than planned. It is with great understanding that the study team acknowledged the WASH sector's urgent priorities responding to both the health and economic impact of the COVID-19 pandemic. The team is appreciative of the stakeholders who were able to participate in interviews.

[11] Nuffield Council on Bioethics. 2020. Research in Global Health Emergencies: Ethical Issues. Link.

- **Availability of resources online:** COVID-19 resources on WASH measures and decision-making were not systematically available online. Resources were sometimes shared by key informants or available on social media, but data gaps remained.

- **Opinion-based questions:** The survey and interviews asked participants to share their opinions on the effectiveness of the WASH response. The effectiveness of the WASH response sometimes varied depending on the stakeholder group and individuals.

- **Remote interviews:** Although remote interviews were the only option with lock-down measures in many countries and allowed for various advantages such as flexibility of schedule, they also have disadvantages in comparison to face-to-face interviews, such as less commitment (e.g., no-shows) and disrupted communication due to internet connection issues.

- **Disputed facts:** Dates and statistics often changed depending on sources.

DISCUSSION AND ANALYSIS

THE GLOBAL WASH RESPONSE

On March 11, 2020, the WHO declared COVID-19 a pandemic. Governments worldwide had to decide how to address this unprecedented global health crisis, making various decisions such as implementing protective measures (social distancing, handwashing) to enforcing strict lockdowns.

Prior to the pandemic declaration, the WHO released a technical brief on water, sanitation, hygiene, and waste management for the COVID-19 virus.[12] As knowledge on the new coronavirus increased, the WHO updated WASH documents with new information. For example, the April 23 update provided more "details on hand hygiene, sanitation, protecting WASH workers and supporting the continuation and strengthening of WASH services, especially in underserved areas."[13] A factor influencing the global WASH response was knowledge of SARS-CoV-2 transmission routes. Although initial evidence suggested airborne transmission, there were unknowns on transmission by fomites, feces, and urine. As of July 9, 2020, it became clearer that the virus was transmitted primarily through droplets and close contact, with the WHO citing, "There have been no published reports of transmission of SARS-CoV-2 through feces or urine" and "Despite consistent evidence as to SARS-CoV-2 contamination of surfaces and the survival of the virus on certain surfaces, there are no specific reports which have directly demonstrated fomite transmission."[14]

As the situation evolved, countries and regions adapted their COVID-19 responses, including their WASH measures. The WASH responses in each country and region varied, but generally, the key WASH measures put in place focused on: handwashing and hygiene promotion, IPC, and continuity and affordability of essential WASH services and products. According to the United Nations Children's Fund (UNICEF) study that focused on the WASH response in 84 countries, the measures that were most implemented across the world were handwashing and hygiene promotion followed by WASH & IPC.

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[12] WHO. 2020. Water, Sanitation, Hygiene and Waste Management for the COVID-19 Virus: Technical brief. Link.
[13] WHO. 2020. Water, Sanitation, Hygiene and Waste Management for the COVID-19 Virus: Interim Guidance (April 23 2020). Link.
[14] WHO. 2020. Transmission of SARS-VoV-2: Implications for Infection Prevention Precautions. Scientific Brief. Link.

Ensuring basic WASH needs, WASH service continuity, and support to water utilities had significantly lower activity.[15]

To support national WASH responses, the WASH sector had to adapt its programs and faced major challenges such as "understanding what to do (scientific and technical limitations) and how to do it (logistical and planning challenges)".[16] A key change for the sector was the new focus on hygiene, which increased calls to review the role of hygiene within the sector as stated by the Director of WASH Sector Support of the NGO Water and Sanitation for the Urban Poor (WSUP): "Now that the COVID-19 pandemic has demonstrated the value of hygiene in saving lives, policies and regulations must be reviewed to reposition its place in the sector."[17] Another key change in the sector was "actors from High-Income Countries taking a more supporting position while actors from Lower Middle-Income Countries lead on the ground" due to travel restrictions.

While there are positives to come from the COVID-19 pandemic, including improved awareness of WASH, there are also concerns with the long-term impact on WASH services. USAID's WASHPALS program assessed the effects of COVID-19 on access to water, sanitation, and hygiene in December 2020, and identified the following trends:[18]

- The water sector seems to have been hit the hardest with negative impacts including financial pressures on water service providers, operational obstacles related to supply chain disruptions, and deferred maintenance on handpumps because of economic burdens.

- The sanitation sector was less disrupted than the water sector, though sanitation service providers did see a decline in demand, particularly in the fecal sludge management sector, and supply chain problems are making sanitation products and services less profitable.

- The hygiene sector saw a rise in demand with increased handwashing during the pandemic, and there was no evidence of persistent or widespread shortages of soap, with soap prices seeming to remain constant. Manufacturers and distributors of hygiene products reported margin losses despite increased demand. However, the report concluded that there were no foreseeable immediate crises with respect to hygiene product supplies and general availability.

THE WASH RESPONSE IN SUB-SAHARAN AFRICA

This following section includes an overview of the WASH policies and measures implemented in African countries thus far in the pandemic, and how these were coordinated, financed, monitored, and implemented. For each of the key areas, there is a description of what happened during the pandemic and what lessons could improve future COVID-19 waves, epidemics, and other emergencies. The statements in the following sections were communicated by multiple key informants, and when possible, verified through the literature review. To improve the readability of the document and to maintain the

[15] UNICEF. 2020. Overview of Water, Sanitation, and Hygiene (WASH) COVID-19 Responses from Governments, Regulators, Utilities and other Stakeholders in 84 Countries. Link.
[16] SanitationHub. 2020. How WASH Programming has Adapted to the COVID-19 Pandemic: Rapid Topic Review. Link.
[17] WSUP. 2020. How can the Global WASH Sector Respond Better in Future Crises. Blog. Link.
[18] WASHPaLS. 2020. Assessing the Effects of COVID-19 on Access to Water, Sanitation, and Hygiene in USAID High Priority and Strategy-Aligned Countries. Synthesis Report. Link.

anonymity of key informants, the study team only included referencing for quotes (type of organization only) or statements linked to a key source.

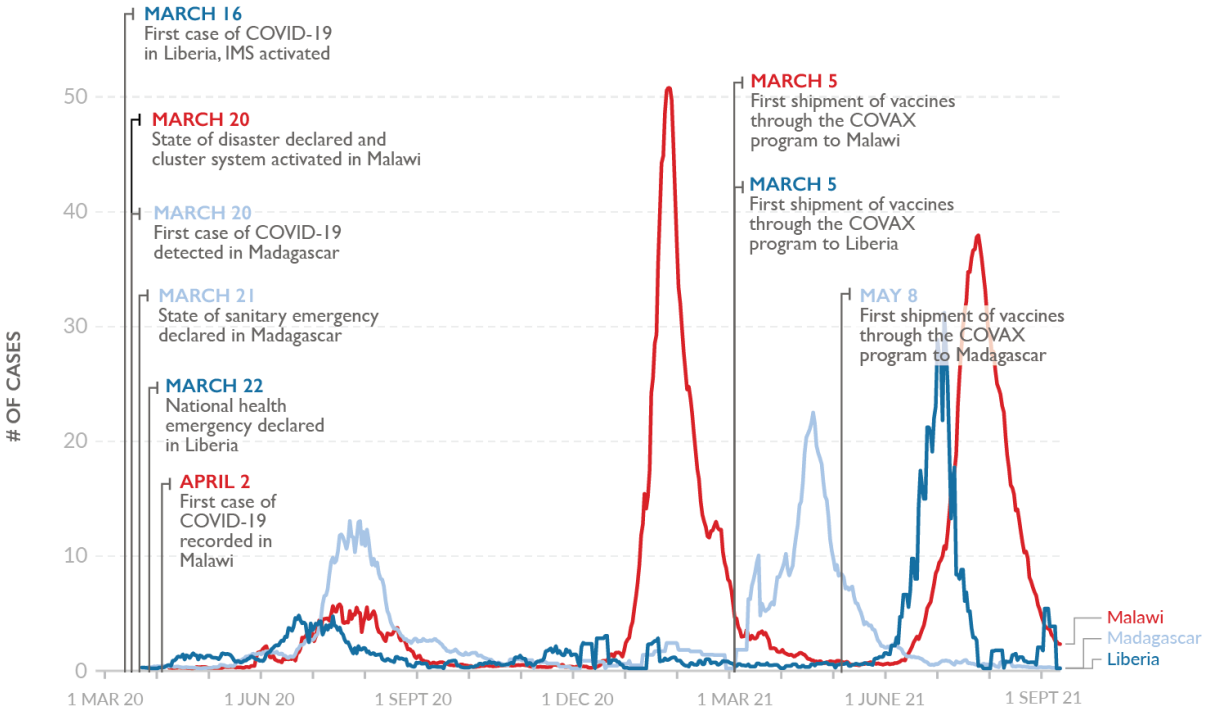

Figure 1: COVID-19 waves and key events in Liberia, Madagascar, and Malawi (relative to country population: per million people).

POLICIES AND PLANNING

The first confirmed case of COVID-19 in Africa was detected in Egypt on February 14, 2020,[19] while multiple news articles suggest the first confirmed case in sub-Saharan Africa was detected in Nigeria on February 25, 2020.[20] Around the same time, on February 22, 2020 the African Union (AU) and the Africa Centers for Disease Control and Prevention (CDC) released a COVID-19 Joint Continental Strategy that identifies the lack of WASH facilities as a concern and includes the objective "implementing rigorous hand hygiene in all congregate settings, such as schools, prisons, stadiums, transportation hubs, offices, shopping malls, and large religious congregations".[21] The strategy was endorsed by all 55 AU member states.[22] The WHO Africa also published the Strategic Response Plan for the WHO African Region for February-December 2020, in which they identified IPC & WASH as one of the key 12 strategic areas.[23] The plan also identified limited availability of water and disinfection products as a key challenge to applying social distancing and handwashing measures. The WHO published a second plan on April 26, 2021 for February 2021-January 2022 titled Strategic Preparedness and Response Plan for the WHO African Region.[24]

[19] African Union and Africa CDC. 2020. Africa Identifies First Case of Coronavirus Disease: Statement by the Director of Africa CDC. Link.
[20] Articles include: BBC, France24, The Guardian, Nature, New York Times, Africa News.
[21] African Union and Africa CDC. 2020. Africa Joint Continental Strategy for COVID-19 Outbreak. Link.
[22] WHO. 2020. Report on the Strategic Response to COVID-19 in the WHO African Region. Link.
[23] WHO. 2020. Strategic Response Plan for the WHO African Region. Link. Updated in May 4, 2020.
[24] WHO. 2021. Strategic Preparedness and Response Plan for the WHO African Region. Link.

Each of the three case study countries rapidly declared national emergencies: Liberia declared a state of emergency for a total of 7 weeks (one extension) for the first wave and activated the Incident Management System (IMS); Madagascar declared a state of health emergency extended every two weeks for the first and second wave and put in place the Operation Control Center (CCO); and Malawi declared a state of national disaster for the first and second wave (although faced challenges declaring a national state of emergency) and activated the emergency cluster system. A rapid response to limit the spread of COVID-19 is a trend for African countries with the WHO stating "Early and rigorous risk assessment and development of COVID-19 preparedness and response plans facilitated early response in all the 47 countries."[17] However, the effectiveness of these response systems was questioned by many key informants, which is also aligned with the WHO's findings that national IMSs faced various challenges including weak capacity, lack of resources at the sub-national level, and inability to influence decision-makers that were mostly influenced by economic and political concerns.[17]

All three countries developed national COVID-19 response plans using a multi-sectoral framework that included WASH. In terms of WASH response plans, the WASH Cluster in Madagascar developed a specific WASH response plan, as did the IMS WASH Pillar in Liberia. In Malawi, the WASH Cluster developed the WASH section of the first and second national plans.

As the pandemic progressed with subsequent COVID-19 waves, Malawi updated their national plans for a third time in July 2021, Liberia developed a new WASH implementation plan, and Madagascar did not update their plans. Although Madagascar did not update their national plan, they did declare a second state of emergency for the second wave. Malawi also declared a second state of disaster. Liberia only declared an emergency for the first wave.

Liberia:

- National Multi-Sectorial Plan (not publicly available)
- Implementation Plan for WASH Pillar COVID-19 Response in Liberia May-October 2020 (not publicly available)
- Implementation Plan for WASH Pillar COVID-19 Response in Liberia July-December 2020 (not publicly available)

Madagascar:

- The National Contingency Plan for the Preparation and Response to the Epidemic of the Acute Respiratory Illness caused by the New Coronavirus COVID-19 (not publicly accessible)
- Multi-Sectorial Emergency Plan (July 1, 2020).[25]
- WASH Cluster Response Plan (March 31, 2020 – Revised version April 2020).[26]

Malawi:

- National COVID-19 Preparedness and Response Plan as guidance for March – June 2020.[27]
- National COVID-19 Preparedness and Response Plan July – December 2020.[28]
- National COVID-19 Preparedness and Response Plan July 2021 – June 2022.[29]

Figure 2: COVID-19 Policies in Liberia, Madagascar, and Malawi.

[25] Government of Madagascar, 2020. Multi-Sectorial Emergency Plan Madagascar. Link.
[26] WASH Cluster, 2020. COVID-19 Response Plan. Link.
[27] Republic of Malawi. 2020. National COVID-19 Preparedness and Response Plan, March – June 2020. Link
[28] Republic of Malawi. 2020. National COVID-19 Preparedness and Response Plan, July – December 2020. Link
[29] Republic of Malawi. 2021. National COVID-19 Preparedness and Response Plan, July 2021 – July 2022. Link.

All three countries prioritized regions and areas where COVID-19 transmission was high. The focus was on the key cities and ports of entry. Malawi was faced with the particular challenge of Malawian workers returning from South Africa due to lockdown conditions, driving unemployment and subsequently organizing returnee centers to apply quarantine measures.

MEASURES

Although there were regional COVID-19 guidelines and global WASH guidelines, WASH responses varied across the continent, with certain countries applying a wide range of WASH measures while others applied very few.[30] According to the UNICEF study on WASH responses in 84 countries, hygiene promotion and other IPC measures were prioritized in most African countries both at the household level and in health care facilities. At the local level, there was a focus on the availability of hygiene supplies such as soap and temporary handwashing facilities. These findings are aligned with the findings from the three case study countries. All three countries implemented a variety of WASH measures, with a focus on hand washing.

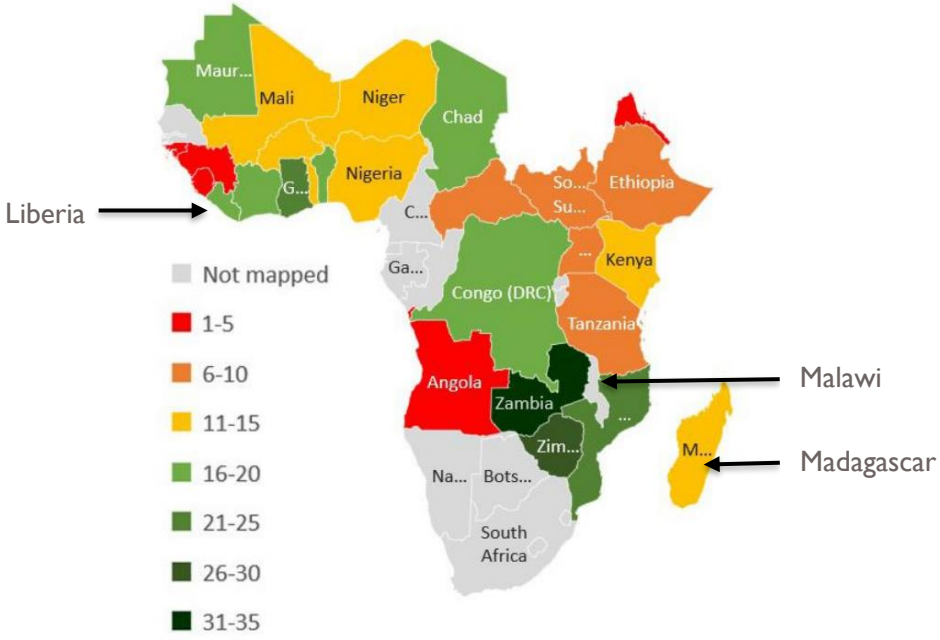

Figure 3: The number of WASH measures implemented in African countries.

In all three countries, key informants stated that health measures were prioritized over WASH measures, often linked to a lack of understanding of the essential role WASH plays in preventing COVID-19 transmission at the highest political level as well as a focus on curative measures over preventative measures. The study team found that most of the implementation of measures were funded and conducted by development partners, while the government ministry, department, or commission responsible for WASH was in charge of coordinating the activities.

[30] UNICEF. 2020. Overview of Water, Sanitation, and Hygiene (WASH) COVID-19 Responses from Governments, Regulators, Utilities and other Stakeholders in 84 Countries. Link.

COORDINATION

Coordination is necessary for an effective response to an emergency. According to the Humanitarian Coordinator Competencies, coordination includes leadership, managing relationships, advocacy and communication, managing complexity, and adapting and coping.[31] The pandemic seems to have improved coordination as highlighted by the SanitationHub study which states "The response has resulted in more multi-sectoral engagement, and better coordination and sharing of learning." However, the pandemic has also raised more fundamental questions on coordination, such as the "need for policymakers to rethink how institutions are structured and coordinated to enable clarity of responsibilities and allocation of resources, and as a result, reducing overlap and competition, and enhancing efficiency and collaboration in service provision at all times."[32] The African Minister's Council on Water (AMCOW) also recognized the need to improve coordination between countries, recommending the establishment of a coordination platform for emergency WASH to improve communication and knowledge sharing.[33]

The following section provides more details on the overall coordination of the national response, coordination of the WASH sector, including coordination between the WASH and Health Sector, between the national and sub-national level, and with service providers. These subcategories were defined based on the literature review and key informant responses.

National Coordination

Although the national governments of Liberia, Madagascar, and Malawi responded rapidly to the COVID-19 pandemic, and included WASH as a key component of their response, the WASH coordinating structures in each country faced challenges coordinating and communicating with the national coordinating structure. In Madagascar, several key informants felt that the WASH response worked parallel to the national response, with limited communication between the WASH Cluster and the CCO. In Liberia, despite weekly meetings between Special Presidential Advisory Committee on COVID-19 (SPACOC) and the CEO of the National WASH Commission, the WASH Pillar was marginalized. While in Malawi, the Department of Disaster Management Affairs (DoDMA) understood the importance of WASH, but at the higher-level coordinating body there was a lack of technical understanding of WASH, which led the Presidential Task Force to deactivate the WASH Cluster in March 2021.

Coordination of the WASH sector

All three countries activated coordination structures to coordinate the WASH response: In Liberia, the IMS WASH Pillar in Liberia led by the National WASH Commission; in Madagascar, the WASH Cluster led by the Ministry of WASH (MEAH) and co-led by UNICEF; in Malawi the WASH Cluster led by the Water Department and co-led by UNICEF. All countries reported having an inclusive WASH sector with active partners, including ministries, health institutes, and development partners. According to key informants, the WASH Cluster in Madagascar coordinated their response effectively, with regular and organized meetings, including all key stakeholders collaborating to create a sense of solidarity and motivation within the cluster. Some key informants were hopeful that this was the start of improved coordination in the WASH sector in Madagascar. In Malawi and Liberia, although there was positive feedback on the WASH Cluster and the IMS WASH Pillar, respectively, key informants referred to several challenges. In both countries there were instances of duplication caused by other sectors

[31] IASC. 2009. Humanitarian Coordinator Competencies. Link.
[32] WSUP. 2020. How can the Global WASH Sector Respond Better in Future Crises. Blog. Link.
[33] AMCOW. 2020. Using Water Sanitation and Hygiene Services to Fight Covid-19: Experiences from African Countries Link.

implementing WASH activities without communicating with the WASH coordination structure. In Liberia there were suggestions that there was a power struggle between development partners and the National WASH Commission that existed before the pandemic making it difficult to coordinate the WASH response. Furthermore, some key informants complained that over time the useful coordination turned into meetings and bureaucracy. In Malawi, there were concerns about inconsistent attendance suggesting a less united WASH sector.

Coordination between WASH and Health

The coordination between the WASH and Health sectors is crucial during the pandemic, as noted by the Executive Secretary of AMCOW: "Health for all cannot be achieved without WASH for all."[34] However, coordination between the two sectors is a global challenge; A research paper on WASH lessons learned from COVID-19 highlighted the disconnect between the two sectors stating that policy-makers and health planners make the assumption that the WASH sector will be able to respond and support in emergencies, and that was not the case in many countries.[35] Another study on the challenges faced by the WASH sector during the pandemic highlighted the need to improve policies which "would require high-level political attention and closer coordination between public health and WASH sectors at the level of implementation."[36] Further highlighting the need to improve coordination between health and WASH is the Joint Monitoring Programme's (JMP) four recommendations to improve healthcare services including, "Integrate WASH into regular health sector planning, budgeting, and programming, including COVID-19 response, and recovery efforts to deliver quality services."[37]

Coordination between the two sectors in Liberia, Madagascar, and Malawi occurred through attendance of coordination meetings. For example, in Madagascar, the Ministry of Health was an active partner of the WASH Cluster, while in Malawi a majority of WASH actors also attended Health Cluster meetings. The IPC WASH working group within the WASH Cluster in Madagascar, which included the Ministry of Health, was effective at improving coordination between the two sectors. In Malawi, despite the coordination meetings, unclear roles and responsibilities for WASH services between the Ministry of Health and the Water Department, including the unclear mandate for the Sanitation Policy, led to duplication of efforts at times. In Liberia, the disconnect between the Health and WASH sector was apparent in some hospitals which had ventilators but no running water or functioning toilets.

Although the study did not focus on coordination with civil society, it was brought up in interviews as strong community structures in Africa are often leveraged for public health measures. In Liberia, it was noted that WASH Pillar leaders made sure to involve civil society in its monitoring and inspection activities. In Madagascar, a key recommendation for future emergencies included improving the coordination and capacity of community agents. While in Malawi, civil society is represented at the highest-level coordination structure, the Presidential Task Force.

Coordination between the National and Sub-National Level

Although policies were developed at the national level, local governments were in charge of implementing the COVID-19 response, particularly in areas with outbreaks. Coordination between the national and sub-national level was key to ensure effective implementation of measures and distribution

[34] AMCOW (@amcowafrica). Twitter. April 7, 2020. 6:18 PM. Link.
[35] Howard, G. et al. 2020. COVID-19 and WaSH: Lessons for the Current and Future Pandemics. Link.
[36] Donde, O., et al. 2021. COVID-19 Pandemic: Water, Sanitation and Hygiene (WASH) as a Critical Control Measure Remains a Major Challenge in Low-Income Countries. Link.
[37] WHO and UNICEF. 2020. Global Progress Report on WASH in Health Care Facilities: Fundamentals First. Link.

of materials. In Madagascar, the Regional Department of Water, Sanitation, and Hygiene (DREAH) and the Department of Water, Sanitation, and Hygiene in municipalities (DEAH) were active partners of the WASH Cluster and presented their needs and progress at each Cluster meeting. It was based on those needs that the Cluster mobilized its resources. Furthermore, the creation of regional CCOs proved to be effective to coordinate the COVID-19 response at the regional level. In Malawi, the WASH Cluster is largely organized by geography so that each partner is working in a specific district to better coordinate work. Although coordination was effective in Madagascar and Malawi, capacity at the local level was highlighted as a key barrier to the implementation of measures. In Liberia, coordination with local government is unclear. It seems local government was not as involved, with only 50% of survey respondents identifying local government as involved in the national decision-making process.

Coordination with Service Providers

Service providers play an important role in providing water, sanitation, and hygiene services to households and public institutions, particularly during an emergency. However, the study team found limited coordination between the WASH Clusters/Pillar and service providers. In Liberia, it seems that the WASH Pillar did not coordinate with service providers effectively. According to the survey, 92% of respondents said utilities were not part of the decision-making process to inform the WASH response.[38] Furthermore, the lead of the coalition of sanitation-focused community-based enterprises noted that the national government did not include them in coordination efforts. In Madagascar, the national water company (JIRAMA) was part of the WASH Cluster, and worked with UNICEF and the local government to supply water, but it is unclear how much coordination occurred through the WASH Cluster. In Malawi service providers attended WASH Cluster meetings and received assistance from development partners.

Future Emergencies

After discussing coordination during the pandemic, key informants were asked to reflect on what worked and what could be improved for future emergencies. The following table provides a summary of these reflections categorized by country.

[38] WALIS Survey on the National COVID-19 Response (2021).

	COORDINATION	
	What worked?	How to improve?
Liberia	• Regular meetings and information sharing among WASH Pillar members • Emergency management structure was established early and had full support from the highest levels of the Government (President Weah) • Experience with previous emergencies (Ebola)	• Increase trust and coordination among IMS and other pillars • Improve coordination between Ministry of Health (head of IMS) and WASH Pillar • Improve planning and implementation of water and sanitation activities by WASH Pillar • Improve Government of Liberia coordination with donor/partner activities
Madagascar	• The WASH Cluster • Regional CCOs • The working groups (e.g., IPC WASH) • Virtual meetings (gain time) • Experience with previous emergencies	• Improve knowledge sharing platforms to ensure timely and quality communication to avoid duplicating activities • Improve monitoring data to inform coordination • Improve coordination between MEAH and the Ministry of Public Health • Improve coordination with the fokontanys (neighborhoods). • Improve coordination of the national response (e.g., On-the-job training for CCO) • Increase relations between MEAH and financial partners (MEAH is often ignored) • Improve coordination with isolated regions
Malawi	• Coordination between WASH Cluster stakeholder was fair • Coordination between WASH cluster and DoDMA was fair • DoDMA understanding of WASH Cluster needs	• Improve coordination between the WASH Cluster and the Presidential Task Force (via DoDMA) • Improve coordination and engagement with the Health cluster, especially in regards to the sanitation policy • Reduce duplication efforts and improve attendance at meetings • Clarify roles and responsibilities between WASH, Health, and Education clusters from the government

FINANCES

Lack of financial data and funding gaps are key challenges the WASH sector faced prior to the COVID-19 pandemic,[39] and which continued into the pandemic. The study team faced challenges with mapping financial sources and flows as key informants did not often have this information, sometimes due to the key informants' non-financial role, a lack of transparency at higher levels, or the data did not exist. Disorganized or inexistent financial data is a common challenge in the sector, with the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) report providing an example for hygiene, "When governments do not know what is currently being spent on hygiene, it becomes challenging to advocate for additional funding and difficult to best use the funding that is available."[40]

WASH Funding

The literature review revealed the WASH budgets for the COVID-19 national plans, and provided some insights on how the WASH activities were intended to be funded. The plans for the three countries

[39] GLAAS. 2019. National Systems to Support Drinking-water, Sanitation and Hygiene: Global Status Report 2019. Link.
[40] GLAAS. 2020. Hygiene: UN-Water GLAAS Findings on National Policies, Plans, Targets and Finance. Link.

provided the available government funding for WASH and identified the funding gap, however, key informants were unable to confirm that government funds were disbursed to the ministries responsible for WASH, suggesting a lack of transparency and/or a lack of committed government funds for the WASH sector. One donor in Malawi illustrated this uncertainty, stating, "The government did not provide funding towards the response when it comes to WASH activities. If they did, maybe it was a small amount."

A lack of WASH funding was identified in all three countries. Financial flows remained the same as before the pandemic, with development partners funding the implementation of WASH measures with oversight from the government. In Madagascar, local government officials explained that there is never a transfer of funds between their department and development partners. They expressed their needs, and then development partners responded using their funds. In Liberia, once the WASH Pillar leaders understood that the IMS would not prioritize WASH activities, they started presenting the WASH budget to donors and other WASH partners in the country.

Tracking budget allocation and disbursement for WASH is therefore extremely complex, with each development partner adapting their current funds to address the emergency needs and/or sourcing additional funds from different donors. Furthermore, WASH activities are sometimes funded through other sectors such as health or education, making it even more challenging to consolidate all the financial data for WASH activities.

WASH and Health Funding

All three countries noted that there was an uneven distribution of funds for the health sector. This was made apparent in Madagascar, where the individual from the Ministry of Health did not recall any financial challenges, while most individuals from the WASH sector expressed challenges with funding, with one individual comparing the WASH response to an exercise of passing a hat around and seeing who could contribute.

Funding for Service Providers

There was limited data available on funding for water and sanitation service providers, and service provider staff were not available for interview. In Liberia, the government provided $1 million to the Liberia Water and Sewer Corporation (LWSC) for the continuation of running water services for customers for sixty days at the start of the pandemic. However, LWSC put out a fundraising call to business partners, and experienced employee strikes due to lack of payment of salaries, suggesting financial difficulties. In Madagascar, JIRAMA, the national water and electricity company, was financially supported by UNICEF through water tariff subsidies for underserved communities. JIRAMA also made improvements to their billing system to prevent customers from needing to do long commutes and wait in line, suggesting a sense of financial stability..[41]

WSUP, an organization that works closely with utilities in various countries in Africa, including with JIRAMA, stated there was a need to develop frameworks for enabling full cost-recovery support mechanisms for service providers implementing emergency measures for vulnerable populations..[42] Meanwhile, many of Africa's water and sanitation service providers will be plagued with how to mitigate

[41] JIRAMA (@JiramaOfficiel). 2020. Twitter. March 25, 2020, 10:41 PM. Link.
[42] WSUP. 2020. How can the Global WASH Sector Respond Better in Future Crises. Blog. Link.

massive reductions in revenue during the pandemic and continue to attract investment capital during and after the pandemic for years to come.[43] The World Bank's Water Global Practice developed design considerations for the creation of financial facilities to support water and sanitation service providers in emerging markets like Liberia, Madagascar, and Malawi.[44]

Future Emergencies

After discussing financing during the pandemic, key informants were asked to reflect on what worked and what could be improved for future emergencies. The following table provides a summary of these reflections categorized by country.

	FINANCING	
	What worked?	How to improve?
Liberia	• International Non-Government Organization (INGO) and donor partners were able to reprogram funds or refocus geographically to respond to the most impacted communities, mostly around the two largest cities in Liberia	• Increase transparency on government funding allocation within the IMS • Increase transparency about partner/donor funding in the WASH sector • Prioritize government funding for WASH activities to prevent diseases like COVID-19
Madagascar	• No key informant provided examples of what worked in terms of finances	• Include WASH as a budget line in the Ministry of Public Health budget for COVID Treatment Centers (CTC) but also healthcare centers • Increase transparency (e.g., money going from CCO to MEAH • Improve donor preparedness to release funds for emergencies • Improve political will at national level to increase WASH funding • Advocate to donors for funding on preparedness • Establish an emergency fund that can be easily accessed when there is an emergency
Malawi	• Lobbying efforts • The Sanitation and Water for All (SWA) Handbook	• Advocate for WASH funding at the national level (Presidential Task Force) • Ring-fence budgeting • Funding for the WASH Cluster to meet regularly

[43] RockBlue, 2021. How Water Service Providers Can Manage Massive Reductions in Revenue During the Coronavirus Pandemic and Access to Finance and Creditworthiness for Water Utilities, Online Learning Series #4 and #2. Link
[44] World Bank, 2020. Considerations for Financial Facilities to Support Water Utilities in the COVID-19 Crisis. World Bank, Washington, DC. Link

MONITORING

At the start of the pandemic, data was important to inform decisions and keep track of the WASH response. As the pandemic progressed, data was also required to assess the effectiveness of measures and adapt the response. WASH data will also be valuable to evaluate the overall WASH response when the pandemic is under control.

Monitoring the WASH Response

The WASH Clusters in Malawi and Madagascar effectively established and used the 5W (Who does What, Where, When, and for Whom) monitoring system to keep track of WASH activities and progress. In Liberia the WASH Commission included a mechanism and technical staff to monitor handwashing data in the COVID-19 response plan and budget, but there has been little to no funding to collect and return data.

National Monitoring Databases

Although countries had different experiences monitoring the WASH response, all three countries faced challenges with using WASH data to inform decision-making. In Malawi, the national database for WASH includes water and sanitation points, however the public use of the data is limited as it is still under the management of a project funded by the Scottish government. In Madagascar the national database called SESAM is not fully functional yet, and does not seem to have been used during the pandemic. Instead, it seems that the pandemic helped advocate to improve SESAM. In Liberia, there does not seem to be a national database for WASH. The only WASH data to inform decision-making was from the Joint Monitoring Programme (JMP), but it is outdated, with hygiene data dating back to 2013.[45]

[45] JMP. 2021. Liberia country file. Link.

COVID-19 Data

Countries used case management data to prioritize where to implement WASH measures, however there were also requests to improve this type of data to make more informed decisions.

Learning from Past Emergencies

Did countries learn from prior emergencies that affected WASH? Yes and No.

Both Madagascar and Liberia have faced various emergencies in the past decade. Liberia had the Ebola epidemic in 2014-2015, while Madagascar is prone to cyclones, and has had Plague and Rabies outbreaks.

Some stakeholders believed that previous emergencies improved the COVID-19 response. In Liberia one individual stated, "We didn't need to reinvent the wheel, we didn't need to start from zero. We went straight to the Ebola file and brought responses that were being utilized with the Ebola response." Health workers and WASH technicians were able to execute their duties well due to their experience with emergencies. While in Madagascar, certain individuals believed the regions that were hit by recent cyclones were quick to respond, and the Ministry of Public Health was able to adapt and use trainings from the Plague epidemic to train officers in charge of IPC measures in CTCs.

However, others believed not enough was learnt from previous emergencies. One individual in Madagascar was surprised by the lack of experience at the national level considering the country faces annual cyclones, floods, and there were plague and rabies epidemics. In Liberia, some individuals noted a weaker response for COVID-19 compared to Ebola, including not seeing as much activity on the ground.

What is clear is that there is a need to extract lessons from the COVID-19 pandemic to improve WASH responses for future emergencies. As AMCOW stated, "the documentation and sharing of lessons learnt in the present and past pandemics will go a long way in sparing countries to reinvent the wheel and enable them to save time and hence save lives." WSUP also highlighted the need to learn from the pandemic, stating, "Now that we seem to have somehow figured out the immediate actions to save lives and sustain a basic level of access to services, we need to envision what could have been done to better prepare for such circumstances."

Future Emergencies

After discussing monitoring during the pandemic, key informants were asked to reflect on what worked and what could be improved for future emergencies. The following table provides a summary of these reflections categorized by country.

	MONITORING	
	What worked?	How to improve?
Liberia	• COVID-19 case data was used and shared so that partners could geographically target their activities in hotspots around the country • Joint Monitoring Programme data was available and shared	• Update WASH data to improve decision-making • Ensure the Joint Sector Review is completed
Madagascar	• WASH Cluster 5Ws • Rapid-evaluations	• Increase resources to conduct evaluations (e.g., staff, financing) including for far-away regions • Update national database SESAM • Improve capacity of partners to provide their data to the DREAHs. • Create technical units in rural areas to increase data collection • Formalize the WASH Cluster's monitoring system (5W) • Improve government health data (e.g., cases, hotspots)
Malawi	• Limited access to mWater • Sharing data	• Increase access to mWater • Promote sharing of data • Update 5W • Strengthen district capacity for monitoring • Advocate for funding for monitoring • Include a focal point for data and information management within the WASH cluster • Improve donor accountability and internal processes for reporting/sharing data

ORGANIZATIONAL CAPACITY

Organizational capacity is an organization's ability to deliver on its mandate, including the capacity and competency of staff to perform their duties. Countries need qualified professionals and volunteers to implement WASH measures. In all three countries, there was no comprehensive capacity development plan for emergency responses, and trainings were delivered by development partners to meet the required needs. For example, in Madagascar, there was a lack of qualified hygiene agents for the new CTCs. The Ministry of Public Health, with partners such as the Red Cross, urgently trained personnel to implement IPC measures.

Local Government Personnel

A challenge that was identified in all three countries was the lack of human resources in local government which hindered the WASH response. In Madagascar the DREAH operated on almost no resources. They have a small budget, very few people and very little equipment. To overcome this

challenge, the MEAH worked with other departments such as soldiers from the Ministry of Defense and firefighters. In Liberia one government official estimated that in the 15 counties and national government entities, there are not many more than 200 WASH employees total, and not all of those are WASH technical specialists. While in Malawi, one individual from the Water Department noted that they've taken a lot of time to replace the frontline workers recruited in the 1990s and that they need to recruit to fill the gap. Another individual from an NGO in Malawi stated, "At the moment, government doesn't have a proper strategy or training capacity building system for its staff, especially the ones at district level. So, the frontline staff, they are hired ad hoc."

Scale of Pandemic

Another challenge articulated by all three countries was the scale of the pandemic. In Malawi, one individual stated that the sector was overwhelmed by the scope and demand of the emergency. In Madagascar, the DEAH also mentioned that they were not able to conduct rapid evaluations as intended, not because they didn't have the expertise, but because they didn't have enough staff in relation to the scale of the emergency.

Collaboration

Overall, the WASH sector responded as best as possible with the resources available, and despite the challenges, there was a sense of collaboration. In Malawi, this can be seen through the WASH Clusters persistence to continue meeting informally despite the Cluster having been deactivated. In Madagascar, collaboration was identified by various individuals, including one individual describing the collective engagement of all the members and a sense of real cohesion.

Future Emergencies

After discussing capacity development during the pandemic, key informants were asked to reflect on what worked and what could be improved for future emergencies. The following table provides a summary of these reflections categorized by country.

	CAPACITY DEVELOPMENT	
	What worked?	How to improve?
Liberia	• Health workers were well trained in IPC following the Ebola Virus Disease epidemic	• Increase training for WASH technicians on IPC, crisis response, and technical aspects of their jobs • Increase funding for training of all essential workers • Build up WASH technicians in the country during non-emergency periods

Madagascar	• Competencies gained from previous emergencies (e.g., disinfection) • Regions have emergency teams (particularly the regions that have faced cyclones) • Adapting training materials from previous epidemics	• Conduct a detailed evaluation of the COVID-19 response • Increase human resources for data collection during emergencies. • Formalize and train community agents on WASH in emergencies. • Increase staff and resources for the DREAH (transport, communication equipment) • Ensure emergency staff availability for future emergencies • Review remote training options for pandemics • Advocate for more funding for capacity development • Develop a capacity development program to prepare the country for emergencies • Provide on-the job training for CCO • Increase capacity of donors in emergencies to release fund rapidly (e.g., learn from their own emergency departments) • Learn and incorporate lessons from other countries
Malawi	• Capacity at higher-levels such as directors and deputy directors	• Recruit and retain personnel, specifically at the district level (district officers, water monitoring assistants)

CONCLUSIONS AND RECOMMENDATIONS

The COVID-19 pandemic is an unprecedented event in the present age that has raised questions about the national emergency WASH response in countries in Africa. Because USAID considers evidence-based decision-making a critical component of effective action, it tasked the WALIS Program to study how national governments, NGOs, and service providers, and partner governments responded to the COVID-19 crisis. Using a case study and comparative analysis, the study team found that Liberia, Madagascar, and Malawi responded quickly to the COVID-19 pandemic. All three countries developed national COVID-19 response plans using a multi-sectoral framework that included WASH. The WASH responses focused on handwashing and IPC measures in healthcare centers and prioritized regions and areas with high COVID-19 transmission (e.g., main cities, ports of entry). Multiple sources of evidence suggests that prior existing weaknesses continued or were exacerbated by the crisis. Therefore, there is a need to continue addressing these challenges to improve preparedness for future emergencies.

The WASH sectors in the countries selected for case studies faced challenges coordinating with their national coordination structures and to a degree with their own health sectors as well. Although national COVID-19 plans included budgets for WASH, government funds were not disbursed to the government structures responsible for WASH – as opposed to the health sector. The WASH response in these countries was mostly funded by implementing partners using reallocated funds from existing programs or additional emergency funds. Overall, tracking budget allocation and disbursements for WASH was complex due to the different funding sources and the different ministries and actors implementing WASH activities. Although monitoring the WASH response through the 5W framework functioned effectively, WASH data and human resources to collect and process data to inform decision-making was weak. Finally, the crisis has made clear that there is a clear lack of human resources in local governments. To overcome personnel shortages, other departments or development partners were

recruited, and/or personnel was trained as required, however, there was no systemic training of staff to better respond to the COVID-19 pandemic.

Based on the study team's interviews, the challenges the WASH sector faced during the pandemic may be the result of various factors. In all three countries, there seemed to be a lack of understanding at the national level on the link between WASH and COVID-19, and a lack of funding, that led to the prioritization of treatment over prevention..[46] Related to this, national WASH agencies' credibility and ability to advocate for resources and/or a stronger role in coordinating the national response may have been inhibited by recent or recurring changes in institutional arrangements. The need for a single ministry for WASH was identified as an inhibiting factor for coordination in Malawi and Liberia, where the structure responsible for WASH currently sits within another ministry. Furthermore, the lack of clear roles and responsibilities of the different ministries and agencies involved in WASH was also highlighted as a requirement to avoid duplication of efforts. Lastly, politics also contributed to the challenges faced by the WASH sector, including WASH measures, such as installing handwashing stations, which may not advance politicians in their popularity compared to other measures such as receiving oxygen tanks and food distribution.

Deriving recommendations from the KII responses, the study team identified multiple opportunities for further research and action. In terms of future research related to the enabling environment there is a clear need to improve coordination and collaboration between WASH sector government agencies and service providers and the public health sector at all levels. More specifically, three future research opportunities are: 1) understanding how incident management systems need to be improved to support the WASH response during emergencies, 2) understanding how organizational capacity gaps can be filled to better respond to crises of similar nature and magnitude to COVID-19, and 3) understanding how to improve national WASH monitoring systems to ensure rapid and effective decision-making for future emergencies. Finally, countries would greatly benefit from designing or even retrofitting financial mechanisms with their partners to mitigate and recover from the COVID-19 crisis. Identifying viable mechanisms for the WASH sector to leverage as soon as possible is paramount to maintain the hard-won achievements of the past two decades in terms of sustainable safe water and sanitation for millions in sub-Saharan Africa.

In sub-Saharan Africa, governments and WASH partners can often improve crisis coordination, organizational capacity, and monitoring systems, as well as unlock financing and improve service providers' financial solvency, without conducting new in-depth research. These government entities and other organizations can analyze and share lessons learned and other knowledge to effectively address these gaps and calibrate disaster response and recovery efforts. However, these knowledge resources are often not widely accessible, especially to national governments and WASH sector partners who lack the financial means and human capacity necessary to obtain this material. These entities need appropriate funding and expertise to effectively evaluate WASH disaster responses, develop and implement post-disaster recovery plans to improve access to WASH, and increase preparedness for future emergencies.

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[46] Consensus in the public health sector regarding the mode of transmission of the virus causing COVID-19 evolved from March to December 2020 as mounting evidence suggested much stronger transmission by aerosolized droplets and not by fomites, urine, and/or feces. The WHO provided updates on possible transmission modes in March 2020, July 2020, and December 2020.

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The study team used various sources to develop the case studies. The details of the sources are found in the footnotes throughout the case studies. Below is an overview of the resources categorized by type (documents, websites, key informants, social media, and newspapers).

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- National Public Health Institute of Liberia: Link.
- Our World Data: Link.
- Presidency of Liberia: Link.
- Presidency of Madagascar: Link.
- Ran'Eau Malgasy: Link.
- World Health Organization: Link.

Key informants

- Cities Alliance
- Concern Worldwide
- DEAH Tana
- Department of Disaster Management Affairs (Malawi)
- Liberia Youth WASH Coalition
- Malawi Red Cross Society
- Ministry of Health (Malawi)
- Ministry of Public Health, Environmental Health Services department (Madagascar)
- Ministry of Water, Sanitation and Hygiene, Sanitation and Hygiene department (Madagascar)
- National Association of Primary Waste (Liberia)
- National WASH Commission (multiple)
- RANO WASH
- UNICEF Madagascar
- UNICEF Malawi
- USAID Liberia Economic Policy Dialogue (LEPDA) activity
- USAID Madagascar

- USAID Malawi
- Water Department, Ministry of Forestry and Natural Resources
- Water for People Malawi
- WaterAid Madagascar
- Welthungerhlife

Social Media

Twitter

- Bobby Whitfield (@BobbyWhitfiel14)
- Department of Disaster (@DisasterDept)
- George Weah (@GeorgeWeahOff)
- Government of Madagascar (@PresidenceMadagascar)
- JIRAMA (@JiramaOfficiel)
- National Public Health Institute of Liberia (@NPHIL6)
- Rajoelina, Andry (@SE_/Rajoelina)
- UNICEF Madagascar (@UNICEFMada)
- WHO Madagascar (@OMSMadagascar)

Facebook

- Air Madagascar (@air.madagascar.officiel)
- BNGRC (@BNGRCMID)
- CCO (@madavscovid19.mg)
- Centre de Traitement COVID-19 (@CTC19Madagascar)
- Commune Urbaine Antananarivo (@cuaofficiel)
- MEAH (@meahmadagascar)
- Ministry of Education (@LiberiaMOE)
- Ministry of Health (@moh.gov.lr)
- Ministry of Public Health (@minsanp)
- National Public Health Institute of Liberia (@nphil6)
- National WASH Commission (@NWASHC)
- ONG Ran'Eau (@raneaumadagascar)

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ANNNEX

ANNEX A: SURVEY

Below is the survey for government officials. Surveys were adapted slightly for service providers, NGOs and donors. These are not shared to limit the length of the report.

Respondee profile	1	What type of organization do you work for? [ ] National government (e.g., ministries, agencies, regulators, etc.) [ ] Local government (e.g., municipalities, district government, state government) [ ] Service providers (e.g., utilities, private, public) [ ] Non-governmental Organizations or Community-based Organizations [ ] Donor or Donor Program
	2	So that the assessment team can correctly categorize WASH responses by country, please select the country for which you are completing this survey. If you work in more than one of the countries listed below. Please complete a survey for each country. [ ] Kenya [ ] Liberia [ ] Madagascar [ ] Malawi [ ] Nigeria [ ] Senegal [ ] Uganda [ ] Zambia
	3	Gender [ ] Male [ ] Female [ ] Other [ ] Prefer not to say
Part 1: COVID-19 Response	Part 1 of the survey focuses on the national Water, Sanitation and Hygiene (WASH) response to the COVID-19 pandemic. The national WASH response includes: (1) WASH measures to prevent the spread of COVID-19 (2) WASH measures to continue the provision of WASH services (3) Supporting activities that ensure the effective implementation of WASH measures. This information is important to map out the WASH response in the country.	
	MEASURES Which of the following WASH measures did your government implement in response to the COVID-19 pandemic?	

	1	**COVID Prevention Measures** *COVID prevention measures are measures that are put in place to prevent or stop the spread of COVID-19 in households, public places, and institutions. Which of the measures has your government implemented thus far? Choose all that apply.* [ ] Mandatory mask requirements in public [ ] Behavior change campaign for handwashing with soap [ ] Handwashing station construction or rehabilitation [ ] Improved availability of soap and hand sanitizer [ ] School closures [ ] No COVID prevention measures [ ] Don't know Other WASH measures:
	2	**Water and Sanitation Service Provision for Households** *Water and sanitation service provision to households must be maintained throughout the pandemic. Which of the measures has your government implemented thus far to ensure the continuous provision of water and sanitation services to all? Choose all that apply.* [ ] Free water for all policy [ ] Moratorium on water disconnections [ ] Water reconnections (e.g., free reconnections, reconnections with outstanding debt) [ ] Water distribution (e.g., tanker trucks) [ ] Water point construction or rehabilitation [ ] Subsidized or free empyting services [ ] Construction or rehabilitation of sanitation facilities [ ] No service provision for households [ ] Don't know Other WASH measures:
	3	**Water, Sanitation and Hygiene Service Provision in Public Places** *The provision of WASH services for public institutions and places are important to prevent the spread of COVID-19. To which public institutions and places has your government provided WASH services to prevent the spread of COVID-19? Choose all that apply.* [ ] Health care facilities [ ] Schools [ ] Isolation centers and social care institutions [ ] Public places (markets, stations, religious centers, etc.) [ ] No provision to public institutions and places [ ] Don't know [ ] Other
	SUPPORT Which of the following activities did your government provide or receive to support the implementation of WASH measures in response to the COVID-19 pandemic?	

	4	**Overall Support Provided** *Which stakeholders has your government provided support to thus far to implement WASH measures in response to the COVID-19 pandemic? Choose all that apply.* [ ] Service providers [ ] Local government [ ] NGOs [ ] No support was provided [ ] Don't know Other:
	4a	**Support to Water and/or Sanitation Service Providers** *Water and sanitation service providers play a key role in implementing the national WASH response to the COVID-19 pandemic. What type of support has your government provided to service providers? Choose all that apply.* [ ] Direct financial support (e.g., grants, loans, tax reductions, payment moratoriums) [ ] Technical support [ ] Equipment, materials and/or chemicals [ ] Support with energy provision [ ] Monitoring and data management [ ] Don't know Other:
	4b	**Support to Local Government** *Local governments play a key role in implementing the national WASH response to the COVID-19 pandemic. What type of support has your government provided to local government? Choose all that apply.* [ ] Direct financial support (e.g., grants, loans, tax reductions, payment moratoriums) [ ] Equipment (e.g., IT, vehicles) [ ] Technical support [ ] Human resources (e.g., additional staff) [ ] Monitoring and data management [ ] Don't know Other:
	4c	**Support to Non-governmental Organizations** *Non-governmental Organizations played a key role in implementing the national WASH response to the COVID-19 pandemic. What type of support has your government provided to Non-governmental Organizations? Choose all that apply.* [ ] Direct financial support (e.g., loans, grants) [ ] Technical support [ ] Equipment (e.g., IT) [ ] Monitoring and data management [ ] Don't know [ ] Other: _____

	5	**Overall Support Received** *Which stakeholders has your government recieved support from thus far to implement WASH measures in response to the COVID-19 pandemic? Choose all that apply.* [ ] National government [ ] Donors [ ] Non-governmental Organization [ ] No support was received [ ] Don't know Other:
	5a	**Support from National Government** *Local governments play a key role in implementing the national WASH response to the COVID-19 pandemic. What type of support has your organization recieved from national government? Choose all that apply.* [ ] Direct financial support (e.g., grants, loans, tax reductions, payment moratoriums) [ ] Equipment (e.g, IT, vehicles) [ ] Technical support [ ] Human resources (e.g., additional staff) [ ] Monitoring and data management [ ] Don't know Other:
	5b	**Support from Donors** *Has your government received financial support in the form of loans and/or grants to implement WASH measures in response to the COVID-19 pandemic from donors thus far? Donors include bilateral and multilateral donors, NGOs, Foundations, Private Individuals, and/or the Private Sector. Choose all that apply.* [ ] Yes. The government received financial support. [ ] The government received in-kind support (e.g., materials, equipment, services purchased on behalf of the government by a donor). [ ] Don't know
	5c	**Support from Non-governmental Organizations (NGOs)** *What type of support has your government recieved from Non-governmental Organizations? Choose all that apply.* [ ] Direct financial support (e.g., loans, grants) [ ] Direct implementation of WASH measures [ ] Technical support [ ] Equipment (e.g., IT) [ ] Monitoring and data management [ ] Don't know [ ] Other: _____ Other support:
Part 2: Decision-making	Part 2 of the survey focuses on the decision-making process that informed the national WASH response to the COVID-19 pandemic. This information will provide an insight on the factors that influenced the selection of WASH measures and supporting activities.	

	9	Which ministries were part of the decision-making process to inform the national WASH response to the COVID-19 pandemic? [ ] Ministry responsible for Health [ ] Ministry responsible for Finances [ ] Ministry responsible for Water and Sanitation [ ] Ministry responsible for Local Governement [ ] Ministry responsible for Education [ ] Other: _____ [ ] No national WASH response [ ] Don't know
	10	Which stakeholders were part of the decision-making process to inform the national WASH response to the COVID-19 pandemic? Choose all that apply. [ ] Local governments [ ] Utilities [ ] Non-governmental Organizations (international and national) [ ] Civil Society and Community-based Organizations [ ] Donors [ ] WASH cluster [ ] Global Health Organizations [ ] Regional Health Organizations [ ] Individual WASH experts [ ] Neighboring countries [ ] Don't know [ ] No stakeholders were consulted [ ] Other: _____
	11	Did the government develop a COVID-19 response plan? [ ] Yes [ ] No
	12	Did the COVID-19 response plan include the following: Choose all that apply. [ ] Hygiene [ ] Water [ ] Sanitation
	13	From your perspective, how effective was the decision-making process that informed the national WASH response to the COVID-19 pandemic? [ ] Very effective [ ] Moderately effective [ ] Somewhat effective [ ] Not at all effective [ ] Don't know

	14	From your perspective, to what extent did the following factors influence the national WASH response to the COVID-19 pandemic? - Water and health professionals - International pressure - Public demand - Traditional authorities - Media - WASH sector advocacy - Past experience with public health crises - Funding - Public health data - WASH infrastructure, access, and services data - Other: _____
Part 3: Preparedness	Part 3 of the survey focuses on WASH preparedness for the COVID-19 pandemic. This information will provide an insight on where to focus strengthening efforts for future emergencies.	
	15	Did your government have an established process for an emergency WASH response prior to the COVID-19 pandemic? [ ] Yes [ ] No [ ] Don't know
	16	Was this process activated as planned when the COVID-19 pandemic started? [ ] Yes [ ] No [ ] Don't know
	17	From your perspective, how prepared were these stakeholders for a WASH response to the COVID-19 pandemic? - National government - Local government - Service providers - Non-governmental Organizations - Donors
Conclusion	18	Are you interested in participating in an interview to provide more detailed information on your experience during the COVID-19 pandemic. [ ] Yes [ ] No
	19	Is there any thing else you would like us to know about the WASH response to the COVID-19 pandemic in your country?

ANNEX B: INTERVIEW GUIDES

Below is interview guide for government officials. Interview guides were adapted slightly for service providers, NGOs and donors. These are not shared to limit the length of the report.

Coordination (10 - 15 min)

Coordination during an emergency is essential to develop and implement an effective and timely response. From the literature review, it was seen that all countries created COVID-19 response committees led by various structures (e.g., Prime Minister Office, Ministry of Health, National Emergency Response Committee, etc.). *[Adapt information on coordination to the specific country]*. In this section we would like to understand coordination between the agencies responsible for water, sanitation and hygiene and the COVID-19 response. More specifically, we would like to know what factors influenced the effectiveness of coordination.

- Was the Ministry responsible for Water and Sanitation *[Enter name]* involved in the COVID-19 response?
- How was the Ministry responsible for Water and Sanitation *[Enter name]* involved in the COVID-19 response?
- When was the Ministry responsible for Water and Sanitation *[Enter name]* involved in the COVID-19 response?
- In your opinion, how effective was the coordination between the Ministry of Water and Sanitation and the COVID-19 response team?
    - If effective, why was it effective?
    - If not effective, how could it be changed for future emergencies?
- Do you believe institutional arrangement had an effect on coordination of the WASH response?

[If the country or the interviewer is from a specific government agency, ask the same questions to understand the coordination between their agency and the COVID-19 response.]

Before we move on to the section on funding, is there anything else you would like to share on the coordination between government agencies responsible for water, sanitation and hygiene, and the COVID-19 response?

Finances (10 - 15 min)

Finances during an emergency is essential to develop and implement an effective and timely response. COVID-19 response strategies have associated budgets, although it is not always clear what portion of the budget is dedicated to WASH. The sources of funding for the COVID-19 response plan are unclear – although there seems to be significant input from development partners such as World Bank, IMF, and AfDB. *[Adapt information on funding to the specific country]*

We know that funding is often a limiting factor in the provision of water, sanitation, and hygiene services in non-emergency situations. In this section, we would like to understand how funding may have influenced the WASH response to the COVID-19 pandemic.

- What funding sources were used to implement the WASH measures to prevent the spread of COVID-19 and continue service provision?
- Follow-up questions:
    - Was existing budget reallocated for the WASH response to the Covid-19 pandemic?
    - Was new funding allocated for the WASH response to the Covid-19 pandemic?

    - Were there sufficient funds to implement the WASH component of the COVID-19 response plan?
    - Were there sufficient funds to continue water and sanitation service provision throughout the pandemic?
    - How did you access that funding?
    - How effective was the process to access this funding?
- In your opinion, how effective was accessing funding for water, sanitation and hygiene to implement the WASH response to the COVID-19 pandemic?
    - If effective, why was it effective?
    - If not effective, how could it be improved for future emergencies?
- Did the economic impact of the COVID-19 pandemic have an impact on the WASH response?

Before we move on to the next section on data and information, is there anything else you would like to share on funding and the WASH response to the COVID-19 pandemic?

Data and information (10 - 15 min)

Emergencies require a rapid response. However, they should also be developed based on evidence. As a new virus, data gaps made it challenging for countries to make informed decisions on protective measures. Countries often had to learn from previous epidemics, trial approaches, and adapt them based on results. *[Adapt information on data and information to the specific country]* In this section, we would like to understand how WASH data, information, and knowledge informed the WASH response to the COVID-19 pandemic.

- Was WASH data and knowledge used to inform the WASH response to the COVID-19 pandemic?
    - If yes, what data was used?
    - If no, what are the key barriers preventing the use of data to inform decisions?
    - If yes or no, was there any information or data that would have been useful to improve the WASH response?
- How was data and knowledge used to inform the WASH response to the COVID-19 pandemic?
- Where did you access this data or knowledge?
- Does the government have a public health data management system? Is it adapted to emergencies?
- In your opinion, how effectively was data used to inform the WASH response to the COVID-19 pandemic?
    - If effective, why was it effective?
    - If not effective, how could it be improved for future emergencies?
- Did national experiences with epidemics have an effect on WASH response decision-making to COVID-19?

Before we move on to the next section on human capacity, is there anything else you would like to share on data and information use to inform the WASH response to the COVID-19 pandemic?

Human capacity (10 - 15 min)

To implement an emergency response, a country needs trained and motivated professionals and volunteers. [Adapt information on human capacity to the specific country]. As capacity development takes time, human capacity is a key component of preparedness. In this section, we would like to understand how human capacity affected the WASH response to the COVID-19 pandemic.

- Were there sufficient WASH professionals to implement the WASH response to the COVID-19 pandemic?
    - If no, how did you overcome this challenge?
- Were training programs or other capacity development activities required to increase capacity to implement the WASH response to the COVID-19 pandemic?
  In your opinion, how did human capacity (quantity, skills and motivation) affect the WASH response to the COVID-19 pandemic?
    - If it did not affect the WASH response: Why do you think human capacity did not affect the WASH response?
    - If it did affect the WASH response: How could human capacity be improved for future emergencies?

Before we move on to the next section on the decision-making process of WASH measures, is there anything else you would like to share on human capacity and the WASH response to the COVID-19 pandemic?

ANNEX C: KEY INFORMANTS

Liberia	Madagascar	Malawi
• National WASH Commission (multiple) • USAID Liberia Economic Policy Dialogue (LEPDA) activity • Cities Alliance • Welthungerhlife • Concern Worldwide • National Association of Primary Waste (Liberia) • Liberia Youth WASH Coalition	• Department of Water, Sanitation and Hygiene of Tana • Ministry of Public Health, Environmental Health Services department • Ministry of Water, Sanitation and Hygiene, Sanitation and Hygiene department • RanoWASH • UNICEF • USAID • WaterAid	• Water Department, Ministry of Forestry and Natural Resources • Ministry of Health • Department of Disaster Management Affairs • UNICEF • USAID • Water for People • Malawi Red Cross Society