Epidemic/Pandemic Response in Africa:

Covid-19 in Egypt, Ethiopia, Kenya, Nigeria and South Africa

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i. Preface

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iv. List of Abbreviations and Acronyms

ACT – Access to COVID-10 Tools Accelerator
AfCFTA – African Continental Free Trade Area
AfDB – Africa Development Bank
Africa CDC – African Center for Disease Control and Prevention
AFTCOR – African Task Force for Coronavirus Preparedness and Response
AIDS – Acute Immunodeficiency Syndrome
AU – African Union
BVNL – Biovaccines Nigeria Limited
BWC – Biological Toxins and Weapons Convention
CDC – Center for Disease Control
CEPI – Coalition for Epidemic Preparedness Innovations
CFR – Case Fatality Rate
COVID-19 – Coronavirus Disease 2019 (The disease caused by SARS-CoV-2)
CRF – COVID-19 Response Facility
cVDPV – Vaccine Derived Polio Virus
DBSA – Development Bank of Southern Africa
EAC – East African Community
EPHI – Ethiopia Public Health Institute
FDI – Foreign Direct Investment
GAVI – Global Alliance for Vaccine and Immunization
GDP – Gross Domestic Product
GHSA – Global Health Security Agenda
GNP – Gross National Product
GPMP – Global Preparedness Monitoring Board
HIV – Human Immunodeficiency Virus
IHR – International Health Regulations (2005)
IMF – International Monetary Fund
IPPPR – Independent Panel for Pandemic Preparedness and Response
ISU – Implementation Support Unit
JEE – Joint External Evaluations
MAC – Ministerial Advisory Committee
MAC-Vacc – Ministerial Advisory Committee on Vaccines
NAFDAC – Nigeria's National Agency for Food and Drug Administration and Control
NAPHS – National Action Plans for Health Security
NCDC – Nigerian Center for Disease Control
NERC – National Emergency Response Committee

NICD – National Institute for Communicable Disease

NPHCDA – National Primary Health Care Development Agency

NPHIs – National Public Health Institutes

NTI – Nuclear Threat Initiative

OECD - Organisation for Economic Co-operation and Development

PACT – Partnership to Accelerate COVID-19 Testing

PAHO – Pan American Health Organization

PAN – Pandemic Action Network

PCR – Polymerase Chain Reaction

PERC – Partnership for Evidence-Based COVID-19 Response

PFT – Presidential Task Force

PHI – Public Health Intervention

PHSM – Public Health Social Measures

PPE – Personal Protective Equipment

RCC – Regional Collaborating Center

SAMRC – South African Medical Research Council

SARS-CoV-2 – Severe Acute Respiratory Syndrome Coronavirus 2

SMME – Small, Medium and Micro Enterprise

TB – Tuberculosis

UNECA – United Nations Economic Commission for Africa

UNICEF – United Nations International Children's Emergency Fund

WEF – World Economic Forum

WHO – World Health Organization

Executive Summary

1. Introduction

SARS-CoV-2, a novel respiratory coronavirus, was first detected in late 2019 in Wuhan, China. Being easily transmitted asymptomatically and through respiratory droplets, the virus spread quickly across international borders, prompting the WHO to declare a pandemic in March 2020. When the first case of COVID-19 (the disease caused by SARS-CoV-2) was reported in Egypt in February, the African continent, on the basis of its well-documented public health vulnerabilities, was expected to become the next epicenter of the disease. However, swift and pre-emptive public health responses by African governments in the initial stages of the pandemic helped to slow transmission and lessen the burden on the continent's healthcare systems. Successful as many of these responses were, they came with severe costs for Africa's economic system, and some countries (South Africa in particular) nevertheless experienced significant outbreaks.

We are still in the middle of a pandemic, and it is therefore difficult to speak with confidence about what constitutes success or failure with regard to public health initiatives, economic strategies, and government responses, as the full extent of the pandemic's impact on economies, societies, and political systems has yet to be realized. This study examines actions taken in response to COVID-19 in five major economic and cultural hubs in Africa – Egypt, Ethiopia, Kenya, Nigeria, and South Africa. While initial responses largely mitigated the spread of COVID-19 and its burden on healthcare systems, state responses in each of the five countries have had significant impacts on public trust, prospects for economic recovery, and in some cases led to controversies that may present barriers to successfully address future waves of the pandemic and in the longer term, to recovery.

The study comprises three core sections: (1) an analysis of the disease and public health dynamics of COVID-19 in Africa; (2) the impact of public health interventions on economic systems; and (3) the role of governance, public trust, and leadership in driving state responses. A concluding section outlines the next steps required to combat the pandemic and move toward recovery; these include vaccine procurement and distribution, economic recovery, and upscaling public health capacities in all regions of the African continent. While Africa certainly faces many challenges in recovering from COVID-19, the African Centres for Disease Control and Prevention (Africa CDC) and multilateral efforts have provided and will continue to offer support that is vital to combatting and recovering from pandemics.

2. Disease Dynamics and Public Health Responses

At the beginning of the pandemic, high-income nations such as Italy, Spain, the United Kingdom, and the United States – all seemingly well-equipped to combat epidemics – were quickly overwhelmed by

the virus. In contrast, transmission of COVID-19 on the African continent has been significantly less, defying expectations. As of 27 November, Africa had reported more than 2.1 million cases and approximately 51,000 deaths, accounting for 17% of the world's population but only 3% of COVID-19 cases globally. While testing capacity remains an issue for the African continent, test positivity rates and test per case ratios suggest that the virus is not as widespread amongst African countries as it is in other regions of the world.

Many hypotheses exist as to why COVID-19 has thus far remained so manageable for the African continent, with one of the strongest being that early implementation and widespread acceptance of public health and social measures (PHSMs) helped to stem the growth of the pandemic in its infancy. Lower rates of infection in Africa could also be attributed to the demographic makeup of the continent; on average, COVID-19 has the greatest impact on older populations, and Africa has a markedly younger population with a lower portion of its population over the age of 65 than the world average. Other hypotheses explaining a lower case-count include a higher prevalence of pre-existing antibodies for other coronaviruses in the African population; effective infectious disease control efforts already ingrained in national responses in Africa; and an overall lack of testing capacity on the continent leading many infections to go undetected.

Widespread testing is considered the single best tool for tracking the spread of COVID-19, and the ability to test widely was quickly identified as a major vulnerability for Africa. In the early stages of the pandemic, many efforts, including the Africa Joint Continental Strategy for COVID-19, established by African health ministers and backed by aid from the WHO, sought to increase testing capacity across the continent, ultimately leading to Polymerase Chain Reaction (PCR) testing capabilities being developed in all African countries. Despite these efforts, testing rates remain an issue for Africa, with a continent-wide test positivity rate of 9.8% as of 27 November. The WHO suggests a positivity rate below 10%, but ideally 3% or less, as a general benchmark for adequate testing. Increasing testing capacity and implementing effective testing strategies will be crucial in the continued response to COVID-19 in Africa.

On 14 February 2020, Egypt became the first country on the continent to report a COVID-19 case, followed by Nigeria on 28 February, South Africa on 6 March, and Ethiopia and Kenya both on 13 March. All five countries implemented stay-at-home restrictions (some imposed lockdowns) and border closures early, intending to limit cases imported by foreign travel. Despite these initial efforts, each country eventually reached community transmission of the virus. South Africa continues to experience the highest number of COVID-19 cases and deaths in Africa, with infection and death rates that rival other countries globally. As of 27 November, Egypt has the third-largest number of total COVID-19 cases on the continent. Of the five countries examined here, only Nigeria and Ethiopia are testing at rates above the recommended threshold, with test per case ratios of 28 and 11, respectively.

Due to a lack of intensive care facilities across the continent, many African countries implemented restrictive measures before widespread transmission was detected, allowing time for health systems to prepare. Surveys from the Partnership for Evidence-Based COVID-19 Response (PERC) collected responses from 24,000 individuals in 18 countries across Africa, including the five under consideration in this study. The surveys found that support for and adherence to PHSMs was relatively high.

Though the amount of support reported in the PERC surveys suggests that most people have basic knowledge of COVID-19 and the measures that can prevent its spread, self-reported adherence to these measures was much lower among respondents. Most countries followed a similar pattern: support for and self-reported adherence to personal measures (hand washing, face mask wearing) were higher than for measures that restrict economic activity and public gatherings. As is the case in any outbreak, people's understanding of their personal risk of catching COVID-19 (their "personal risk perception") affects how likely they are to support and engage in preventive behaviors. PERC's survey found that while more than two-thirds of respondents agreed that many people in their country would be affected by COVID-19, less than one-third (29%) believed their own personal risk of infection was high.

Despite early preparedness, COVID-19 has placed strain on African health systems and disrupted access to non-COVID-19 healthcare services. Shortages of personal protective equipment (PPE) have put frontline workers at elevated risk for contracting the disease, leading to a shortage of hospital staff in many regions due to widespread outbreaks among healthcare workers. The pandemic has also disrupted many essential health services such as infectious disease prevention, routine childhood vaccination, emergency care, and access to life-saving medications; these disruptions threaten to undo decades of progress in reducing disease and increasing life expectancy on the African continent.

The COVID-19 pandemic is still far from over. With vaccines on the horizon but their timelines still unclear for most Africa countries, it may be years until all countries in Africa reach herd immunity. As we learn more about the virus and the severity of the disease in the African context, countries will need to use data to maintain the balance of disease control and economic hardship, especially at the household level. Limited testing capacity remains an Achilles heel in the surveillance system of many countries, calling into question the accuracy of case counts and impact of the pandemic on populations. Additional data that includes mortality surveillance and the impact of the pandemic on essential health services are important additional pieces of the puzzle that can shed light on disease dynamics and the secondary impacts of the pandemic.

3. The Economic Impact of COVID-19 in Africa

The COVID-19 pandemic comes as Africa is at a pivotal moment in terms of urbanization, economic progress, global connectedness, and technological modernization. Decreases in local productivity and exports, as well as disruptions of global value chains, have severely impacted African industries and

business, which are largely dependent on foreign investment and international markets. The effects of stringent public health interventions are expected to lead to a contraction of between -3.4 and -5.2% in 2020, marking the first recession for the continent in 25 years. Three of the countries in this study – Egypt, Nigeria, and South Africa – produce 60% of Africa's GDP; the economic slow-down in these countries weighs heavily on the continent and provides crucial indicators for its economic trajectory.

With hindsight and following the economic ramifications and tradeoffs of measures taken to control the pandemic, economic responses could have been better informed, implemented, and tailored for specific countries. Both the response of the governments in this study and that of international agencies provide an interesting and instructive approach to managing the broader economics of pandemics for comparative purposes going forward. This, along with the recent and collective request for debt relief that came from African countries and the implications it carries, are important to track and consider in the overall picture.

The response to and impact of economic interventions vary from country to country. Based on existing data, international support and financial aid had a positive and immediate impact on the economic recovery of Kenya and Ethiopia. This is less evident in the case of Egypt, Nigeria and South Africa, which may be due to the size of these economies and the relatively small impact of aid packages.

The pandemic will continue to impact regional integration and connectivity in Africa. National lockdowns immediately hampered the movement of goods, services, capital and, most importantly, people, across borders. It also calls into question the responsiveness of sub-regional blocs and the state of intra-Africa trade. The continent requires economic liberalization and connectivity to build robust local economies, to compete internationally, and to integrate into global value chains, all of which are essential to recovery and ensuring sustainable progress.

In all cases, except in South Africa, business confidence has begun to recover. This is a crucial prerequisite for attracting international capital, and the resumption of investment and trade activities, activities upon which all these countries rely for financial prosperity. COVID-19 may also provide the spark for long-delayed integration and structural reforms that will yield a competitive, modern, and open economic landscape in Africa. But this reset will be driven by individual country responses to COVID-19 and their desired approach to recovery.

The pandemic will be with us well into 2021. In the spirit of coexistence, governments need to identify the economic trade-offs of their response to the virus. This is particularly relevant in Africa, where countries have a complex set of economic, social, and political issues resting on a fragile foundation, and most lack the access to capital to sustain their populations during prolonged lockdowns. A stringent approach to curbing infections has proven unsustainable, delivering unintentional and lasting consequences by setting back crucial socioeconomic progress. As Africa works to recover while a

second wave of the pandemic unfolds, context-driven measures that consider the array of issues Africans face are critical if countries are to recoup past gains, and achieve their development goals.

4. It Takes a State

The five countries under review succeeded in controlling the initial spread of the virus by swift and coordinated action by their national governments accompanied by cooperation from the private sector and multilateral institutions. Heads of state took charge, were decisive, responded swiftly, created new policy instruments, and secured resources and partnerships to underwrite the effort; healthcare workers rose to the occasion, coming out in vast numbers to assist institutions and communities despite risks to their lives; and individual countries were supported by the Africa CDC and global partners such as the WHO.

In contrast to many other countries and regions battling COVID-19, Africa has adopted a multilateral approach to pandemic response. As early as February, the African Union brought together ministers from its 55 member states to create a proactive and unified response to COVID-19, resulting in the adoption of the Africa Joint Continental Strategy for COVID-19. Led by the Africa CDC, the African Task Force for Coronavirus was formed to coordinate surveillance, infection prevention and control in health-care facilities, clinical management of infected individuals, laboratory diagnosis, risk communication, and community engagement.

State Capability

Since the 2014-2015 Ebola epidemic in Africa, all five countries, along with most members of the African Union, have been evaluated as part of the WHO's Joint External Evaluations (JEE), which were designed to assess and increase individual country compliance with the WHO's 2005 International Health Regulations (IHR). These evaluations revealed significant gaps in the countries' ability to prevent, detect, and respond to infectious disease outbreaks. The countries were assessed again in 2019 as part of the Global Health Security Index (GHSI) developed by the Nuclear Threat Initiative, Johns Hopkins University's Bloomberg School of Public Health, and the Economist Intelligence Unit. The GHSI identified the ability to rapidly respond and communicate risk when faced with a disease outbreak to be a significant weakness for all five countries under consideration. Both the JEE and GHSI serve as important benchmarks for pre-COVID-19 preparedness.

As a result of their participation in the JEE and efforts to comply with the IHR, when COVID-19 arrived in Africa, the continent's leaders from sectors most directly involved in emergency response understood that unless they scaled up their preparedness and acted swiftly, their health systems would be overwhelmed. With no ready-purposed pandemic response machinery at hand, countries created new structures and instruments as the need arose.

The lack of legislation designed specifically for public health emergencies and the slow pace of establishing multi-functional public health institutes resulted in many problems and posed serious challenges for all five countries. Among the more compelling problems were poor coordination between the health and security sectors and the failure on the part of the police and military to understand their roles and functions during a public health emergency. Violent escalations between security forces and citizens have been reported in all countries as a result of COVID-19 related security incidents. Many, if not most, of the conflict episodes between citizens and the police and military could have been prevented through better training and leadership. When the police and military overstep their roles, citizen trust in the very state institutions that are responsible for their health and personal security is undermined.

Public Trust

Successful pandemic response strategies require that individuals adhere to and comply with effective public health measures. Ideally, adherence is voluntary and based on the self-understanding individuals have that the measures will protect them, their families, and the wider community from disease and possibly death. In the case of COVID-19, the world has learnt that mask-wearing, physical distancing and, when necessary, stay-at-home orders, are currently the most effective behavioral safeguards against the spread of the disease. Efficacious vaccines are coming to market and in order to accelerate herd immunity, a majority of the population should be open to taking them. Fortunately, according to the Wellcome Trust Monitor, African countries generally have a positive attitude toward vaccination because of the continent's recent and ongoing history of fighting infectious diseases.

A cross-sectional analysis of 23 countries found that despite the decline of trust in physicians in commodified private oriented health systems, trust in physicians from public healthcare systems has remained high. In the five African countries under review, top-down and bottom-up risk-communication approaches were employed. However, in those societies where trust in governments is historically low, greater reliance had to be placed on bottom-up approaches led by frontline health workers to disseminate the correct information. Africa's health-care systems are largely nurse-driven, an asset that made bottom-up approaches workable.

The spread of disinformation, misinformation, and conspiracy theories surrounding COVID-19 has also been a source of concern for many African countries. International best practice suggests that direct, clear, and consistent science-based public health messages from governments, leaders, and health professionals who have direct personal connections with citizens are the best top-down and bottom-up techniques for counter-acting misinformation, disinformation, and conspiracies.

The COVID-19 pandemic has served as a catalyst for improving both communication and trust between African citizens and their governments. Chikwe Ihekweazu, Director General of the Nigeria Centre for Disease Control, reported that during the outbreak, emergency operations centers were established in

35 of Nigeria's 36 states. In Kenya, hotline #719, designed to field calls related to COVID-19, came into being and all calls were filtered through three call centers. Direct communication systems with frontline health-workers have been established in Kenya, Nigeria and South Africa. Initially slow off the mark, it took Egypt five weeks to start their information campaign after their first COVID-19 case was registered on 14 February, but a mere 3 days for Ethiopia (first case 13 March) and the same day (5 March) for South Africa. Kenya and Nigeria pre-emptively launched theirs two weeks and a month respectively before their first cases were registered on 12 March and 28 February. This was swift, by any standard.

Leadership

Leadership, what it means and why it matters, varies by context and purpose. In the case of responding to infectious disease outbreaks of epidemic or pandemic potential, we have learnt that the following actions on the part of leaders are of the greatest importance in mounting a successful response: (1) prompt recognition of the problem at the highest levels of government, even when there is limited or imperfect information, and a swift mobilization of a response machinery to deal with it; (2) the pursuit of a pandemic response as a public and not a private good based on reasoned evidence-based arguments; (3) priority given to the protection of frontline healthcare workers and vulnerable populations who are at greatest risk of infection; and (4) ensuring the capability of the education system to mitigate the educational consequences of extended school closures. In democratic societies, leadership is exercised in a rights-based framework that requires both citizen consent and cooperation; through legislation, however, certain classes of rights (such as freedom of movement and association) may temporarily and legitimately be constrained during a public health crisis, if state actions can be openly and clearly justified by an ethical/legal framework proportionate to the threat posed by the public health hazard at hand.

Multilateralism in Action

Due to the depletion of public resources, the nations surveyed here will face significant difficulty in increasing their capability to respond to future pandemics in accordance with the WHO's IHR. Prior to the COVID-19 pandemic, each of the five countries had developed their WHO National Action Plan for Health Security (NAPHS), but had yet to obtain adequate funding. Following the COVID-19 pandemic, the prospects of securing international resources to support the NAPHS and develop health security infrastructure is stronger than before. Investment in public health security plans, designed to prevent and respond to future pandemics are of the utmost importance to prosperity of a nation and its people.

Moving forward, pandemic preparedness must become a priority on a national and global scale. The World Bank has an established Pandemic Emergency Financing Facility, and the Africa Development Bank has COVID-19 pandemic financing instruments. There are also initiatives to establish more pandemic financial facilities, including a matching fund. Importantly, for African countries, the African Union's youngest agency, the Africa Center CDC, established in 2017 and led by virologist Dr. John Nkengasong, has quickly grown into a most valuable technical support agency for member states whose mission includes helping with resource mobilization.

5. Next Steps

The number of new COVID-19 cases daily in the months of July and August in Africa declined rapidly. This trend changed during the month of October with many countries now experiencing either their first major increase in the number of new COVID-19 cases or their second wave of the pandemic. Morocco leads in the largest number of new cases reported (53,660) followed by South Africa (48,119). Together the two countries account for more than half the new cases reported. About half (27 of 55) of African Union Member States reported increases in new cases and including in hotspot countries like Kenya, Tunisia and war-torn Libya. As the pandemic continues to evolve across Africa, the Africa-CDC has been instrumental in helping Member States to re-evaluate, re-strategize, and re-invigorate their COVID-19 responses to handle a second and possibly a third wave of the pandemic, this time with the prospect of having vaccines in hand to accelerate reaching the goal of herd immunity.

The scenario that is likely to control the COVID-19 pandemic without excessive loss of life is the development, deployment, and widespread uptake of safe and effective COVID-19 (SARS-CoV-2) vaccines. Given the magnitude of the ongoing pandemic, the WHO has called upon all nations to prepare for the purchase, distribution, public health messaging and administration of COVID-19 vaccines as they become available.

With the emergence of several effective COVID-19 candidate vaccines, the issue of equitable distribution has come into focus, particularly for the African region. The establishment of the Access to COVID-19 Tools (ACT) Accelerator and, in particular, the COVAX Facility have been positive developments in this regard. However, there are still significant concerns pertaining to access for many developing countries, especially given the rising 'vaccine nationalism' reflected in the efforts made by wealthier countries to secure vaccine stockpiles. Within this context, it is important to understand what the current vaccine procurement, manufacturing and distribution capabilities are for some of the larger countries on the continent.

In order to strengthen disease surveillance systems, develop research capabilities, and continue to strengthen the continent's health systems, UN agencies, the Africa CDC, and African governments must commit to reforming the health security architecture, both on the continent and globally. Our principal

recommendation is that the Africa CDC – the prime enabler of change and progress in public health on the African continent – should establish five regional branches, in order to serve member states in North, West, East, Central and Southern Africa.

In the end, it is up to individual countries to invest in upscaling the health security systems for their populations. All five countries under review have been assessed by the WHO/JEE process. Every country has developed their National Action Plans for Health Security (NAPHS) and set targets that have to be met over a period of time. Some are short-term and can be introduced now, others medium and yet others, longer-term. Progress that has been made, but African countries have far to travel in order to meet optimal benchmarks for health security. In the concluding section of our report, we make specific recommendations of what governments should do.

-1-

Introduction

When COVID-19 first arrived in Egypt on 14 February 2020, many expected the African continent, given its well-known public health vulnerabilities, to become one of the next epicenters of the disease. While some African countries, especially South Africa, experienced significant outbreaks, the continent's relatively swift scaled-up responses during the initial stages of the pandemic helped to slow transmission and lessen the burden on the continent's healthcare systems. But, as we will show, the public health interventions – successful as they were in many cases - came at a major cost to Africa's economic systems. This will in turn test fiscally constrained governments to cope with the next round of surges the pandemic is likely to bring, even with innovative public health interventions, including having therapeutics and a vaccine in hand.

We are in the middle of a pandemic and it is too early to speak with confidence about successes and failures when we do not have a firm grip on what damage the COVID-19 has inflicted on economies, societies, and political systems. This study's ambition is to examine the common successes and difficulties of five low to middle-income countries - Egypt, Ethiopia, Kenya, Nigeria and South Africa – from different regions and economic-cultural zones of the African continent. We will examine how state responses affected public trust, hampered economic recovery, and engendered controversies that may well define the limits and possibilities of ongoing responses to cycles and surges of a pandemic that has yet to run its course.

The ability of states to deal with pandemics is influenced by the local and regional context in which they function. It matters whether states are at peace with their neighbors, if they are vulnerable to insurgencies and/or terrorist attacks and if their citizens live with one another in relative harmony. Four of the countries under review - Egypt, Kenya, Ethiopia and Nigeria - are located in volatile parts of the world, South Africa less so, though there are increasing concerns about Islamic insurgencies in Northern Mozambique that could migrate southwards. Ethiopia and Nigeria face immediate threats. Egypt and Kenya's hazards are episodic and more confined.

Ethiopia has an ongoing crisis in its Oromo region where 35% of its population of 110 million people live. Simmering internal tensions with the Tigrayan leadership in north-western Ethiopia have spilled over into a regional conflict with Eritrea and Sudan, unleashed a refugee crisis on top of a refugee problem, and diverted government's attention away from dealing with the immediate crisis and longer-term effects of the Coronavirus pandemic. The Ethiopian economy, which has become used to growth rates of more than 10% for the last quarter century, will flatline during 2020.

Following Ethiopia, Nigeria is the next at-risk country in our sample. Military campaigns have been conducted against Boko Haram known for its abduction of 200 schoolgirls from the village of Chibok and more recently, in October 2020, the kidnapping and then freeing of 344 kidnapped school-going boys in the state of Katsina. Nigeria also faces threats from the Islamic Movement of Nigeria, farmer-herder conflicts that fracture along religious lines and from the so-called Delta Avengers who are involved in ongoing criminal activity in the oil-rich Niger-Delta region, Nigeria's oil producing core. Nigeria has made major progress in dealing with some of these threats, but it remains at-risk, diverting resources and focus from dealing with emergencies such as the COVID-19 pandemic.

Kenya is at relative peace with its neighbors - Tanzania, Somalia, Ethiopia, South Sudan and Uganda – in an unstable part of the world. It has suffered a series of devastating terrorist attacks from the Somalia-based Al-Shabaab group over the years, most recently the 2019 assault on the Dusit hotel complex in Nairobi. Egypt borders on Libya and Sudan, countries that fall into the Fragile State Index[1] alert and high alert categories, and to its north, with the Palestinian Territories, Israel, Jordan and Saudi Arabia. It has been vulnerable to terror attacks, largely concentrated in the Sinai Peninsula. Neither Kenya or Egypt have given much indication that their threat environment diverted attention or resources from their battle against COVID-19 pandemic.

It is in this broader regional context that we examine pandemic response of the five countries in three domains: (1) an analysis of the disease and public health dynamics of COVID-19; (2) the impact of public health interventions on economic systems; and (3) the role of governance, public trust, and leadership in driving state responses. A concluding section examines the next steps required to combat the pandemic and move toward recovery; these include vaccine procurement and roll-out, economic recovery, and upscaling public health capacity in all regions of the African continent. While Africa certainly faces many challenges in recovering from COVID-19, the African Center for Disease Control and Prevention (Africa CDC) and broad-based multilateralism have provided and will continue to offer critical support that is essential to combatting and recovering from pandemics.[2]

[1] https://fragilestatesindex.org/2020/05/08/fragile-states-index-2020-annual-report/

[2]See Ilona Kickbusch et al 'COVID-19: how a virus is turning the world upside down' *British Medical Journal* 2020:369:m1336 doi: 10.1136/bmj.m1336 (Published 3 April 2020).

Disease Dynamics and Public Health Responses

2.1 Introduction

A severe respiratory syndrome (COVID-19) caused by the SARS-CoV-2 virus, a novel human coronavirus, first appeared in China in November 2019 and rapidly spread worldwide. In the absence biomedical interventions such as vaccines and therapeutics, and with a poor understanding of the virus' transmission dynamics, nations were left to rely upon basic principles in their response to COVID-19.

By the beginning of January 2021, the world has recorded more than 84 million cases and almost 1.8 million deaths worldwide. Although the pandemic is far from over, the progression of the outbreak and the divergence in response and impact across the globe is becoming clear. Africa currently accounts for just 3% of COVID -19 cases globally, but the extent of the impact of the pandemic on economic, food security, and access to essential health services is largely unknown and will surely be long lasting.

While the recent development and approval of several vaccines provides some light at the end of the tunnel, there is still much to learn about the virus and its impact. Early success in limiting the spread of the virus can be attributed to a combination of rapid response, experience in managing highly infectious outbreaks, strong governance, regional coordination, effective risk communication, and perhaps biological and demographic differences that limit the severity of the illness. However, the ongoing use of public health and social measures (PHSMs) to limit transmission have increasing negative impacts on the economy. With resilience in communities waning and 'COVID fatigue' increasing in many locations, policy makers will have to balance COVID-19 control measures carefully against the negative consequences of blunt public health measures. Tailored responses based on clusters of cases will be required – but to do so will require precise health data including increased testing, rapid mortality surveillance, and monitoring the impact of interventions on other essential health services. Improvements in understanding and tracking the transmission of COVID-19 and balancing control measures will be the critical lynchpin in the Africa response, making a delicate balancing act for policy makers.

2.2 Background

At the start of the pandemic, the world watched as health systems in wealthy nations were overwhelmed. In February 2020, Italy battled a surge in cases and by March 2020, similar scenarios were observed in parts of the United States, the United Kingdom, and Spain. The virus spread rapidly across the globe. It was soon recognized that respiratory droplets were the principal mode of transmission and that the virus could

be spread by infected individuals before they developed the signs and symptoms of COVID-19 pandemic (pre-symptomatic transmission), or by infected individuals who never developed signs or symptoms of COVID-19 (asymptomatic infection). The fact that it could be transmitted by asymptomatic and pre-symptomatic people made it particularly difficult to contain, as it was nearly impossible to know who was contagious.

There was great concern that COVID-19 could be devastating for the African continent, where countries had less robust health systems and where populations already had poor access to healthcare. A 26 March 2020 Imperial College COVID-19 Response Team report concluded that in the absence of any mitigating interventions, there would be more than 1 billion infections and 2.4 million deaths in Sub-Saharan Africa.[3]

However, we have not yet seen that level of devastation. The first COVID-19 case in Africa was reported in Egypt on 14 February 2020, with the source of the virus a traveler arriving from China. By mid-March 2020, Algeria, Cameroon, Egypt, Ethiopia, Kenya, Morocco, Nigeria, Senegal, South Africa, Togo and Tunisia had reported cases; the source of the virus was primarily travelers from Europe at this time. These cases were responsible for the early spread of the pandemic on the African continent.[4] By 7 June 2020, the number of confirmed COVID-19 cases in Africa had passed 200,000 with over half of the continent's 54 nations reporting cases.[5] As of 27 November 2020, the continent of Africa has reported more than 2.1 million cases and 51,000 deaths - only 3% of COVID-19 cases reported globally.

While there are many potential hypotheses as to why caseload has stayed so manageable on the continent, one strong potential is the early implementation of PHSMs and community acceptance of those PHSMs, which were able to stem the growth of the pandemic in its infancy. The decision to ease or end restrictions must be grounded in data and communicated with the caveat that PHSMs may need to be reinstated in the future if the disease situation worsens (refer to WHO's guidance on adapting PHSMs).[6] Importantly, though, research shows that the real driver of economic slowdown is the virus itself, and while lockdowns

[3] Patrick Gt Walker et al., 'The Global Impact of COVID-19 and Strategies for Mitigation and Suppression On Behalf of the Imperial College COVID-19 Response Team WHO Collaborating Centre for Infectious Disease Modelling MRC Centre for Global Infectious Disease Analysis', March 26, 2020, https://doi.org/10.25561/77735. (Accessed 27 Nov 2020).
[4] Marguerite Massinga Loembé et al., 'COVID-19 in Africa: The Spread and Response', *Nature Medicine* 26, no. 7 (July 1, 2020): 999–1003, https://doi.org/10.1038/s41591-020-0961-x. (Accessed 27 November 2020).
[5] Jacqui Thornton, 'Covid-19: Africa's Case Numbers Are Rising Rapidly, WHO Warns', *BMJ* 369 (June 15, 2020): m2394, https://doi.org/10.1136/bmj.m2394. (Accessed 27 November 2020).
[6] WHO, 'WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 - 13 April 2020', www.who.int, April 13, 2020, https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19--13-april-2020. (Accessed 27 November 2020).

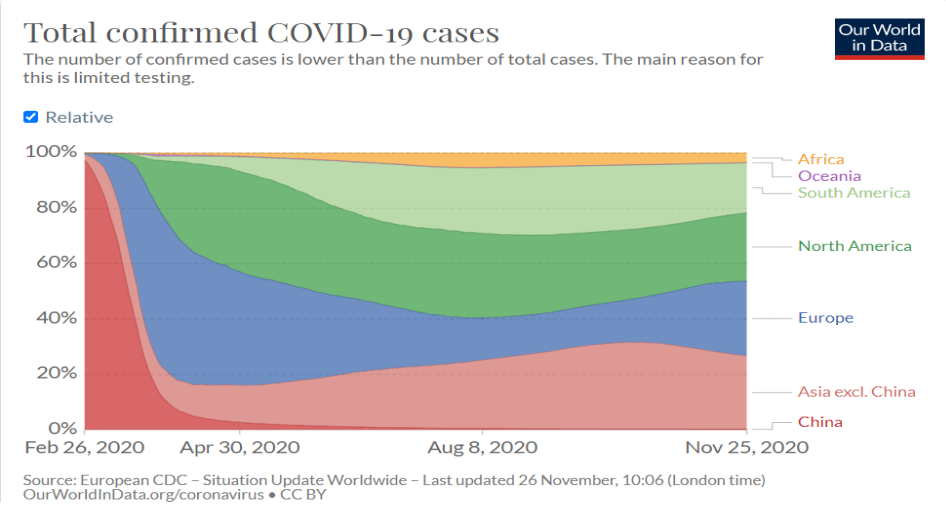
and other severe restrictions may lead to economic disruption, the global economy cannot make a full recovery until the virus is contained.[7]

This chapter reviews the importance of the relationship between the disease dynamics and public health capacity to respond to COVID-19, the role of PHSMs to stymie the outbreak, and the balance countries need to achieve with respect to other vulnerabilities or risk of communities. We then do a more in-depth analysis of five countries to see these interactions in play.

2.3 Disease Dynamics in Africa

While Europe and North America have experienced intense periods of COVID-19 transmission, disease transmission in Africa has overall been more muted.[8] As of 27 November 2020, there have been more than 2.1 million cases and 51,160 deaths reported across the African continent. While Africa makes up 17% of the world's total population, it comprises less than 3% of COVID-19 cases reported globally.[9] (Figure 2.1) Country-level experience of COVID–19 has varied widely across the continent. Disease incidence ranges from 4.91 cases per 100 000 people in Uganda to 1373.4 in South Africa. A similar trend is observed in case fatality rates (CFR) (Figure 2.2). There are several possible explanations for why the cumulative per capita case count and the overall experience of COVID-19 on the African continent differs so markedly from higher income contexts like Europe and North America.

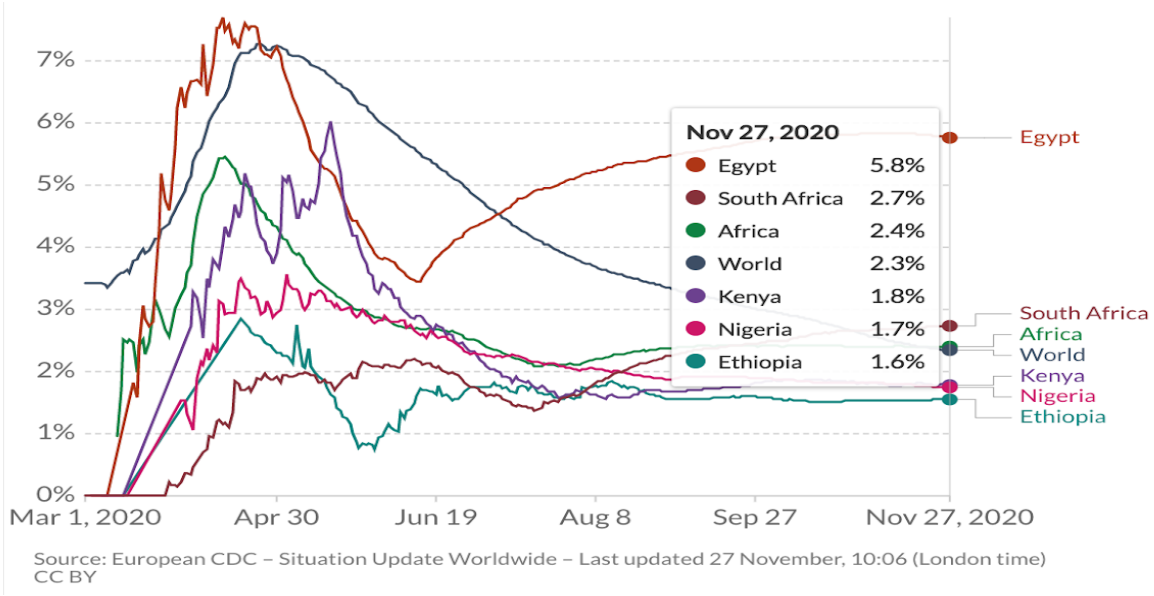
Figure 2.1. - Total Confirmed COVID-19 Cases Over Time



[7] IMFBlog, 'COVID's Impact in Real Time: Finding Balance Amid the Crisis', IMF Blog, October 8, 2020, https://blogs.imf.org/2020/10/08/covids-impact-in-real-time-finding-balance-amid-the-crisis/. (Accessed 27 November 2020).
[8] Prevent Epidemics, 'Update on COVID-19 in Africa', Prevent Epidemics, August 26, 2020, https://preventepidemics.org/covid19/science/insights/update-on-covid-19-in-africa/. (Accessed 27 November 2020).
[9] 'Coronavirus Cases', Worldometer, https://www.worldometers.info/coronavirus/ (Accessed 27 November 2020).

Source: 'Total Confirmed COVID-19 Cases', https://ourworldindata.org/grapher/total-covid-cases-region?stackMode=relative. (Accessed 27 November 2020).

Figure 2.2: Trends in case fatality rates (CFR) due to COVID-19 over time in selected African countries



Source: Max Roser and Hannah Ritchie. 'Coronavirus Disease (COVID-19)', *Our World in Data*, March 4, 2020. https://ourworldindata.org/coronavirus. (Accessed 27 November 2020).

For one, lower rates of death in Africa could possibly be attributed to demographic makeup. As COVID-19 impacts primarily older populations on average, Africa has a markedly younger population as reflected in the population age-structure.[10] In countries such as the United States, COVID-19 ravaged nursing homes with elderly populations, contributing to high rates of mortality. Three co-morbid conditions, obesity, diabetes and hypertension significantly increase the risk of death in individuals with SARS-CoV-2 infection. National rates of obesity and diabetes vary greatly while hypertension rates are similar in high-, middle-, and low-income nations (Table 2.1) As regards infection rates, African populations tend to be less mobile, live in communities less densely populated, and spend more time on average outdoors due to work and warmer weather, as compared to Europe or North America, for example.

[10] Fabrice Mougeni, Ance Mangaboula, and Bertrand Lell, 'The Potential Effect of the African Population Age Structure on COVID-19 Mortality', *Preprint*, May 21, 2020, https://doi.org/10.1101/2020.05.19.20106914. (Accessed 27 November 2020).

Table 2.1 – Country-specific and World Age and Co-Morbidity Data

Country	Proportion of Population ages 65 years and above	Adult Prevalence	
		Obesity	Diabetes
Egypt	5.3%	32.0%	17.2%
Ethiopia	3.5%	4.5%	4.3%
Kenya	2.4%	7.1%	3.1%
Nigeria	2.7%	8.9%	3.1%
South Africa	5.4%	28.3%	12.7%
Italy	23.0%	19.9%	5.0%
United Kingdom	18.5%	27.8%	3.9%
United States	16.2%	36.2%	10.8%
World	9.1%	13.1%	9.1%

Sources:https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS?end=2019&locations=ET-KE-IT-NG-ZA-GB-1W-US&name_desc=false&start=2019&view=bar (Accessed 11 December 2020); https://ourworldindata.org/obesity#what-share-of-adults-are-obese (Accessed December 11, 2020); and https://data.worldbank.org/indicator/SH.STA.DIAB.ZS. (Accessed December 11, 2020).

An emerging area of research posits the hypothesis that among African populations, there is a higher prevalence of pre-existing antibodies against other coronaviruses and that these antibodies cross-react with SARS-CoV-2, possibly conferring some protection against acquisition of COVID-19.[11] However, testing this hypothesis is challenging due to the limited accuracy of the antibody tests; challenges in quantifying the protection (if any) offered by cross-reactive antibodies; and determining, if there is some cross-protection, how significant this factor may be in keeping case counts low in Africa. There is a need to strengthen clinical research capacity in Africa to further investigate hypotheses such as this and indeed others.

Another possible reason for lower COVID-19 incidence could be attributed to effective infectious disease control efforts already ingrained in national responses in Africa. African countries acted early and swiftly to implement public health and social measures to slow the spread of the virus [see PHSM section in 2.5]. These measures likely contributed to slower disease introduction to populations and reduced rates of transmission in the initial months of the pandemic. Most countries in Africa routinely manage infectious

[11] For Yue Tso et al., 'High Prevalence of Pre-Existing Serological Cross-Reactivity against Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2) in Sub-Saharan Africa', *International Journal of Infectious Diseases* 102 (January 1, 2021): pp. 577-583, https://doi.org/10.1016/j.ijid.2020.10.104. (Accessed 27 November 2020).

disease outbreaks and are well-practiced in implementing standard disease control measures like port-of-entry screening, isolation, quarantine and contact-tracing. [12]

Lastly, epidemiologic indicators should be interpreted in context and with caution, particularly when comparing across countries. Case counts in particular are heavily impacted by the availability of testing, and capacity to detect cases could be, in part, the reason for observed variation in the confirmed cases and deaths.

2.4 Testing Capacity

Widespread testing remains the single best tool for tracking the spread of COVID-19. Testing using sensitive and specific assays allows for the identification and isolation of infected individuals and provides valuable information regarding the epidemiological trends. However, countries that are not conducting sufficient tests, as measured by the test positivity rate and test per confirmed case ratio, are unlikely to be able to effectively identify the true disease burden they face. The WHO has suggested a positivity rate lower than 10% – but ideally lower than 3% – and 10-30 tests per case as general benchmarks of adequate testing.[13]

The ability to test was identified early as a major capacity gap in Africa. As the first case reached the continent in mid-February 2020, African health ministers agreed on an Africa Joint Continental Strategy for COVID-19.[14] The taskforce identified equipping, training, and strengthening public health laboratories for quality-assured diagnostic testing as one of its key pillars. Within the first two months, sub-Saharan Africa went from having two laboratories equipped for testing – in South Africa and Senegal – to creating some testing capacity in every country. However, African countries' capacity to test has been significantly impacted by their reliance on external suppliers and the competition with higher income countries to acquire COVID-19 testing kits and reagents. Despite WHO efforts to facilitate pooled procurement of COVID-19 diagnostics, the continent remains underserved. Testing capacity continues to grow but remains a significant challenge, especially at the sub-national level.[15]

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[12] F. Mboussou et al., 'Infectious Disease Outbreaks in the African Region: Overview of Events Reported to the World Health Organization in 2018 – ERRATUM', *Epidemiology and Infection* 147 (November 11, 2019), https://doi.org/10.1017/s0950268819002061 (Accessed 27 November 2020).

[13] Hannah Ritchie et al., 'Coronavirus (COVID-19) Testing', Our World in Data, https://ourworldindata.org/coronavirus-testing.

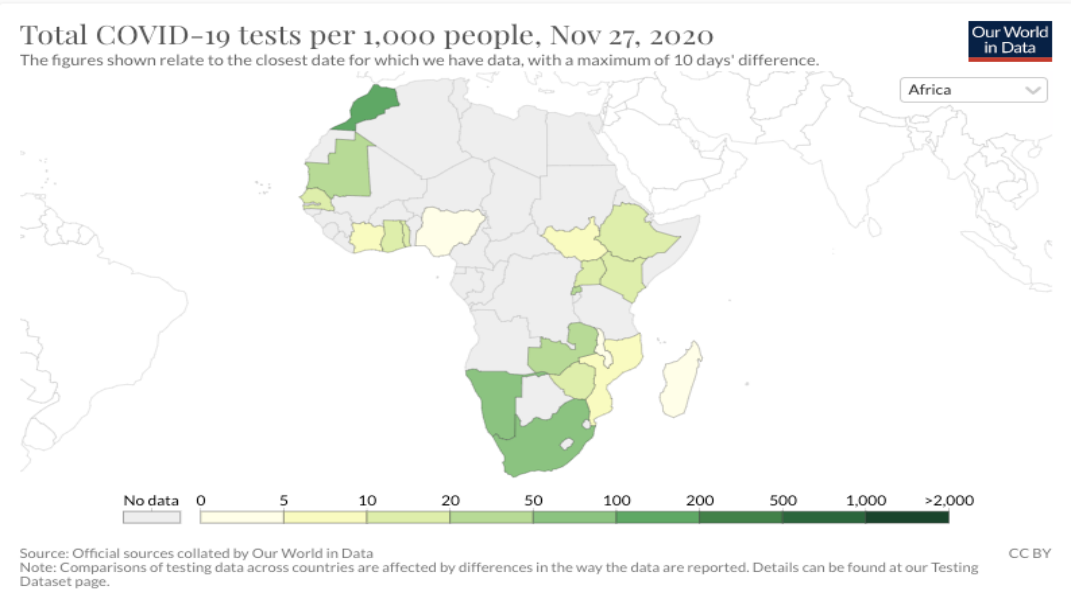
[14] Patricia Geli, 'World Bank Blogs', *World Bank Blogs* (blog), August 25, 2020, https://blogs.worldbank.org/health/africa-centres-disease-control-and-preventions-covid-19-response-united-continental-strategy. (Accessed 27 November 2020); 'Africa Joint Continental Strategy for COVID-19 Outbreak', Africa CDC, March 5, 2020, https://africacdc.org/download/africa-joint-continental-strategy-for-covid-19-outbreak/. (Accessed 27 November 2020).

[15] Pascale Ondoa et al., 'COVID-19 Testing in Africa: Lessons Learnt', *The Lancet. Microbe* 1, no. 3 (July 1, 2020): e103–e104, https://doi.org/10.1016/S2666-5247(20)30068-9. (Accessed 27 November 2020).

To effectively limit further spread of COVID-19, Africa CDC has set the ambitious goal of increasing the number of COVID-19 PCR tests from 1,300 to 16,000 per million people. To achieve this goal, PCR testing platforms within national disease control programs and the private and animal laboratory sectors are being utilized. Access to this capacity could potentially yield up to 55 million molecular tests annually.[16]

As of 27 November, Africa CDC reports that more than 21.9 million COVID-19 tests have been conducted across the continent with a positivity rate of 9.8% and test per case ratio of 10.2. While testing capacity has increased significantly across the continent, the high test positivity rates reflect a state of testing capacity that continues to lag behind demand. The challenges are certainly driven by cost, supply, and material access, as discussed above, but they are also impacted by testing strategy. When capacity for testing is insufficient, prioritization becomes necessary. Testing may be restricted to people in priority groups, including symptomatic, vulnerable or hospitalized patients, leading to high test positivity rates. Only South Africa has an open test policy with the three other countries implementing a policy of prioritizing symptomatic or vulnerable groups. With so many asymptomatic cases, targeting and recruiting of patients for testing poses significant challenges. As antigen testing becomes available, adapted testing strategies will be required to capture changes in diseases dynamics. Broader availability to this form of tests could help alleviate some of the pressure on bottlenecks inhibiting more widespread access to PCR tests.[17]

Figure 2.3 – Testing Rates in Africa



[16] Ondoa et al., 'COVID-19 Testing in Africa: Lessons Learnt'.
[17] Ondoa et al., 'COVID-19 Testing in Africa: Lessons Learnt'.

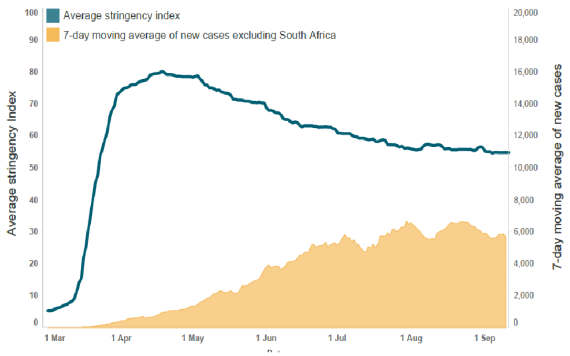
2.5 Public health and social measures (PHSMs)

In an effort to suppress transmission of the virus, countries implemented an array of public health and social measures (PHSMs), including recommending that people wash their hands, wear masks, and maintain two meters of separation from others (an activity termed social distancing). Governments mandated capacity limitations on indoor gatherings and public transportation, cancelled large sport matches and religious gatherings, closed schools, and implemented society-wide lockdowns or curfews. PHSMs became critical public health tools for managing the pandemic, particularly in the earliest stages when knowledge about the virus was still lacking.

In many African countries, these restrictive measures were implemented even before significant case numbers were detected in an effort to prevent widespread transmission while allowing for health systems to prepare. The lack of intensive care support in most African countries and the developing scenario in China, Northern Italy and New York City, impacted the rapid and strict enforcement of PHSMs across much of Africa.

With strict PHSMs implemented in early March, African countries were largely able to contain the virus between March and May. At the same time, African countries scaled up their testing capacity, contact strategy and treatment capacity. Minor loosening of PHSMs in June and July coincided with an increase in reported cases across the continent (Figure 2.4); however, the epidemic rapidly grew in South Africa (Figure 2.5). The average PHSMs stringency[18] across Africa continued to decrease gradually into October, although some countries have reinstated measures in November as Africa entered its second wave.

Figure 2.4: Ave Stringency Index & 7 Day Moving Average (excluding South Africa)

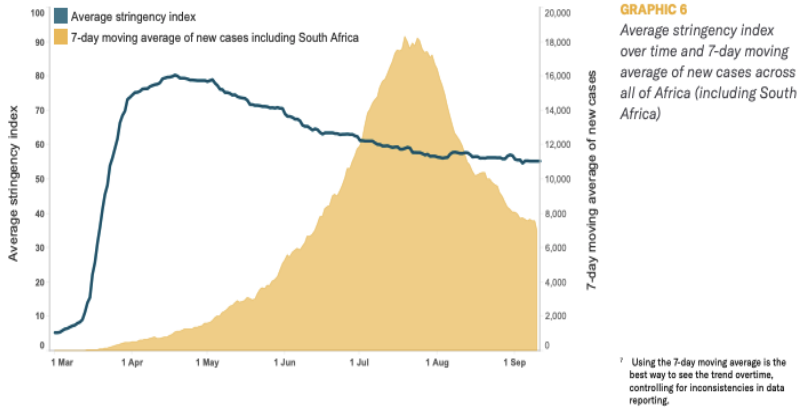


GRAPHIC 5
Average stringency index and 7-day moving average of new cases across all of Africa (excluding South Africa)

Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

[18] The Oxford Stringency Index is a composite measure based on nine indicators, which include school closures, workplace closures, and travel bans, which are rescaled to a value from 0 to 100 (100 = strictest). This map shows stringency as of 10 September and does not indicate how strictly PHSMs are enforced.

Figure 2.5: Ave Stringency Index & 7 Day Moving Average (including South Africa)



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

PHSM effectiveness relies on widespread and sustained behavior change. The extent to which citizens adhere to PHSMs is the prime indicator of how effective they will be in reducing transmission. The success of PHSMs relies on clear public health messaging and personal behavior change and community engagement. A critical component of any governments' ability to implement PHSMs effectively is peoples' acknowledgement of their value, and their ability to adhere to them. To encourage adherence, governments must consider addressing the barriers to adherence that certain populations face (e.g., providing financial support and food aid to people whose livelihoods are most affected by lockdowns, such as street vendors or informal sector workers). To identify measures that have a higher likelihood of acceptance, it is critical to monitor public support, adherence, and overall trust and confidence in the government response.

An August 2020 survey from the Partnership for Evidence-Based COVID-19 Response (PERC) of 24,000 respondents in 18 countries across Africa provides a snapshot of population support for and self-reported adherence to certain PHSMs.[19] The data indicates the level of national acceptability, or understanding that a measure is important, as well as the proportion of respondents that reported they adhered to such measures in the previous week. An individual's likelihood to adhere to a given PHSMs can change over time, and is influenced by a number of factors including government loosening or tightening of policies (as well as new guidelines or recommendations), individual risk perception, barriers to adherence or incentives to

[19] Partnership for Evidence-Based Response to COVID-19 (PERC). (September 2020). *Responding To COVID-19 In Africa: Using Data To Find A Balance.* Retrieved from https://preventepidemics.org/wp-content/uploads/2020/05/PERC_Regional_5-6-2020.pdf (Accessed 27 November 2020).

implementation, and cultural norming. It is important that countries continue to monitor changes in acceptability and adherence to support communication about and adaptation of policies overtime.

The survey found that public support for PHSMs was relatively high in the 18 African countries surveyed by PERC. Though this data suggests that most people have basic knowledge of COVID-19 and the measures that can prevent its spread, self-reported adherence to these measures was much lower among respondents. Self-reported adherence to personal measures (for example, hand washing, social distance, face mask use) were higher than for measures that restrict economic activity and public gatherings. However, this is somewhat to be expected, as most countries had relaxed stay-at-home orders at the time of the survey. Knowledge of the importance of handwashing, masks and social distancing was high across the 18 countries PERC surveyed, including the five countries highlighted in this report.

Although PHSMs are potent tools for curbing the spread of COVID-19, they do come with social and economic costs if not clearly communicated and targeted to highest burden areas. Policymakers are left to make tough decisions about how best to balance saving lives (e.g., morbidity and mortality from COVID-19) against livelihoods and social disruption (e.g., income loss, food insecurity and social isolation). Populations are particularly vulnerable in contexts where poverty is already high and there is a lack of social safety nets. With limited information, and the need for rapid action, national and local-level policymakers raced to find an optimal set of policies that would limit the spread of COVID-19 without causing irreparable social disruption.

2.6 Country Specific Analyses

The burden of disease, government responses, and public support for PHSMs differed widely across the African continent. This section takes a closer look at the interplay between epidemiologic data, government implemented PHSMs (including their timing), and adherence to PHSMs in five of the most populous countries in Africa: Egypt, Ethiopia, Kenya, Nigeria and South Africa.

Egypt became the first country on the continent to declare a COVID-19 case on 14 February 2020, followed by Nigeria on 28 February; South Africa on 6 March; and Ethiopia and Kenya both on 13 March. All five countries implemented movement restrictions, border closures and stay-at-home orders of varying severity with the intention of limiting the spread of the virus from international travel. Despite these initial efforts, each country eventually reached community transmission of the virus. South Africa continues to experience the highest number of COVID-19 cases and deaths in Africa, and rivals other countries globally. As of 27 November, Egypt has the third-largest number of total COVID-19 cases on the continent. Of the five countries examined here, only Nigeria and Ethiopia are testing at rates above the recommended threshold, with test per case ratios of 28 and 11, respectively. (See Table 2.2)

Table 2.2: Epidemiological and testing data for Egypt, Ethiopia, Kenya, Nigeria and South Africa, 27 November 2020.

Country	Population	Total cases[1] (cases per 100,000 pop)	Testing policies[1]	Total tests[1] (tests per 1,000 pop)	Percent positive[1]	Test/case ratio[1]	Case Fatality Rate
Egypt	102,334,404	114,832 (112)	Anyone with symptoms	Data not available[20]	Data not available	Data not available	5.7
South Africa	59,308,690	761,941 (1,285)	Open public testing	5,382,794 (90.76)	11.2%	8.9	2.7
Ethiopia	114,963,588	108,438 (94)	Anyone with symptoms and key groups	1,620,978 (14.1)	10%	10	1.5
Nigeria	206,139,589	67,220 (33)	Anyone with symptoms and key groups	756,530 (3.67)	3.8%	26.5	1.7
Kenya	53,771,296	81,656 (152)	Anyone with symptoms and key groups	886,146 (16.48)	11.1%	9	1.7

Sources:

[1] Hannah Ritchie et al., 'Coronavirus (COVID-19) Testing' Our World in Data , https://ourworldindata.org/coronavirus-testing. (Accessed 27 November 2020).

[2] John Nkengasong, 'Let Africa into the Market for COVID-19 Diagnostics' *Nature News* (Nature Publishing Group, April 28, 2020), https://www.nature.com/articles/d41586-020-01265-0 (Accessed 27 November 2020).

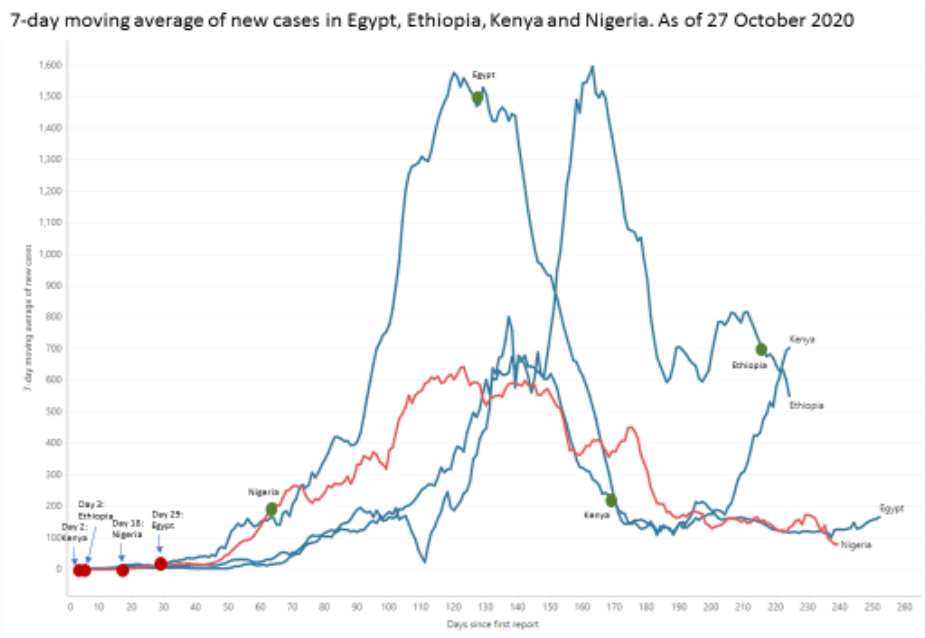
[3] Sarah Wild, 'African Countries Scramble to Ramp up Testing for COVID-19' *Scientific American* (Scientific American, June 16, 2020), https://www.scientificamerican.com/article/african-countries-scramble-to-ramp-up-testing-for-covid-19/. (Accessed 27 November 2020).

[4] 'Africa CDC Leads Continental Response to COVID-19 Outbreak in Africa: Statement by the Director of Africa CDC' Africa CDC, March 26, 2020, https://africacdc.org/news-item/africa-cdc-leads-continental-response-to-covid-19-outbreak-in-africa-statement-by-the-director-of-africa-cdc/. (Accessed 27 November 2020).

[567] Partnership for Evidence-Base Response to COVID-19 (PERC). (September 2020). Finding the Balance: Public Health and Social Measures in Egypt. https://preventepidemics.org/wp-content/uploads/2020/09/09082020-egypt.pdf (Accessed 27 November 2020).

[20] Testing data is not available for Egypt during the timeframe used in this analysis per *Our World in Data*.

Figure 2.6: 7 day moving average of new cases Egypt, Ethiopia, Kenya, Nigeria



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

Public support for PHSMs was relatively high across the five countries. Though this suggests that most people have basic knowledge of COVID-19 and the measures that can prevent its spread, self-reported adherence to these measures was much lower among respondents. Most countries followed a similar pattern: support for and self-reported adherence to personal measures (hand washing, face mask wearing) were higher than for measures that restrict economic activity and public gatherings. As is the case in any outbreak, people's understanding of their personal risk of catching COVID-19 (their "personal risk perception") affects how likely they are to support and engage in preventive behaviors. PERC's survey found that while more than two-thirds of respondents agreed that many people in their country would be affected by COVID-19, less than one-third (29%) believed their own personal risk of infection was high.

Table 2.3 - Support for and Self-reported Adherence to Personal Protective Measures (August 2020)

Measure	Response	Egypt	Ethiopia	Kenya	Nigeria	South Africa
Personal measures						
Hand hygiene	Absolutely or somewhat necessary	97%	99%	98%	97%	99%
	Completely or mostly adhering	87%	91%	89%	89%	96%
Social distancing	Absolutely or somewhat necessary	94%	98%	96%	91%	95%
	Completely or mostly adhering	74%	90%	89%	75%	91%
Wearing a face mask	Absolutely or somewhat necessary	96%	98%	99%	97%	97%
	Completely or mostly adhering	74%	86%	96%	86%	97%
Public gathering measures						
Avoiding places of worship	Absolutely or somewhat necessary	70%	83%	74%	54%	87%
	Completely or mostly adhering	59%	59%	56%	49%	85%
Avoiding public gatherings and entertainment	Absolutely or somewhat necessary	88%	94%	92%	86%	92%
	Completely or mostly adhering	69%	76%	88%	71%	90%
Measures restricting economic activity						
Staying home	Absolutely or somewhat necessary	88%	89%	73%	63%	90%
	Completely or mostly adhering	58%	60%	51%	41%	81%
Reducing trips to the market or store	Absolutely or somewhat necessary	83%	96%	86%	74%	94%
	Completely or mostly adhering	65%	66%	77%	53%	86%

Source: PERC. Prevent Epidemics, December 16, 2020. https://preventepidemics.org/covid19/perc/. (Accessed 27 November 2020).

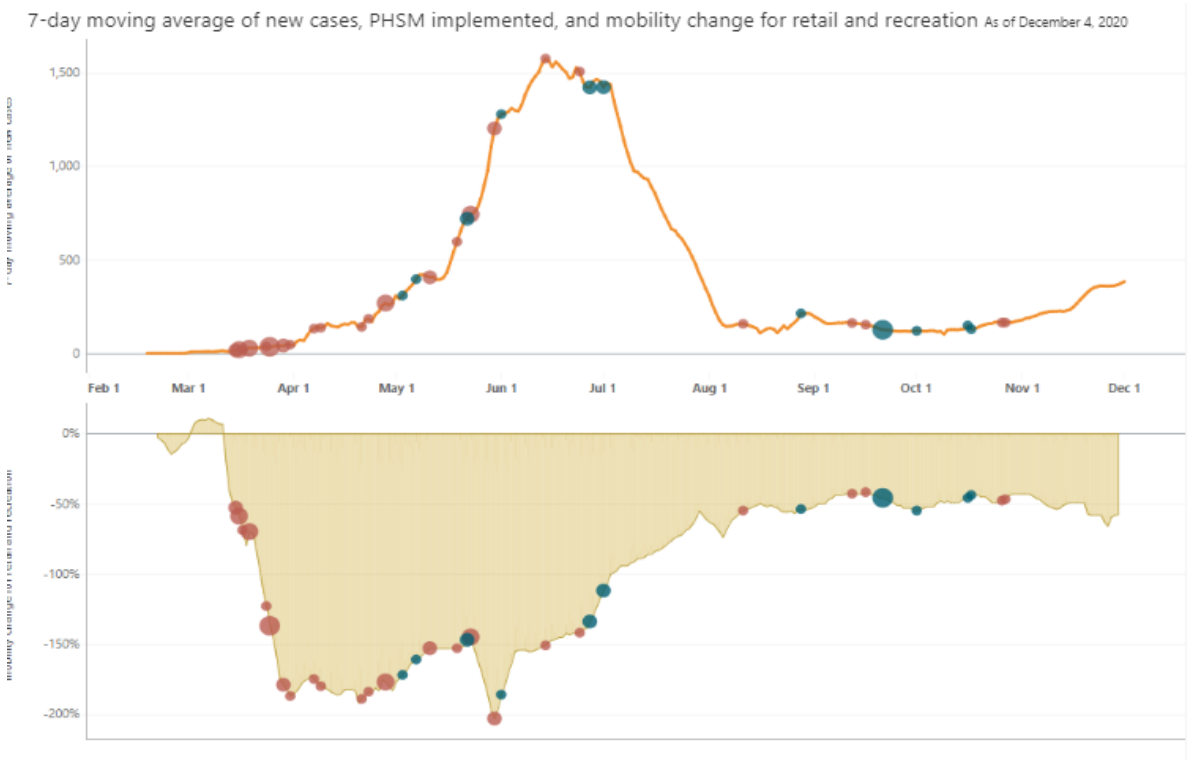
2.6.1 Egypt

As of 27 November 2020, Egypt is experiencing the third largest COVID-19 outbreak on the continent, with a total of 114,475 cases. However, Egypt has had a significant challenge reaching and maintaining adequate testing capacity throughout the response. The ratio of tests per confirmed cases has stayed below recommended guidelines since the beginning of June, and as of November the test positivity rate is as high as 19%. This high rate of positive tests along with a high CFR (peaking at 7.7%) suggest that many cases may not be identified across the country.

After detecting its first case in mid-February, Egypt began implementing PHSMs in late March, with the government instituting a series of restrictive measures, including closing schools and public transportation, and eventually implementing a nationwide curfew. The nationwide curfew remained in effect until late June. Reported cases peaked at the end of June before decreasing in July and August, despite lifting the curfew - and therefore increasing population mobility- at the peak of its reported cases. However, cases have once again started to increase at the beginning of November, with approximately 2,250 new cases reported each week.

PERC survey results showed that respondents in Egypt followed a similar pattern to other countries surveyed: they reported lower adherence to public health and social measures that limited their economic activity and higher adherence to personal measures (e.g., mask wearing, hand hygiene and social distancing). This trend may be driven in part by the low personal risk perception identified by the survey, with less than three in ten respondents in Egypt believing that they are personally at risk to contract the virus.

Figure 2.7: 7 day moving average of new cases in Egypt



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

2.6.2 Nigeria

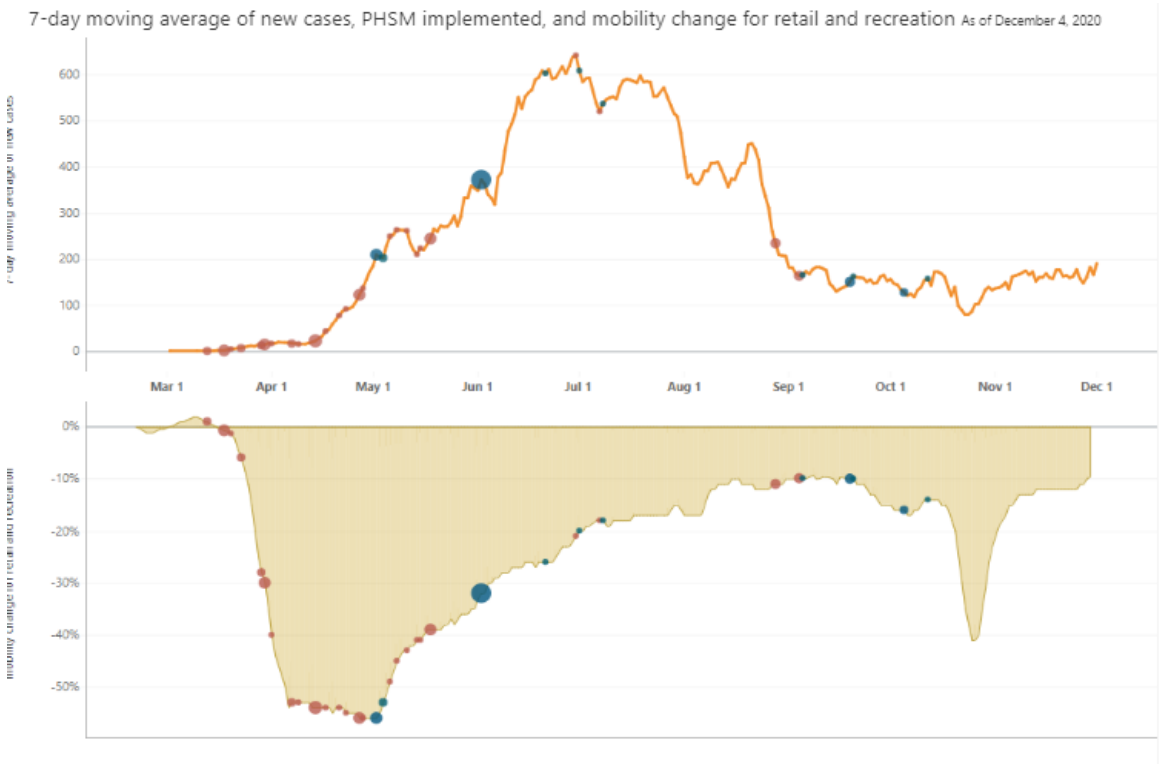
Nigeria reported its first COVID-19 case at the end of February and the epidemic grew at a similar pace to that of Egypt in the initial phases of the pandemic. Nigeria implemented nation-wide mobility restrictions, school closures and a curfew within three weeks of the first confirmed case - decreasing population movements - which allowed for case numbers to plateau. However, economic and social impact of PHSMs were quickly evident and President Buhari announced a phased plan to reopen the economy starting in early May. Since the end of July, the country has seen decreasing reported cases after an eight-week plateau. Due to the economic burden on communities, the country has primarily relied on implementing restrictive measures at a subnational level since. Nigeria is also managing several other outbreaks including cases of yellow fever, Lassa fever, monkeypox, cholera, and Vaccine Derived Polio Virus (cVDPV) complicating the response to COVID – 19.[21]

In total, as of 27 November 2020 Nigeria has recorded 67,220 cases. In May 2020, to meet the increasing demand for testing and to diversify testing methods beyond PCR for better access the Nigeria Centre for Disease Control activated 26 additional COVID-19 testing sites, utilizing their existing high throughput HIV molecular testing and tuberculosis GeneXpert instruments. However, test positivity in Nigeria has remained high throughout the pandemic at over 9% indicating that the case count may not reflect the full picture.

According to the PERC results, while more than six in ten respondents said they supported stay-at-home policies, only four in ten reported they had adhered to such measures in the past week. This most likely reflects the barriers to adherence in Nigeria related to the country's informal economy. The PERC survey found that more than 80% of Nigerians reported having lost income since last year and government assistance programs to mitigate this burden only reached around one in ten respondents as of August 2020.

[21] 'Yellow Fever – Nigeria' World Health Organization (World Health Organization, December 7, 2020), https://www.who.int/csr/don/24-november-2020-yellow-fever-nigeria/en/. (Accessed 27 November 2020).

Figure 2.8: 7 day moving average of new cases Nigeria



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

2.6.3 Ethiopia

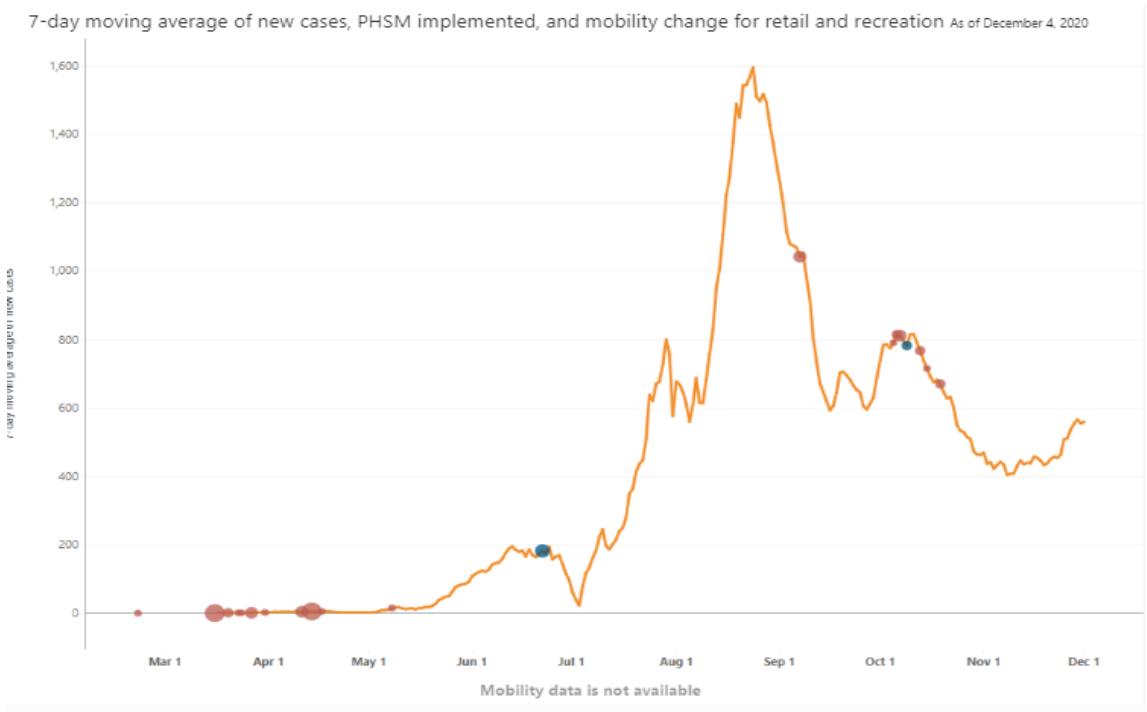
Ethiopia reported its first case on 13 March. When compared to the other four countries, Ethiopia's caseload originally grew at a relatively similar pace. The epidemic curve started to flatten around 15 days into the outbreak (approximately 30 March) after announcing a string of early PHSMs, including shutting down schools, prohibiting large gatherings, and placing restrictions on international and domestic travel. In April, the government declared a state of emergency that has remained in place since; however, Ethiopia never imposed a strict lockdown or stay-at-home order as was done in other African countries. In August, Ethiopia announced a nationwide, month-long testing campaign, which led to better detection of cases and likely contributed to the rapid increase in reported cases around that time. After reaching a peak of cases in late August of approximately 11,000 new cases a week, Ethiopia has had a steady decline in reported cases.

By 27 November, Ethiopia had reported 107,699 cases of COVID-19 and 1,672 deaths. [22] Between 23 July and 19 August, the number of new COVID-19 cases reported each week increased on average by 35%. In

[22] Worldometer, https://www.worldometers.info/coronavirus/ (Accessed 27 November 2020).

August, Ethiopia improved its testing capacity to 7,600 tests per day by reconfiguring its closed testing platforms to accommodate COVID-19 testing and engaging a mix of academic and animal health laboratories. Despite these examples of innovation and adaptation, testing capacity remains inadequate across the continent. As of late November, cases remain relatively stable at approximately 7,000 cases per week with a test positivity of 6.6%.

Figure 2.9: 7 day moving average of new cases Ethiopia



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

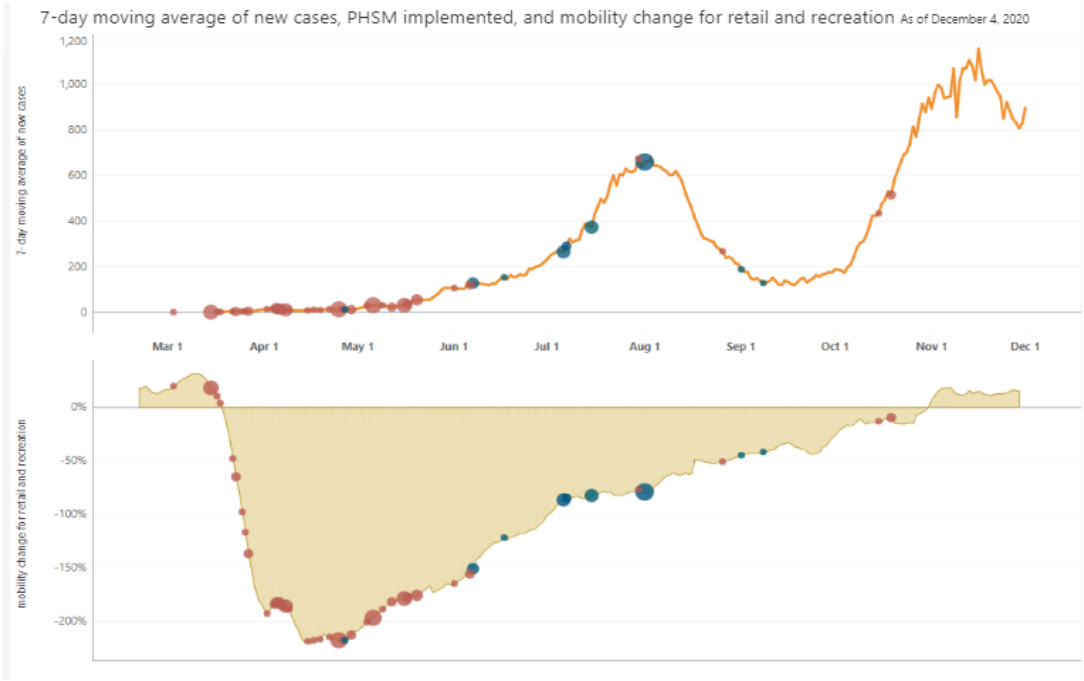
2.6.4 Kenya

After reporting its first case in mid-March, the COVID-19 epidemic in Kenya initially progressed slowly. Shortly after the first reported case, the Kenyan government quickly implemented stringent PHSMs, including announcing fines and mandatory quarantine for violators. In April, moderate stay-at-home in Kenya's largest cities were announced and curfews introduced. Reported cases remained relatively low and contained until June, when restrictions were lifted. Kenya continued to loosen PHSMs in June and July, corresponding to the surge in reported cases. Authorities extended the curfew and instituted bans on alcohol sales in restaurants in response to the growing caseload. By August, cases peaked at 4,621 new cases per week, followed by a decline until October when Kenya experienced another rapid increase in cases, suggesting the beginning of the second wave.

The second wave of cases is ongoing as of 27 November, and the second peak exceeded the first with a current new case count of more than 8,000 cases per week. Throughout November, test positivity remained above the recommended benchmark (10%) of at 9.3% and the CFR was 6.0% indicating that the actual case count could be much higher. By 27 November, Kenya reported 80,102 COVID-19 cases and 1,427 deaths. [23]

According to the PERC results, as of August 2020, support for and adherence to personal protective measures were high in Kenya, with nine in ten respondents reporting regularly wearing a face mask in the previous week. While almost eight in ten respondents in Kenya believed that COVID-19 would affect many people in their country, less than one-third of respondents thought their risk of becoming infected was high.

Figure 2.10: 7 day moving average of new cases Kenya



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

2.6.5 South Africa

After South Africa's first case was detected at the beginning of March, the South African government enforced a strict lockdown beginning in late March which delayed the onset of cases, but began reopening in May as the economic impact on communities intensified. Cases began to surge as mobility increased. The government adopted an alert-level system with five levels to clearly communicate restrictions. Despite

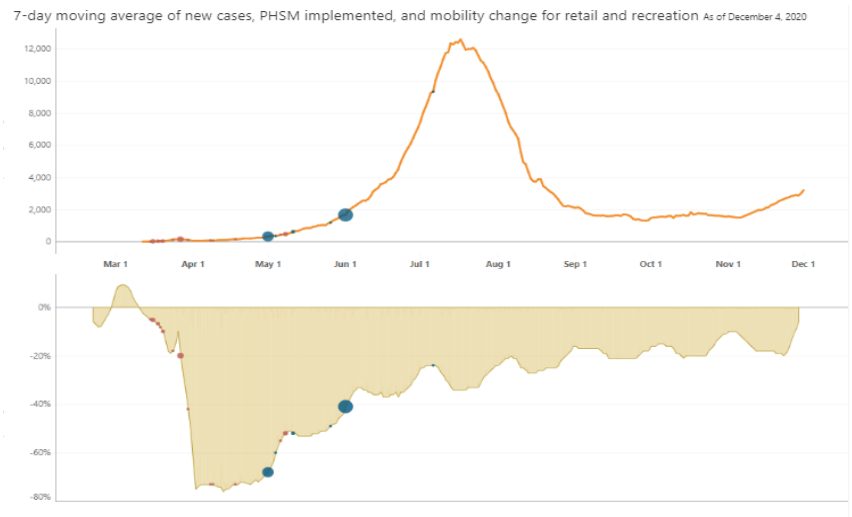
[23] Worldometer, https://www.worldometers.info/coronavirus/ (Accessed 27 November 2020).

increasing caseloads, restrictions were further relaxed in June, but as new reported cases peaked in July with a weekly caseload of 88,000, the government selectively tightened measures with a nightly curfew reinstated, ban on alcohol, and four-week closure of government schools. Most remaining restrictions were lifted on 17 August. A curfew, limits on gathering, and international travel restrictions remain in place, and nightclubs remain closed. Subsequently, cases started to increase again, albeit at a slower rate than the first wave, with approximately 9,000 new cases reported per week at the end of November.

South Africa is among those countries experiencing the highest case and death counts in the world. As of 27 November, South Africa had the highest number of confirmed COVID-19 cases on the continent, recording 778,571 cases alongside 21,829 deaths. [24] Despite having conducted more tests than any other country - over 5 million tests - on the continent, testing capacity has remained a challenge with long turnaround times and high test positivity at 14.5% at the end of November.

According to the PERC survey results, South Africa reported the highest levels of both support for and adherence to all PHSMs, and particularly so for measures restricting economic activity. This is most likely due to clear and consistent communication from the government, including the establishment of an alert level system to support communication, but also the high disease incidence compared to other countries at the time of the survey. Almost nine in ten respondents in South Africa agreed that many people will be infected by the virus, and almost half (48%) saw themselves as being at high risk of personally catching the virus.

Figure 2.11: 7 day moving average of new cases South Africa



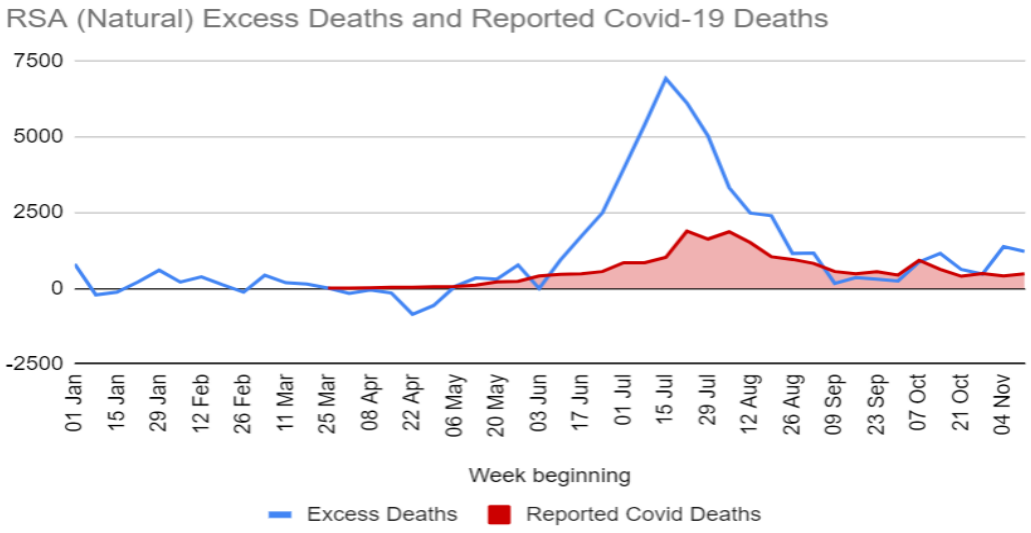
Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

[24] Worldometer, https://www.worldometers.info/coronavirus/ (Accessed 27 November 2020)

South Africa is one of the only countries on the continent able to publish weekly deaths from all causes. This weekly reporting shows excess mortality, a critical indicator that is largely absent from reporting across the continent. The South African Medical Research Council (SAMRC) reported 4,453 COVID-19 deaths from 6 May to 14 July, but documented 17,090 more deaths from natural causes than expected based on the historical average.[25] These excess deaths could be accounted for by unconfirmed COVID-19 deaths as well as increases in mortality due to tuberculosis, HIV, and non-communicable diseases as a result of the disruption of normal health services. This phenomenon was well-documented in the aftermath of the West Africa Ebola crisis in 2016, with mortality data indicating that combined deaths from malaria, HIV/AIDS and tuberculosis were comparable to that attributed to Ebola (10,600 versus 11,300).[26]

As shown in Figure 2.12, excess mortality declined rapidly in July but increased again in November. SAMRC reports that, "although more data are needed on the underlying causes of death, this observation is strongly supportive that a significant proportion of the current excess mortality being observed in South Africa is likely to be attributable to COVID-19."[27]

Figure 2.12 - South Africa Excess Deaths and Covid-19 Deaths



Source: https://www.samrc.ac.za/reports/report-weekly-deaths-south-africa (Accessed 27 November 2020)

[25] Owen Dyer, 'Covid-19: Excess Deaths Point to Hidden Toll in South Africa as Cases Surge', *BMJ*, July 30, 2020, m3038, https://doi.org/10.1136/bmj.m3038.
[26] Dyer, 'Covid-19: Excess Deaths Point to Hidden Toll in South Africa as Cases Surge'.
[27] 'Report on Weekly Deaths in South Africa', South African Medical Research Council, December 23, 2020, https://www.samrc.ac.za/reports/report-weekly-deaths-south-africa.

2.7 Maintaining essential healthcare services

The COVID-19 pandemic and its associated response have placed a significant strain on health systems and disrupted access to non-COVID-19 healthcare across the globe. In Africa, the secondary impacts of COVID-19 on access to healthcare have arguably been the most severe, with the virus exacerbating healthcare worker shortages which existed prior to the pandemic. The persistent shortage of personal protective equipment (PPE) continues to be a major issue in Africa, exposing frontline workers to the virus and fostering stigma towards healthcare workers. In July, WHO AFRO reported that more than 10,000 healthcare workers have been infected with COVID-19, which is considered a significant underestimation due to lack of standardized reporting systems.[28] In August, South Africa reported that more than 27,000 healthcare workers had tested positive for COVID-19 and 240 had died.[29]

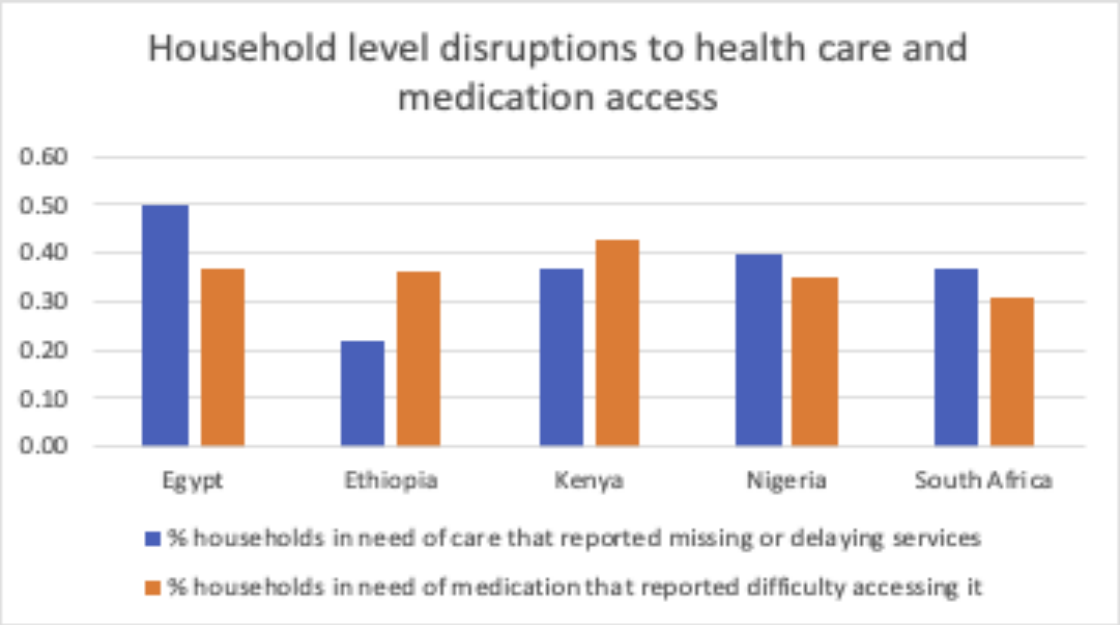
Disruptions to essential health services – broadly defined as communicable disease prevention, management of chronic health conditions, emergency care, and provision of life-saving medicines, among other services – have been synonymous with epidemics, conflicts and emergency situations of the past.[30] [31] [32] During the 2014- 2016 Ebola Virus Outbreak in West Africa, there were more than 10,000 excess deaths from diseases other than Ebola, including maternal deaths, malaria, HIV/AIDS and Tuberculosis.[33] In Africa, COVID-19 threatens to undo decades of progress that have been made in reducing disease and increasing life expectancy, especially as it relates to prevention and treatment of non-communicable diseases.

The full impact of COVID-19 on access to and use of health services in Africa is still yet to be determined, however early signs point to major disruption. In PERC's survey in August 2020, 44% of respondents said that they or someone in their household in need of care had delayed or skipped services since the start of the pandemic (ranging from 82% in Tunisia to 22% in Ethiopia). Healthcare disruptions were highest

[28] WHO, 'Over 10 000 Health Workers in Africa Infected with COVID-19', WHO | Regional Office for Africa, July 23, 2020, https://www.afro.who.int/news/over-10-000-health-workers-africa-infected-covid-19. (Accessed 27 November 2020).
[29] 'Over 27,000 Health Workers Infected with Covid-19 in South Africa', AS.com, August 14, 2020, https://en.as.com/en/2020/08/14/latest_news/1597361222_915673.html. (Accessed 27 November 2020).
[30] Jess Alan Wilhelm and Stéphane Helleringer, 'Utilization of Non-Ebola Health Care Services during Ebola Outbreaks: A Systematic Review and Meta-Analysis', *Journal of Global Health* 9, no. 1 (June 2020), https://doi.org/10.7189/jogh.09.010406. (Accessed 27 November 2020).
[31] N. Banatvala, 'Conflict and Health: Public Health and Humanitarian Interventions: Developing the Evidence Base', *BMJ* 321, no. 7253 (July 8, 2000): 101–5, https://doi.org/10.1136/bmj.321.7253.101. (Accessed 27 November 2020).
[32] M Carballo, S Daita, M Hernandez, 'Impact of the Tsunami on Healthcare Systems - M Carballo, S Daita, M Hernandez, 2005', *Journal of the Royal Society of Medicine*, 2017, https://doi.org/10.1177/014107680509800902. (Accessed 27 November 2020).
[33] Alyssa S. Parpia et al., 'Effects of Response to 2014–2015 Ebola Outbreak on Deaths from Malaria, HIV/AIDS, and Tuberculosis, West Africa', *Emerging Infectious Diseases* 22, no. 3 (March 2016): 433–41, https://doi.org/10.3201/eid2203.150977. (Accessed 27 November 2020).

among those with health problems and living in urban areas. Half of respondents with long-standing illnesses (e.g., diabetes, HIV) reported disruptions to accessing healthcare. Among the five focus countries of this report, respondents in Egypt reported the most disruption to accessing healthcare services, whereas respondents in Kenya reported the most difficulty accessing medication.

Figure 2.13: Household level disruptions to health care and medication access



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

In an early November, the WHO concluded that an estimated 1.37 million children across Africa missed vaccinations that would protect them against TB, and about 1.3 children under age one missed a measles vaccine.[34] WHO had conducted an initial survey of health service providers to assess the impact on five key essential health services that include outpatient consultation, inpatient admission, skilled birth attendance, treatment of confirmed malaria cases and provision of the combination pentavalent vaccine in 14 countries. The preliminary results found sharp declines in these services between January and September 2020 compared with the two previous years. In September 2020, UNICEF published Tracking the Situation of Children during COVID-19 Dashboard which found that Kenya, Nigeria, and South Africa all reported substantial decreases in outpatient care for childhood infectious diseases. (Table 2.4)

[34] WHO, "PRESS RELEASE: COVID-19 Hits Life-Saving Health Services in Africa," worldhealthorganization.cmail20.com, November 5, 2020, https://worldhealthorganization.cmail20.com/t/ViewEmail/d/B6CD29A1AF6AF8EA2540EF23F30FEDED/7979A0F208459AE6419C69E1CEBE89F9. (Accessed 27 November 2020).

Table 2.4 - UNICEF - Tracking the situation of children during COVID-19, September 2020.

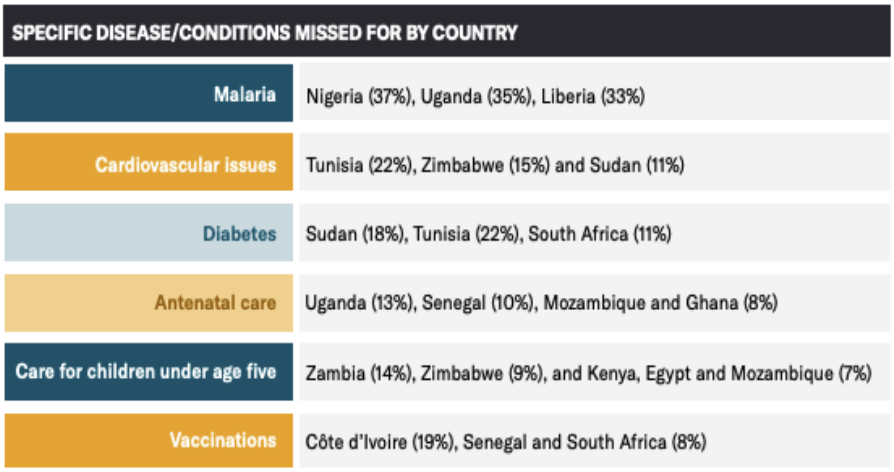
As compared to this time last year, what is the approximate level of COVID-19 related change in:	Ethiopia	Kenya	Nigeria	South Africa
Routine Vaccinations (DTP3 as proxy)	Increased	10-24% drop	10-24% drop	<10% drop
Outpatient care for childhood infectious diseases (IMCI services, treatment for Malaria, TB, HIV, etc.)	No change	50-74% drop	10-24% drop	25-49% drop
Maternal Health services (Antenatal care, Obstetric care and Post-natal care)	No change	<10% drop	10-24% drop	Increased
Family planning services	Increased	<10% drop	10-24% drop	10-24% drop
Testing for mothers in ANC, HIV-exposed infants	Increased	10-24% drop	10-24% drop	<10% drop

Data from Ethiopia were lacking from the survey, and Egypt was not surveyed.

Source: UNICEF, 'Rapid Situation Tracking for COVID-19 Socioeconomic Impacts' UNICEF DATA, April 14, 2020, https://data.unicef.org/resources/rapid-situation-tracking-covid-19-socioeconomic-impacts-data-viz/. (Accessed 27 November 2020).

The survey found that the types of services missed often align with the burden of disease in a given country (e.g., diabetes in Tunisia and Sudan; malaria in Uganda and Nigeria). Overall, about 15% of respondents in PERC's survey that reported disruptions to healthcare said the services they missed were for malaria, including more than 30% in Nigeria. This, coupled with reports of disruptions to insecticide-treated net campaigns, could lead to major increases in deaths attributed to malaria. In South Africa, healthcare disruptions were driven by both demand and supply-side factors. In PERC's survey, safety concerns and affordability of care were key barriers to access, however, more than half of respondents reported that mobility restrictions, coupled with health facility disruptions, contributed to their missing or delaying services. Notably, many of these barriers to health access existed prior to COVID-19 and have only been exacerbated by the virus.

Figure 2.14: Specific disease/conditions missed for by country



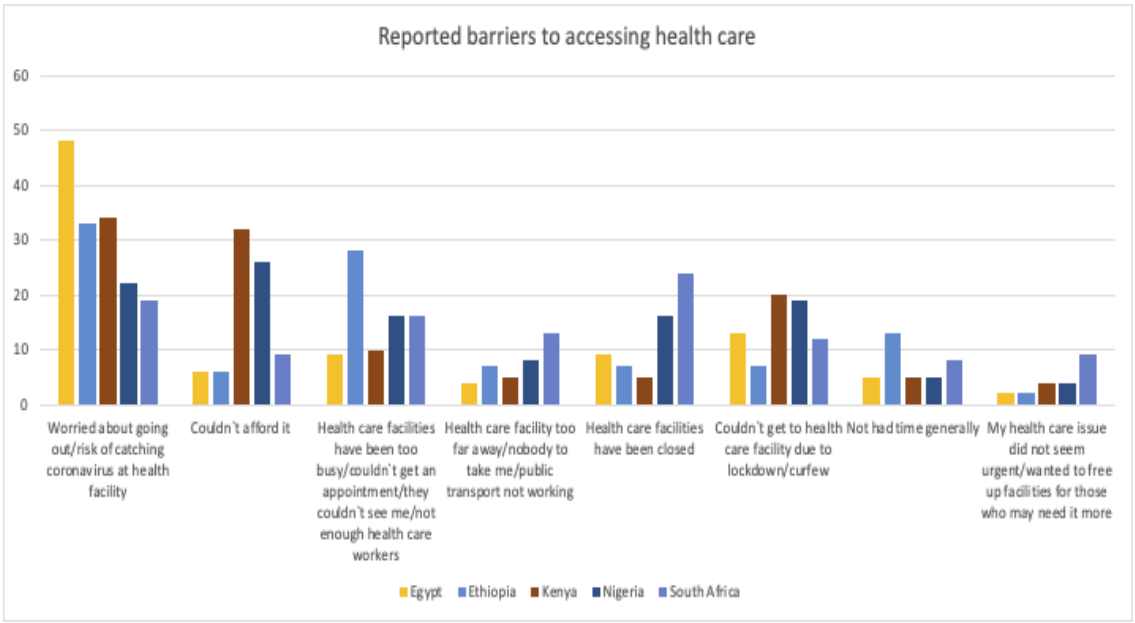
SPECIFIC DISEASE/CONDITIONS MISSED FOR BY COUNTRY	
Malaria	Nigeria (37%), Uganda (35%), Liberia (33%)
Cardiovascular issues	Tunisia (22%), Zimbabwe (15%) and Sudan (11%)
Diabetes	Sudan (18%), Tunisia (22%), South Africa (11%)
Antenatal care	Uganda (13%), Senegal (10%), Mozambique and Ghana (8%)
Care for children under age five	Zambia (14%), Zimbabwe (9%), and Kenya, Egypt and Mozambique (7%)
Vaccinations	Côte d'Ivoire (19%), Senegal and South Africa (8%)

FIGURE 15. Countries with the most disruptions to specific disease/conditions

Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

Changes in access due to lockdowns or curfews were reported in all five countries of focus, but were the highest in Kenya and Nigeria, who also both reported issues with affordability. Nearly half of respondents in Egypt reported they delayed or missed services due to fear catching COVID-19. In South Africa, the most common barrier reported was that health facilities were closed, which may be a reflection of the high disease burden at the time of survey.

Figure 2.15: Reported barriers to accessing health care



Source: PERC (2020) Responding to Covid-19 in Africa: Using data to find a balance Part II.

2.8 Conclusion

The COVID-19 pandemic is still far from over. With vaccines on the horizon but their timelines still unclear for most Africa countries, it may be years until all countries in Africa reach herd immunity. The introduction of COVID -19 and the exponential growth that was seen in many countries was slowed by early action by African governments and the experience of local teams in responding to highly infectious outbreaks. Initial contact tracing, quarantine, emphasis on personal hygiene, and social distancing all seem to have contributed to slowing the spread of the virus. The use of PHSMs to reduce mass gatherings impacted the spread of the virus but also caused significant economic and social disruption.

As we learn more about the virus and the severity of the disease in the African context, countries will need to use data to maintain the balance of disease control and economic hardship, especially at the household level. Limited testing capacity remains an Achilles heel in the surveillance system of many countries calling into question the accuracy of case counts and impact of the pandemic on populations. Additional surveillance data that includes mortality surveillance and impact on essential health services are important additional pieces of data that can support the understanding of disease dynamics and the secondary impacts.

-3-

The Economic Impact of COVID-19

3.1 Introduction: Direct Economic Impact and the Consequences of Interventions

The COVID-19 pandemic and ensuing crisis has had an immediate and lasting economic impact on Africa. This comes at a crucial time in Africa's growth and development. The continent is at a pivotal moment in terms of demographic trends and urbanization, economic progress and developmental expectations, and, especially relevant in 2020, the advent of technology, global connectedness and the economic modernization of Africa.

A fall in local productivity and the disruption of global value chains has severely impacted African industries by halting exports and essential capital flows, and decimating a business sector dependent on trade, investment and international markets. In addition to this, the economic consequences of Public Health Social Measures (PHSMs) are evident, but vary in severity across the continent. Stringent and prolonged lockdown measures designed to reduce the spread of the virus and avoid overwhelming healthcare systems – particularly hospitals – have increased the economic impact and duration of the crisis for many African countries. These measures, in the interest of public health concerns and limited resources, have come with high costs and dire consequences. One estimate, by the United Nations Economic Commission for Africa (UNECA) said that each month of full lockdown across Africa would cost the continent 2.5% of its annual gross domestic product (GDP).[35] The COVID-19 curve may have been temporarily 'flattened', but so too was the curve for economic growth and development in Africa.

According to a cross-section of multilateral organizations and research advisories tracking economic growth in Africa, including the World Bank, the International Monetary Fund (IMF) and the Africa Development Bank (AfDB), Africa's economy is expected to contract between -3.4% and -5.2% in 2020, sparking the first recession on the continent in 25 years, and reducing per-capita income to levels last seen in 2010.[36]

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[35] 'COVID-19 Lockdown Exit Strategies for Africa,' (*United Nations Commission for Africa*, May 2020). https://repository.uneca.org/handle/10855/43760. (Accessed 25 November 2020).

[36] A. Gregory, 'Coronavirus could reverse a decade of progress in tackling global poverty, UN study suggests' (Independent.co.uk, 19 July 2020) https://www.independent.co.uk/news/world/coronavirus-poverty-inequality-index-hunger-united-nations-ophi-a9627276.html. (Accessed 7 November 2020). The Latin American economy is expected to contract by 8.1% in 2020. Most countries will not get back to pre-pandemic levels of GDP until 2023, and per capita income will reach 2019 levels by 2025, suggesting a deeper and more severe impact than any other region in the world. S. Pienknagura, J. Roldós and A. Werner, 'Pandemic Persistence Clouds Latin America and Caribbean Recovery', (IMFBlog Insights and Analysis on Economics and Finance).

The economic collapse or slowdown of the largest economies in Africa has weighed heavily on the continent's performance. Comprising around 60% of the total GDP of Africa, the growth and performance of South Africa, Nigeria and Egypt – three of the five countries covered in this study – is a crucial indicator of the overall tally of numbers and projections for the continent. Over the last five years, the lackluster performance of South Africa and Nigeria has undoubtedly weighed down economic growth in Africa. This has been further dampened by declining levels of foreign investment and business confidence across the continent as a result of a number of factors ranging from political instability, insecurity, inadequate regulatory reform and liberalization.

The impact of COVID-19 and the consequences of PHSMs is varied across the continent. This is clearly evident in the five countries covered in this study. As noted earlier, all responded relatively quickly to the virus, given the experiences of Europe and China in the early months of 2020. Countries like Egypt and South Africa were praised for their quick and decisive action, which undoubtedly curbed the spread of the virus. Kenya and Nigeria implemented more progressive restrictions, with specific targets. But in South Africa, unlike Egypt and the others, the nature and severity of the lockdown prolonged and intensified the economic collapse. The other countries implemented less severe economic restrictions over a shorter period of time. They also appear to have factored in crucial areas of revenue and productivity, mindful of maintaining some continuity and, most importantly, geared for recovery.

In all cases, except in South Africa, business confidence has begun to recover. This is a crucial pre-requisite in attracting international capital, and a resumption of investment and trade activities, on which all these countries rely.

The pandemic will continue to impact regional integration and connectivity in Africa. The lockdowns immediately hampered the movement of goods, services, capital and, most importantly, people across borders. It also brought into question the responsiveness of sub-regional blocs and the state of Intra-Africa trade and connectedness, in a region that requires liberalization and connectivity to build economies of scale, to compete and integrate into global value chains, essential to recovery and sustainable progress.

COVID-19 may provide the spark for long-delayed integration and structural reforms that will yield a competitive, modern and open economic landscape in Africa. But this reset will be driven by individual country responses to COVID-19 and their desired approach to recovery. This chapter provides a brief insight into the current response and pathways chosen by five countries that provides some indication to the post-pandemic African trajectory.

3.2 Comparative Economic Consequences of COVID-19 and the Public Health Social Measures Adopted

Egypt, Ethiopia, Kenya, Nigeria, and South Africa are all leading countries in their respective sub-regions, and carry significant weight in terms of economic size and trajectory, population, and political influence in the broader African context. A variety of factors including demographics, geographical size, urbanization, levels of development, political systems, and healthcare facilities distinguish each country and its unique challenges. There can be no single solution or approach to dealing with a pandemic like COVID-19 and the ensuing economic repercussions that follow. In addition to this, unfolding evidence suggests that responses from other parts of the world may not be contextually appropriate for African countries. There is a growing need for country-specific data and a tailored response that is mindful of the delicate balancing and trade-offs associated with public health and economic security.[37]

South Africa, Nigeria, and Egypt are the three largest economies in Africa. Collectively, they comprise around 60% of Africa's GDP. Ethiopia, with 115 million people, has the second largest population in Africa (after Nigeria), with over 70% of Ethiopians under the age of thirty. It is one of the most exciting economic growth prospects on the continent, having enjoyed consistently high growth for nearly 20 years. Kenya, as the leading nation behind the East African Community (EAC), is widely regarded as a champion of regional integration and innovation. It has also enjoyed strong economic growth over the past decade and is home to a number of emerging pan-African firms that are driving growth and innovation across the continent.

In 2020 South Africa and Nigeria will experience their sharpest economic decline in more than 20 years. According to the IMF and other multilateral agencies, South Africa is expected to contract by up to 8% and Nigeria will contract by at least 5%. This is off a dismal growth record in both countries over the past five years. The Egyptian economy will slow dramatically from the previous levels above 5%, but still record growth of around 2%. (Figure 3.1)

Economic growth in Ethiopia and Kenya is expected to reach 2.6% and 0.6% respectively in 2020. This is substantially lower than the high rates of growth experienced in those countries over the past decade.

[37] A. Mishra, 'Africa and COVID-19: Impact, Response, and Challenges to Recovery', (Occasional Paper, Observer Research Foundation, September 2020).

Figure 3.1: GDP Percentage Growth Rates 2018-2021

Country	2018	2019	2020 Forecast	2021 Forecast
Egypt	5.3	5.6	1.9	2.3
Ethiopia	7.8	9.0	2.6	3.3
Kenya	6.4	5.5	0.6	5.0
Nigeria	1.9	2.2	-5.3	1.5
South Africa	0.8	0.2	-8	2.6

Source: Averages calculated from the World Bank (www.worldbank.org), IMF (www.imf.org) and AfDB (www.afdb.org)

3.2.1 Country-specific Economic Impacts and Consequences of PHSMs

Egypt

Egypt was the first country in Africa to record a case of COVID-19, in mid-February 2020. The government responded quickly and decisively by implement lockdowns, closing schools and halting international travel along with other measures to avoid the spread of the virus. Close monitoring followed, and restrictions were eased dramatically by June when curfews were lifted, travel resumed, and economic activity picked up.

While the pandemic and PHSMs triggered a period of economic uncertainty and upheaval in Egypt, the immediate impact was less severe than in other African countries like South Africa and Nigeria. This may be attributed to a careful consideration of the social and economic consequences of PHIs, resulting perhaps in less stringent measures and for a shorter duration.[38]

COVID-19 ended a relatively long period of macroeconomic stability, high growth, and improving levels of investment, foreign reserves, and overall fiscal balance. This relative strong standing in fundamental structures of the economy, coupled with large public sector construction and growth in the telecommunications sector driving much-needed investment when revenues from tourism are at an all-time low, is what could save Egypt from slipping into recession in 2020.[39]

[38] 'Egypt Takes Proactive Approach to Limit the Pandemic's Fallout' (International Monetary Fund Country Focus, July 9 2020) https://www.imf.org/en/News/Articles/2020/07/09/na070920-egypt-takes-proactive-approach-to-limit-the-pandemics-fallout (Accessed 30 September, 2020). See also Impact of the Coronavirus (Covid 19) on the African Economy *(African Union, Addis Ababa, 2020)* https://www.tralac.org/documents/resources/covid-19/3218-impact-of-the-coronavirus-covid-19-on-the-african-economy-african-union-report-april-2020/file.html/ (Accessed 25 November, 2020).

[39] 'The World Bank in Egypt,' https://www.worldbank.org/en/country/egypt/overview#1 (Accessed 25 November 2020).

Tourism, and especially international tourism, is a key sector in the Egyptian economy. As a result of restrictions and the grounding of flights, foreign reserves dropped sharply. This was further exacerbated by large-scale capital outflows as the COVID-19 crisis unfolded and essential revenue from the Suez Canal dried up, with a severe downturn in global trade.

Apart from the sudden and dramatic loss in revenue, unemployment rose 7.7% to 9.6% from the first to the second quarter of 2020. This impacted overall productivity, and business confidence immediately plummeted. But some reports suggest confidence is returning and Egypt is expected to resume its position as a leading recipient of foreign direct investment (FDI) in 2021. While the rest of the North African region experienced a drop in investment in recent years, Egypt defied the trend with an increase of 11% FDI in 2019, on the back of growing business confidence in the country.

The Egyptian economy was expected to grow between 3.5 and 4% in 2020. Following the COVID-19 crisis, most recent forecasts anticipate growth of below 2% this year. Uncertainty around the pandemic is expected into 2021, which will likely result in low levels of growth for the next year with a rebound to 2018 and 2019 levels by 2022.

Ethiopia

Ethiopia implemented a number of early, well-coordinated and progressive PHSMs in response to COVID-19 in mid-March when the first case was detected. This was especially important in a country with a lower level of development than the other countries in this study. Ethiopia also has particularly fragile healthcare system for a population of 115 million people and is simultaneously battling other communicable diseases like Tuberculosis. The economic consequences of the PHIs are particularly relevant given Ethiopia's dependency on international aid and the export of primary and manufactured goods.

Despite a dramatic downward revision of growth estimates following the COVID-19 pandemic, Ethiopian growth projections are expected to be better than most across the continent. Like Egypt, Ethiopia's PHI responses were both measured and tailored toward the social and economic landscape of the country. Given that nearly 80% of the population resides in rural areas, Ethiopia is deeply dependent on agriculture and rapid economic recovery is essential.

Following decades of double-digit growth, fueled predominantly by public infrastructure projects that have led into mega geo-strategic projects around power, water, rail, and ports, there is now a concerted effort by the Ethiopian government and leading businesses to reduce debt and increase efficiency through a process of liberalization and modernization. This will also attract much-needed foreign investment and private

capital required for the next stage of industrialization and global integration.[40] February 2021 has been marked as the deadline for the partial privatization of Ethiopia's telecommunication sector, which will generate substantial foreign capital. [41] Due to rising political tensions in parts of the country and an erosion of business confidence, Ethiopia has seen a drop in FDI, with a 25% contraction between 2018 to 2019. The COVID-19 crisis will, at the very least, halve economic growth expectations in Ethiopia. In 2020 growth will be below 3% and is expected to rise slightly to 3.5% in 2021.

Ethiopia is heavily dependent on financial aid and crisis support from multilateral lenders and aid agencies. The IMF has committed $411 million to Ethiopia's pandemic response and the World Bank has approved over $330 million in financing, in an effort to kickstart economic activity.[42]

The greatest concern in the medium-to-long term has been the closure of schools as a targeted PHSM. In Ethiopia, where a large proportion of the population is attending primary and secondary school, and where the economic future is dependent on an educated population, this is a concern, along with the resulting pressure on the broader social institutions of the country.

Kenya

Kenya's PHSM have been described as a more progressive and perhaps lighter version than those implemented in the other countries. The most obvious difference was a shortened duration of closures, curfews or grounding of flights, with the loosening of restrictions coming just 45 days after being implemented. The immediate economic consequences were, as a result, lower than the other countries studied, and economic recovery is, arguably, already underway.

Despite a seemingly 'lighter' approach to the pandemic, the Kenyan economy has been severely affected by both the COVID-19 and the locust infestation that has swept through East and the Horn of Africa. Following a period of strong economic growth, with a year-over-year average of 5.7% between 2015 and 2019, the Kenyan economy will grow by 1% at best in 2020. While the locust attacks have decimated food resources and export earnings, COVID-19 has eradicated tourism earnings and especially foreign reserves from international markets – especially Europe, as Kenyan industry and firms have become increasingly connected to global value chains from cut flowers and coffee, to international remittances.

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[40] For a detailed insight into the current standing and recent background to the Ethiopian economy, see '2020 Investment Climate Statements: Ethiopia' *(US Department of State, 2020 Investment Climate Statements)* https://www.state.gov/reports/2020-investment-climate-statements/ethiopia/ (Accessed 15 November, 2020).

[41] S. Marks, L. Prinsloo and S. Gebre, 'Ethiopia Telecom Auction Set For 2021 With Orange In Contention' *(Bloomberg.Com, 10 September, 2020).* https://www.bloombergquint.com/politics/ethiopia-telecom-auction-set-for-2021-with-orange-in-contention (Accessed 20 October, 2020).

[42] Blanchard, L, 'Ethiopia,' *(Congressional Research Service, In Focus)* https://fas.org/sgp/crs/row/IF10185.pdf/ (Accessed 25 November 2020).

Despite a buoyant investment outlook, FDI flows into Kenya dropped 18% in 2019, following the trend across the rest of East Africa, where flows decreased by around 10% on average. While the investment outlook for 2020 is not positive, large technology and healthcare projects bode well for an investment recovery in 2021.[43]

With restrictions lifted earlier than many other African countries, there appears to be an upswing in business confidence which suggests an economic growth recovery of around 5% in 2021. This is still well below what is needed in Kenya, but still higher than the expectations across other major African economies.

Nigeria

Nigeria faces a more serious challenge in implementing PHSMs than most other African countries, and especially of the five in this study. Limited resources, the informal nature of the economy and day-to-day living, and the high levels of density in urban areas make PHIs unsustainable. This forced the Nigerian government to loosen restrictions earlier than expected, which many believe has softened the economic blow of the PHIs in the country.

Despite an earlier loosening of PHSMs, Nigeria has suffered its worst economic contraction in more than a decade. With the crash of oil prices, along with COVID-19, Nigeria's economic output will shrink dramatically this year, resulting in 2020 being one of the worst years on economic record. This, along with recent floods and a shortage of maize production that are threatening a food crisis, is likely to have serious social ramifications.

Following a period of lackluster growth, characterized by ongoing fiscal and monetary constraints, the Nigerian economy will plummet deep into recession, recording worse than -6% economic growth mid-way through 2020, and anticipating an over -5% economic contraction come the end of the year. Given a prevailing dependency on oil, low levels of economic competitiveness across the board and ongoing uncertainty around COVID-19 into 2021, recovery is expected to be slow, with the most optimistic projections anticipating economic growth in the region of 1.5%, off a low base and below population growth rates in Africa's most populous country.[44] This will undoubtedly put enormous strain on monetary systems and responses, and increase the pressure on socioeconomic expectations around the country.

There remains much uncertainty around recovery in Nigeria in 2021. Low levels of investment are concerning and this follows a period of declining investment in Nigeria and West Africa in general, where

[43] 'Investment flows in Africa set to drop 25% to 40% in 2020,' *(United Nations Conference on Trade and Development)* https://unctad.org/news/investment-flows-africa-set-drop-25-40-2020/. (Accessed 15 September 2020).
[44] For a useful country overview, see: 'Nigeria,' *Economist Intelligence Unit*. https://country.eiu.com/nigeria. (Accessed 25 November 2020).

FDI dropped by over 20% in 2019, due largely to ongoing obstacles to investing in Nigeria and new regulations in the oil and gas sector.

South Africa

Despite its size and relative economic sophistication, the COVID-19 crisis appears to have impacted South Africa more extensively than most other African economies. South Africa experienced its most severe economic downturn in more than 25 years as a result of one of the strictest coronavirus lockdowns in the world. The PHSMs in South Africa forced all non-essential activities to shut down operations and a range of preventative measures that stifled e-commerce and crippled key industries for an extended period of time were implemented. In addition to hollowing out key industries and paralyzing large businesses, approaches taken to prevent the spread of COVID-19 also decimated the small business sector. This will have a lasting impact on the economy, as an estimated 98% of businesses in South Africa are in the Small, Medium and Micro Enterprise (SMME) domain. The SMME space contributed 38.2% of the turnover of all enterprises in the first quarter of 2019.[45]

A combination of the stringent lockdown measures and waning global demand has resulted in an expected economic contraction of -8% or more. South Africa also faces weak fiscal metrics and growing government debt, not to mention weakened business confidence, which threatens the country's credit rating and represents additional and ongoing risks to the country's economic profile and outlook.[46] Government compounded its weak revenue outlook (tax revenues are expected to drop by over $18.7 billion) by banning the sale of alcohol and cigarettes leading to billions in lost revenue.

The South African economy may recover some growth in 2021, but this is still far below what is required to address development needs and growing unemployment. Growth and business confidence appear to be slow in returning to South Africa, compared to other African countries. But South Africa's spiraling investment and business confidence was evident prior to the COVID-19 pandemic. In 2019 FDI decreased by 15%, despite large-scale investment projects in mining, manufacturing and service. Business confidence, increased investment and an enabling environment are key to recovery in South Africa.

Drops in investment and business confidence, along with growing government debt and high levels of unemployment are also reasons for great concern. At 28.1% in 2019, South Africa's unemployment is far higher than any other country in Africa and the world. While the numbers are disputed in 2020, there is a

[45] For a deeper perspective on the economic contribution of SMMEs in South Africa, see SMME Quarterly Update 1st Quarter 2019. *(The Small Enterprise Development Agency)*.http://www.seda.org.za/Publications/Publications/SMME%20Quarterly%202019-Q1.pdf. (Accessed 15 October 2020).
[46] 'The South African Economic Outlook,' (*Focus Economics*). https://www.focus-economics.com/countries/south-africa. (Accessed 20 September 2020).

generally accepted figure of an additional three million jobs lost during the COVID-19 lockdowns. Unemployment is more than double that recorded by countries in this study.[47] As a result of COVID-19 and the measures that were taken, unemployment in South Africa is expected to breach 50% in 2020, with youth unemployment rising well over 60%. Despite South Africa's impressively quick and decisive actions to curb the spread of the virus and manage the impact on the public healthcare system, the economic consequences of the PHIs adopted have been both devastating and potentially crippling in the longer term.

3.3 - COVID-19 Stimulus Packages and Economic Interventions

African governments were quick to respond to the COVID-19 pandemic. South Africa, in particular, was hailed for its swift and decisive action in combating and avoiding the spread of the virus. In most cases, the economic responses were equally as fast. But, in hindsight, and following the economic ramifications and tradeoffs of measures taken, economic responses could have been better informed, implemented, and tailored for specific countries. Both the response of the governments in this study and that of international agencies provide an interesting and instructive approach to managing the broader economics of pandemics for comparative purposes going forward. This, along with the recent and collective request for debt relief that came from African countries and the implications it carries, are important to track and consider in the overall picture.

Some examples of support from international financial institutions are:[48]

- The African Union COVID-19 Response Fund, set up in March 2020;
- The African Development Bank's COVID-19 Response Facility providing $10 billion to African governments and the private sector;
- The African Development Bank's Fight COVID-19 Social Bond, at $3 billion (the world's largest social bond in international capital markets);
- The European Union allocating 60 billion Euros to assist the Horn of Africa with the health and socioeconomic impact of the pandemic;
- WHO, IMF and the World Bank contributing individual countries or Africa-based multilateral agencies, totaling $57 billion for Africa; and
- The G20 nations agreement to suspend the debt of poor countries from 1 May 2020 until the end of the year, with an option to extend by another year if necessary.

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[47] Only Nigeria has similarly high levels of unemployment at 27%. Y. Kazeem, 'Here's How COVID-19 Has Battered Africa's Largest Economy,' (*The World Economic Forum*) https://www.weforum.org/agenda/2020/08/africa-largest-economy-worst-contraction-in-a-decade/. (Accessed 20 September 2020).

[48] A. Mishra, 'Africa and COVID-19: Impact, Response, and Challenges to Recovery'. (Observer Research Foundation (ORF) Occasional Paper, September 2020).

The response to and impact of economic interventions varies from country to country. Based on existing data and current information, international borrowing and financial aid had a positive and immediate impact on the economic recovery of Kenya and Ethiopia. This is less evident in the case of Egypt, Nigeria and South Africa. This may be due to the size of these economies and the relative impact of aid packages on the domestic economy.

Financial support and government rescue have placed a clear focus on the survival and bolstering of the SMME sector, government-led investment and stimulus packages, and measures such as interest rate cuts and tax holidays. This is consistent across all five countries in the study, albeit with a slightly different orientation, allocation and duration. This is a clear effort to combat growing unemployment, as the SMME sector comprises such a large proportion of firms and employment in Africa, rising levels of poverty and the immediate impact on the crisis in day-to-day lives, be it in healthcare or access to food.

A detailed list of programs, support and stimulus packages and economic interventions are tabled for comparative purposes as Tables A-A5 on pp.109-112 in the Appendices.

3.4 - Subregional Economic Responses and African Integration

Subregional blocs in Africa responded to the COVID-19 crisis and the economic upheaval in various ways. In many cases, limiting, and at times banning, the movement of goods and people between borders as part of the lockdown measures has had serious ramifications for regional trade and economic outcomes. This gives some indication of the nature and practical extent of economic integration in each region. Regional responses, with greater connectivity and scale, are favored over individual actions, especially in Africa where there is a clear need to build a collective among small stand-alone economies. This also provides a better indication of the overall direction and state of recovery of Africa as a whole.

The extent of subregional responses in West, East and Southern Africa has been limited and, in the economic sphere, has lacked practical application. The COVID-19 pandemic has placed the importance of regional integration and connectedness under the spotlight. While the contagious effect of the virus is a concern that needs to be constrained and managed, the reality of coexisting with the virus and remaining both economically and socially connected in the times of a pandemic, is imperative and has proven essential to both combating the impact of the pandemic and the economic recovery of the continent. Herein lies an opportunity of regional integration brought to the fore more clearly by COVID-19, which has illustrated the importance of local inclusion and the urgency of Africa-wide connectivity.

Opportunities for Continental Integration

The COVID-19 pandemic and ensuing economic crisis have brought with it an unexpected opportunity for broader and deeper continental integration. The African Continental Free Trade Area (AfCFTA), which has been in discussion for years, may have been delayed as a result of COVID-19, but has received an encouraging boost and re-orientation that bodes well for Africa-wide integration and a truly inclusive approach to building markets and value chains across the continent. [49]

Launched in March 2018, the AfCFTA will be the largest free trade area in the world based on the number of member countries. Connecting 1.3-billion people across 55 countries, with a combined GDP of around $3.4-trillion, the AfCFTA has the potential to lift 30-million Africans out of extreme poverty and drive much needed reforms to meaningfully improve the growth potential of African countries in the long term, through real connectivity in terms of the movement of goods, services, people and information.

While trading under the agreement was set to start in July 2020, this has been delayed to January 2021 as a result of COVID-19. However, the delay offers policymakers an opportunity to shape and mould the reconstruction of African economies post-COVID-19, thus leveraging the goals and benefits of AfCFTA more precisely.

The pandemic has demonstrated that Africa's industrial production can be swiftly strengthened, and African industries can react to demand if given the opportunity to do so.[50] While African governments took quick action in coordinating their response to COVID-19 and integrating their supply chains, African firms stepped up and created a variety of vital products and services to fill local supply gaps, helping to build local capacity and value chains.

In 2018, 95.9% of Africa's medicinal and pharmaceutical products were imported from outside the continent. Improved integration across Africa therefore presents an enormous opportunity for the continent's pharmaceutical sector. However, it is not a solution to Africa's dependence on imported pharmaceuticals without a specific policy agenda driving an awareness of the many ways in which trade can impact health systems. Improving the African pharmaceutical industry, in the name of public health, should be at the center of the AfCFTA Agreement, and prioritized in the preliminary stages of its enactment.

[49] L. White and L. Rees, 'Benefits of Africa's free trade bloc could boost post-pandemic recovery' *Business Day* (3 September 2020) https://www.businesslive.co.za/bd/opinion/2020-09-03-benefits-of-africas-free-trade-bloc-could-boost-post-pandemic-recovery/. (Accessed 30 September 2020).
[50] White and Rees, 'Benefits of Africa's free trade bloc could boost post-pandemic recovery'.

In 2018, 82.2% of Africa's imports of food items originated from outside the continent. The rollout of the AfCFTA will be critical to building well-functioning food systems in Africa, and increasing trade between African countries, which is about $8 billion annually.

The AfCFTA is also a catalyst for SMMEs, Africa's engines for employment creation, which help to achieve greater economic efficiency and scale, while also meeting the demands of an integrated market. In addition to this, negotiations for e-commerce and digital trade will be fast-tracked under the Africa-wide free trade pact. This and the push for SMME inclusion is a constructive step forward to rapid and entrenched modernization and competitiveness well beyond the realm of Africa.

COVID-19 has undoubtedly demonstrated that self-sustainability is important, and is most critical in the areas of food security, education, healthcare and logistical services. A fundamental goal of the AfCFTA is to make Africa self-sufficient in these sectors, and member states should set the agenda accordingly, with realistic implementation plans to improve these vital sectors regardless of regional integration.[51]

The pandemic will be with us well into 2021. In the spirit of coexistence, governments need to identify the economic trade-offs of their response to the virus and consider these in a balanced and sustainable approach that fits their particular context. This is particularly relevant in Africa, where countries have a complex set of economic, social, and political issues with a fragile foundation. Most lack the capital to sustain their populations during prolonged lockdowns. A stringent approach to curbing infections has proven unsustainable, delivering unintentional and lasting consequences by setting back crucial socioeconomic progress. As the phased reopening commences and Africa works to recover, context-driven measures that consider the array of issues Africans face are critical if countries are to recoup past gains, and achieve their development goals.

[51] COVID-19 and the African Continental Free Trade Area Agreement. *(Price Waterhouse Coopers)* https://www.pwc.com/ng/en/pdf/covid19-key-considerations-afcfta.pdf. (Accessed 25 November 2020).

-4-

It Takes a State

4.1 - It Takes a State

In his *Foreign Affairs* article titled 'The Pandemic and Political Order' Francis Fukuyama observed that the factors responsible for successful COVID-19 pandemic responses are state capacity, social trust, and leadership: 'Countries with all three – a competent state apparatus, a government that citizens trust and listen to, and effective leaders', he wrote, 'have performed impressively, limiting the damage they have suffered. Countries with dysfunctional states, polarized societies, or poor leadership have done badly, leaving their citizens and economies exposed and vulnerable.'[52]

The sub-title of Fukuyama's article is 'it takes the state' – and not the individual action of the private sector, civil society, or the philanthropic world – to lead a successful and coordinated response to various classes of catastrophes. He thereby affirms the widely accepted norm elaborated in the United Nations' *Sendai Framework for Disaster Risk Reduction 2015-2030* that only national governments have the constitutional/ legal authority, reach and resources to lead a whole-of-society response to and recovery from catastrophes such as pandemics.[53] The United States, Brazil, and other countries, in confronting the COVID-19 pandemic, have ignored or forgotten about *Sendai* – and their people are paying the price for it.

The five African countries under review did not ignore *Sendai,* nor were their leaders (except for Egypt at the beginning of the outbreak) slow to the task of responding to COVID-19. Heads of state took charge, were decisive, responded swiftly, created new policy instruments, and secured resources and partnerships to underwrite the effort. In what are essentially nurse-driven healthcare systems, healthcare workers rose to the occasion, coming out in vast numbers to assist at institutions and communities despite risks to their lives. Individual countries were technically supported by a capable 4-year-old Africa-CDC and global partners like the WHO and others, operating in a developing regional public health framework on a vast continent 55 countries strong.

Africa exemplified the multi-lateral approach to pandemic response. As early as February, the African Union brought together ministers from its 55 member states to create a proactive and unified response to COVID-19, resulting in the adoption of the Africa Joint Continental Strategy for COVID-19. Led by the Africa-CDC, the African Task Force for Coronavirus was formed to coordinate surveillance, infection

[52] Francis Fukuyama, 'The Pandemic and Political Order: It Takes a State' in *Foreign Affairs* 99 no.4 (July/August 2020) p.26.
[53] *The Sendai Framework for Disaster Risk Reduction 2015-2030* (United Nations Office for Disaster Risk Reduction, Third UN World Conference on Disaster Risk Reduction, March 18 2015, Sendai, Japan) https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030/ accessed November 21, 2020.

prevention and control in health-care facilities, clinical management of infected individuals, laboratory diagnosis, risk communication, and community engagement.[54]

Each country faced significant challenges in responding to COVID-19, and political leaders inherited state administrations with limited to poor capability. Not one of the countries under review had systems specifically primed for pandemic response. Governments used legislation already on their books, and though some had sections designed for public health, these were instruments designed for natural disasters and national emergencies. The lack of regulatory preparedness for infectious disease outbreaks with pandemic potential has a lot to do with the fact that governments the world over prefer to react in response to community needs (including those caused by a catastrophe) and thereby generate the applause of public opinion, rather than invest in preventing an outbreak that, by the nature of prevention, goes unnoticed.[55] This is short-sighted but typical.[56]

As we emerge from the first wave of the pandemic, the second wave is upon us. New cases and deaths increased by 20 and 26 per cent respectively on the African continent between 28 October and 10 November, with Morocco, South Africa, Tunisia, Kenya, and Libya accounting for more than three fourths of new cases and deaths. [57] By 7 December new cases rose by a further three percent with Morocco and South Africa accounting for 50 per cent of Africa's new cases. On December 27, South African cases passed the one million mark as the second wave of infections continued to rise steeply.[58] About half (27) of African Union Member States reported case increases. Game-changing vaccines are on their way, though it is not at all clear when they will reach populations. Health officials are concerned that local and international travel will increase cases and overwhelm already taxed health systems. The availability and high-cost of COVID-19 tests continue to be a problem, particularly as countries resume international travel. The Institut Pasteur in Dakar, Senegal, anticipates the roll-out in February 2021 of a rapid COVID-19 test that can be

[54] L.Signe and M. Treacy, 'Covid-19 is accelerating multilateralism in Africa' *The Washington Post* (July 27, 2020) https://www.washingtonpost.com/politics/2020/07/27/covid-19-is-accelerating-multilateralism-africa/ (accessed November 15 2020); C. Ihekweazu and E. Agogo, 'Africa's response to COVID-19' *BMC Medicine* 18, Article no.151 (May 22 2020) https://bmcmedicine.biomedcentral.com/articles/10.1186/s12916-020-01622-w/ (accessed November 15 2020) and I. Kickbusch et al 'Covid-19: how a virus is turning the world upside down' *British Medical Journal* 369 (April 3 2020) m1336 https://www.bmj.com/content/ 369/bmj.m1336.full/. (accessed November 15 2020).

[55] See A. Healy and N. Malhotra, 'Myopic voters and national disaster policy' *American Political Science Review* 103 (2009) pp.387-406; and Malholtra, 'Why isn't the US ready for a pandemic? For politicians, investing in prevention doesn't pay off' *Washington Post* (March 12, 2020) https://www.washingtonpost.com/politics/2020/03/12/why-isnt-us-ready-pandemic-politicians-investing-prevention-doesnt-pay-off/ (accessed November 23 2020)

[56] F. L. Cook, *Who Should Be Helped? Public Support for Social Services (*Beverly Hills, Sage Publications, 1979).

[57] *PERC Biweekly Report* (28 October to 10 November 2020).

[58] See https://sacoronavirus.co.za/2020/12/27/update-on-covid-19-27th-december-2020/ (accessed November 15 2020)

taken at home at the cost of US$1 in the hope that improving the frequency and availability of testing across the continent will save lives while countries await a vaccine.[59]

4.2 - State Capability

In his Columbia University Cartwright Lecture titled 'COVID19 in South Africa: medical, scientific and political challenges' given on 18 November 2020, Salim Abdool Karrim, advisor to South Africa's Health Minister Zweli Mkhezi, noted that there were 'substantial' shortcomings in the country's health system. He highlighted the fact that despite the admirable efforts of the National Institute for Communicable Disease (NICD), the country had 'no pandemic preparedness unit.'[60] A legislative proposal to create such a facility was put before Parliament in 2017 (when Wilmot James, one of the co-authors of this report, was still a ranking opposition party member serving on the Health Committee) but it only became law 3 long years later - in early 2020 - after COVID19 had struck.[61]

South Africa was assessed by the WHO for its capacity to detect, prevent, and respond to infectious disease outbreaks, as part of the Joint External Evaluations (JEE), the results of which were published in July 2017. Led by then Director-General of the South African Department of Health, M. Precious Matsoso, the evaluations were an extensive technical exercise requiring domestic governments to first complete a rigorous internal assessment of the entire public health sector, followed by a visit led by the WHO that jointly assessed where the country stood in terms of its detection, surveillance, and response capabilities, and how it could improve matters. Egypt, Ethiopia, Kenya and Nigeria also participated in the JEE. All of them, save Egypt, published their results. The average figures for response capability are reported in Table 4.2.

Table 4.2: WHO Joint External Evaluations

	South Africa	Ethiopia	Kenya	Nigeria	Egypt
Response Capability	2.86	2.5	1.5	1	N/A

Capability Key: 1 = none: 2=limited: 3=developed: 4=demonstrated: 5=sustainable.

Source: Mission Reports: https://www.alliancehsc.org/

[59] PERC Biweekly Report (24 November-7 December 2020).
[60] S. A. Karim, 'Covid-19 in South Africa: medical, scientific and political challenges' *The Cartwright Lecture* (November 18, 2020, Vagelos College of Physicians and Surgeons, Columbia University).
[61] *National Public Health Institute of South Africa Bill* (Republic of South Africa, B 16B-2017).

On average Nigeria had no response capability, Kenya a modicum, and Ethiopia's and South Africa's described as 'limited' to 'developed'. WHO led evaluations were voluntary, and many countries such as China, Russia and all of the countries of South America falling under the Pan American Health Organisation (PAHO), did not participate. The countries were assessed between 2016 and 2017 and the figures serve as an important pre-COVID-19 benchmark for epidemic preparedness.

In October 2019 the Nuclear Threat Initiative (NTI), Johns Hopkins University's Bloomberg School of Public Health, and the Economist Intelligence Unit released the Global Health Security Index (GHSI) for all 195 of the world's countries.[62] Funded by the Open Philanthropy Project, Bill and Melinda Gates Foundation, and the Robertson Foundation, the Economist Intelligence Unit hired over 1,000 in-country researchers conversant in local languages to systematically search through all publicly available data to construct the Index using a standardized methodology. The governments of assessed countries were given an opportunity to review and comment on the results. An extract of the results for pandemic rapid response capabilities for the countries under review are presented in Table 4.3:

Table 4.3 Global Health Security Index: Rapid Response Capability

Country:	Egypt	Ethiopia	Kenya	Nigeria	So.Africa	Global Ave
Rapid Response Capability (overall)	45	44.7	37.1	43.8	57.7	38.4
Emergency preparedness and response planning	0	25	12.5	12.5	0	16.9
Exercise response	50	0	50	100	0	16.2
Emergency response operations	33.3	33.3	33.3	33.3	33.3	23.6
Linking public health and security authorities	0	0	0	0	100	22.6
Risk communication	75	100	25	25	100	39.4
Access to communications infrastructure	66	51	58.5	56.7	86	72.7
Trade and travel restrictions	100	100	100	100	100	97.4

0-33.3 Low Scoring Band 33.4-66.6 Medium 66.7-100 High.

Source: Global Health Security Index (2019) *https://www.ghsindex.org*

The GHSI benchmark for overall rapid response capability awarded South Africa the highest, but still unimpressive score of 57.7/100, and Kenya the lowest at 37.1/100. Egypt and South Africa conducted no emergency planning and the other three countries conducted very little. South Africa and Ethiopia did not

[62] *Global Health Security Index: Building Collective Action and Accountability* (Nuclear Threat Initiative, Johns Hopkins University and Economist intelligence Unit, October 2019 https://www.ghsindex.org/wpcontent/uploads/ 2020/04/2019-Global-Health-Security-Index.pdf).

run stress tests for any other disaster plans (municipal plans, for example) they may have had on paper, Egypt and Kenya made a good effort, while Nigeria achieved top scores for theirs. All countries had emergency response operations, but they were functioning at a third of the level required to be effective during surge circumstances. At the time the Index was assembled, except for in South Africa, enduring firewalls hampered communication between health and security services. On the assets side, common strengths were good public access to communications infrastructure and a strong capability to impose and enforce trade and travel restrictions.

All five countries participated in additional WHO International Health Regulations (IHR) related exercises. During 2019, Egypt conducted a simulation exercise for IHR National Focal Point communications; Nigeria reviewed the manner in which they tackled cholera; and Kenya tested their efficacy in monitoring cross-border movements in the East African Community. After-Action Reviews of the management of infectious disease outbreaks were conducted during 2018 in Nigeria (for Cerebrospinal Meningitis, Lassa Fever and Cholera) and 2019 in Ethiopia (Cholera). There was also widespread participation in animal-human health bridging and disease risk-profiling workshops.[63]

The departments of government directly involved in the various JEE exercises – led typically by health, but including other departments of government such as agriculture, finance, environmental affairs, defense, and transport[64] – understood their country's strengths and weaknesses. None of the governments under review were strangers to the need to upscale their capacities to meet IHR requirements. Among continents, Africa has the highest participation rates in JEE exercises, and the five countries under review have led the way in bolstering health security.[65]

As a result of their participation in the JEE and efforts to comply with the IHR, when COVID-19 arrived in Africa, the continent's leaders from sectors most directly involved in emergency response understood what needed to be done. They also understood that unless they scaled up their preparedness and acted swiftly, their health systems would be overwhelmed. They had very good reasons to be concerned about the capacity of their healthcare systems. The Global Health Security Index awarded Egypt 5.6/100 for the

[63] *IHR Country Capacity Assessment, Monitoring, Evaluation and Planning Update*, (Alliance for Health Security Cooperation, 23 October 2020).
[64] Nigeria's superb *National Action Plan for Health Security 2018-2022* (Lagos, Federal Ministry of Health, November 2018) best illustrates the large swathe of authorities involved in pandemic response: Ministry of Health, Airports Authority of Nigeria, Ministry of Agriculture and Rural Development, Ministry of the Environment, Ministry of Finance, Ministry of Mines and Steel Development, Ministry of Defense, Ministry of Transport, Ministry of Science and Technology, Ministry of Justice, National Emergency Management System, Nigerian Armed Forces, Nigeria Police Force, Ministry of Interior, Office of the National Security Advisor, National Agency for Food and Drugs Administration and Control, National Primary Healthcare and Development Agency, Nigeria Civil Aviation Authority and Nigeria Nuclear Regulatory Authority.
[65] See *Alliance for Health Security Cooperation* (https://www.alliancehsc.org/).

adequacy of their clinics, hospitals and community care centers; Nigeria 2.8/100; Ethiopia 42.2/100; Kenya 20.7/100; and South Africa 52.6/100. In an article for *Wellcome Open Research,* Gisele Umviligizo and 12 other young scientists remarked that '[T]he majority of African countries lack specialized medical capacity that is critical for handling severe cases of COVID-19 such as intensive care unit beds and mechanical ventilators.[66]

With no ready-purposed pandemic response machinery at hand, countries created new structures and instruments as the need arose. Nigerian President Muhammadu Buhari established a Task Force on COVID-19 led by the Secretary to the Government of the Federation, with the Nigerian Centre for Disease Control (NCDC) leading the public health response. Buhari used the 1926 Quarantine Act to declare 'infected local areas' within the country. Some individual states (Nigeria has 36) imposed stricter regulations than those put forth by the national government. The mandate to lead preparedness, detection, and response to infectious disease outbreaks and public health emergencies is vested in the Nigerian CDC which was established in 2011. A more modern piece of draft legislation called the Control of Infectious Disease Bill ran into trouble in the Nigerian Senate for infringing on the powers of their states and on citizen rights.

In Ethiopia, Prime Minister Abiy Ahmed set up a Coronavirus Inter-Ministerial Task Force, and Health Minister Liya Tadesse led the response. Ethiopia is the only nation among the five countries under review to have a long-established public health institute. Established in 1995, the Ethiopia Public Health Institute (EPHI) consolidates detection, prevention, and response functions in a single institution.[67] The EPHI Council of Minister's Regulation (301/2013) established the EPHI as the agency for implementing the WHO 2005 International Health Regulations in 2013.[68] Ethiopia's Proclamation 3/2020 enacted a state of emergency to counter and control the spread of COVID-19 and mitigate its impact.[69]

In Kenya, President Uhuru Kenyatta established a National Emergency Response Committee (NERC) on COVID-19 and a private-public COVID-19 fund board to mobilize national resources. The public health response was led by the Ministry of Health which set up a COVID-19 taskforce. Prompted by COVID-19, and to provide a coordinated response to this and other pandemics, Kenya passed the Pandemic Response and Management Act of 2020 on 30 June. Kenya lacked a multi-functional public health institute, and the first stakeholder workshop to establish one was held on 19-20 February 2020. This effort was supported by

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[66] G. Umviligihozo et al 'Sub-Saharan Africa preparedness and response to the COVID-19 pandemic: A perspective of early career African scientists', *Wellcome Open Research* 2020 5:163 (16 September 2020). https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7499400/pdf/wellcomeopenres-5-17918.pdf/

[67] J.P. Koplan et al, 'Improving the world's health through national public health institutes' *Bulletin of the World Health Organisation* 83 (2) February 2005 pp.154-157.

[68] https://www.ephi.gov.et/index.php/2014-04-09-13-52-44/2014-04-09-13-53-29/history-of-ephi/

[69] https://www.ilo.org/dyn/natlex/natlex4.detail?p_lang=en&p_isn=110046&p_count=26&p_classification=01/

the United States Government (through the US CDC) and the International Association of National Public Health Institutes.[70] President Uhuru used the Public Order Act of 2003 (revised in 2009) to issue curfews and restrict public gatherings.[71]

In Egypt, President Abdel Fattah el-Sisi used his office to make many high-level statements about COVID-19, but the responsibility for leading the government response was put to Prime Minister Mostafa Madbouly. He announced the regulations for the curfew and shutdowns while assigning oversight responsibilities to cabinet ministers involved in fighting the pandemic and mitigating its economic impact. Madbouly appointed a high-profile crisis commission and downstream management groups at the governate level. Health and Population Minister Hala Zayed established a Scientific Committee to Combat COVID-19 led by Dr. Hossam Badrawi. In an article examining the potential effects of the pandemic on Egyptian governance, Amr Hamzawy and Nathan J. Brown wondered whether the foregrounding of civilian government in managing COVID-19 in Egypt portended a more permanent shift from the usual prominence occupied by the Egyptian military.[72]

The Egyptian Ministry of Health and Population led by Hala Zayed added COVID-19 to the list of contagious diseases covered by the dated Medical Precautions (Law no. 137 of 1958), legislation that gives public health authorities the ability to develop interventions to stop the spread of a contagious disease.[73] President Abdel Fattah al-Sisi advocated for amendments made on 23 April 2020 to a 1958 Emergency Law (Law no. 162) to allow for the issuing of decrees that imposed restrictions on business operations, the closing of schools, limitations on social gatherings, curfews, and mandatory mask-wearing.

South Africa's President Cyril Ramaphosa formed a ministerial level National Command Council and Health Minister Zweli Mkezi introduced coordinating structures at provincial and district levels that report up to a Project Management Office and National Incident Management Team in the Department of Health. To advise him, Mkezi appointed – in March 2020 – a Ministerial Advisory Committee on COVID-19 led by Salim Abdool Karrim, a Ministerial Advisory Committee on Coronavirus Vaccines *(*MAC-Vacc) and, more recently, a Ministerial Advisory Committee in Behavioural Science and Vaccines to advise on COVID-19 vaccine take-up issues. The National Institute for Communicable Diseases provides epidemiological information by way of the National Incident Management Team.[74]

[70] https://ke.usembassy.gov/united-states-and-kenya-partner-on-the-establishment-of-a-national-public-health-institute/
[71] https://policehumanrightsresources.org/content/uploads/2016/03/Public-Order-Act-Kenya-2003.pdf?x96812/
[72] A. Hamzawy and N.J. Brown, 'How much will the pandemic change Egyptian governance and for how long?' (New York, Carnegie Endowment for International Peace, July 23, 2020).
[73] https://www.loc.gov/law/help/health-emergencies/egypt.php/
[74] L. Morris. Memorandum. (NICD, November 30, 2020).

South Africa took three years to enact their National Public Health Institute of South Africa, which finally saw the light of day in early 2020, at the start of the COVI-D19 outbreak.[75] As Salim Abdool Karrim pointed out in his Columbia University Cartwright Lecture, South Africa's response was hampered by not having the Institute in place. The National Institute for Communicable Diseases (NICD) is a surveillance agency and had no response functions. President Cyril Ramaphosa used the Disaster Management Act of 2002 to declare a state of disaster in SA on 15 March 2020.

The lack of clear public health emergency legislation and the slow pace of establishing multi-functional public health institutes resulted in many problems and posed some serious challenges for all five countries. One of the more compelling problems is poor coordination between the health and security sectors and the failure on the part of the police and military to understand their roles and functions during a public health emergency. Many if not most of the conflict episodes between citizens and the police and military could have been prevented through better training and leadership. When the police and military overstep the mark, it undermines citizen trust in the very state institutions that are responsible for their health and personal security.

It is a not an isolated problem. Eighteen COVID-19 related security incidents have been reported in Egypt between May and August. The majority of these incidents occurred in March and April and were non-violent. The protests were about the difficulties people were experiencing in carrying out burial rights for family members who had died from COVID-19. There were also pressing demands to better protect healthcare workers. We are aware of seven doctors and two pharmacists who are in pretrial detention and face charges related to terrorism and the so-called misuse of social media when they complained about poor working conditions. There have also been at least two reports of efforts by the security forces to enforce public health measures, one of which turned violent.[76]

In Ethiopia, there were eight recorded security incidents related to COVID-19, with the majority occurring during March-April. All ended in violence – either police violently enforcing public health measures or citizens attacking police in protest. Although the July protests in Addis Ababa prompted by the assassination of Haacaaluu Hundeessaa were unrelated to COVID-19, they led to the death of more than 200 people and detention of many more, amplifying anti-government sentiment across the country. The protests have also led to public health concerns, as healthcare workers and local officials have said that some of the individuals detained in the wake of the protests had contracted COVID-19 with the result of the virus being spreading in overcrowded prisons and makeshift detention centers.

[75] https://static.pmg.org.za/B16-2017_National_Public_Health_Institute_of_SA.pdf/ (Accessed 7 Dec 2020)

[76] *Finding the Balance: Public Health and Social Measures in Egypt* (Partnership for Evidence-Based Response to COVID-19 or PERC, last updated 19 August 2020).

On 9 August, people in Ethiopia took to the streets again after the military arrested more than 20 officials, community leaders and activists in the Southern Nations, Nationalities, and Peoples' Region. The officials were released on 13 August, but there were reports of at least 16 deaths as a result of the protests. Additionally, the decision to postpone the August elections provoked accusations that the Prime Minister was using the COVID-19 pandemic to keep power beyond his constitutionally mandated time, which ended on 30 September.[77] The skirmish later escalated into a regional crisis when the Prime Minister sent in Ethiopian troops to put down what he regarded as secessionist-bent mutineers in operating from Tigray that set loose a major refugee problem and drew its neighbouring nemesis Eritrea into the fray.

There have been over 70 COVID-19 related security incidents reported in Kenya between March and August, two-thirds of which were categorized as crowd- control and enforcement incidents in which the military or police enforced public health measures. All these incidents were violent, with reports of police shooting or beating citizens who did not adhere to public health measures. Crowd control incidents have decreased since June, which may be due to the loosening of public health measures and, therefore, less need to enforce them. Some of these violent crowd control incidents led to protests against police brutality, categorized as anti-enforcement incidents.[78]

Nigeria has experienced more than 90 security incidents related to COVID-19, with more than half occurring in April, followed by a rapid drop off in reported incidents in May through July. These episodes had a wide variety of causes, including protests against public health enforcement and attacks against coronavirus task and security forces enforcing restrictive measures. All of the reported incidents involving enforcement by security forces resulted in violence against civilians. There were also at least 6 peaceful protests by healthcare workers for reasons including inadequate PPE and working conditions, poor or no compensation, and physical abuse of a female healthcare worker.[79]

Nearly 200 COVID-19-related security incidents have been reported in South Africa since May, including a significant share that involved reports of violence. The pace of incidents continued through July without slowing. Many of these have involved demands for economic relief, better security for healthcare workers, more protection in workplaces and schools, and against stricter public health measures or delays in school reopening. There have also been at least 25 reports about episodes where members of the security forces harshly enforced public health measures that turned violent. Beyond incidents directly related to COVID-

[77] *Finding the Balance: Public Health and Social Measures in Ethiopia* (Partnership for Evidence-Based Response to COVID-19 or PERC, last updated 19 August 2020).
[78] *Finding the Balance: Public Health and Social Measures in Kenya* (Partnership for Evidence-Based Response to COVID-19 or PERC, last updated 19 August 2020).
[79] *Finding the Balance: Public Health and Social Measures in Nigeria* (Partnership for Evidence-Based Response to COVID-19 or PERC, last updated 19 August 2020).

19, media reports have highlighted an overall drop in crime on the one hand but increased reports of domestic violence on the other.[80]

Despite the controversies over police and military conduct, the PERC Ipsos survey found a high level of satisfaction among citizens in four of the five countries (Egypt was unfortunately not included in the survey) under review, as presented in Table 4.4:

Table 4.4: Satisfaction with government COVID-19 Response

	Ethiopia	Kenya	Nigeria	So. Africa
1. Countrywide	81	72	51	70
2. Urban	79	70	44	69
3. Rural	81	73	56	71
4. Govt aid recipients	84	78	42	80
5. Non recipients	81	49	51	67
6. Region	76	76	70	72
7. All surveyed	72	72	72	72

Very/Somewhat satisfied combined score.

Sources: PERC: Finding the Balance (Ethiopia, Kenya, Nigeria and South Africa).

Ethiopians were the most satisfied, Nigerians the least. Rural populations were slightly more satisfied than urban ones. Unsurprisingly perhaps, government aid recipients expressed greater satisfaction than non-recipients, except for Nigerians. Ethiopia, Kenya and South Africa obtained higher scores than the average for the region where they are geographically located, Nigeria the reverse.

4.3 - Public Trust

Successful pandemic response strategies require that individuals adhere to and comply with effective public health measures. Ideally, adherence is voluntary and based on the self-understanding individuals have that the measures will protect them, their families, and the wider community from disease and possibly death. In the case of COVID-19, the world has learnt that mask-wearing, social distancing and, when necessary, staying-at-home, are currently the most effective behavioral safeguards against the spread of the disease. Efficacious vaccines are coming to market and when they reach individuals, in order to accelerate herd immunity, a majority of the population should be open to taking them.

[80] *Finding the Balance: Public Health and Social Measures in South Africa* (Partnership for Evidence-Based Response to COVID-19 or PERC, last updated 19 August 2020). Ipsos surveyed 1,395 adults in South Africa between 3-17 August 2020.

The Partnership for Evidence-Based COVID-19 Response (PERC) fielded a COVID-19 related survey of 24,000 respondents in 18 countries across Africa.[81] Overall risk perception is relatively low for Egypt and Nigeria, moderate for Kenya and Ethiopia to moderate-high for South Africa where the pandemic is most severe. There was widespread agreement that public health interventions work, but they can be rendered ineffective if messaging from leadership is inconsistent as we have seen, for example, with the mask-wearing controversies in the United States of America. Self-reported adherence and compliance is lowest for Nigeria and highest for South Africa, with the other three countries falling in-between.

Table 4.5: Risk Perception, Efficaciousness of Public Health Social Measures and Self-Reported Adherence

	Egypt	Ethiopia	Kenya	Nigeria	So. Africa
1. Risk perception	42	54	52	44	67
2. Agree that PHSM work	91	93	92	87	86
3. Self-Reported Adherence	54	59	63	40	73

Source: Source: PERC *Finding the Balance* (19 August 2020).

The Ipsos survey also collected information about the conceptions and misconceptions about COVID-19 circulatinh in the countries under review. The results are reported below in Table 4.6.

TABLE 4.6: Conceptions/Misconceptions about COVID19

	Egypt	Ethiopia	Kenya	Nigeria	So. Africa
1. Average	55	49	42	53	50
2. Avoid COVID19 'recoverees'	53	36	36	41	47
3. Foreigners testing vaccines on locals	67	52	52	64	59
4. Foreigners discredit African medicines	47	54	54	66	53
5. Animal contact is a risk	52	52	24	40	40

Source: PERC *Finding the Balance* (19 August 2020).

Close to half of all respondents believed that it is best to avoid individuals that have recovered from COVID-19. The belief is strongest in Egypt and weakest in Ethiopia and Kenya. 6 out of every 10 respondents believed that foreigners were testing vaccines on locals. Egypt registered the highest level of suspicion of foreigners, followed by Nigeria and South Africa. Close to 7 out of 10 Nigerians are of the view that

[81] Partnership for Evidence-Based Response to COVID-19 (PERC). (September 2020). Responding To COVID-19 In Africa: Using Data To Find A Balance. Retrieved from https://preventepidemics.org/wp-content/uploads/2020/05/PERC_Regional_5-6-2020.pdf

foreigners tend to discredit African indigenous medicines, whereas 5 out of 10 for the other countries feel the same. In terms of zoonotic exposure, Kenyans, whose country has great expertise in animal health, do not fear animal contact as much as Egyptians and Ethiopians do.

The Ipsos survey was administered in August 2020 and the question is how durable the beliefs, attitudes and conceptions/misconceptions have been since, and how much they may have changed - for better or for worse - during the subsequent phases of the pandemic. One particular area of concern is the attitudes towards vaccination. It is not clear when the first COVID-19 vaccines will arrive in the five countries under review, nor is it clear which of the approved vaccines candidates will be made available. A high level of vaccine resistance will impede the achievement of an accelerated path to herd immunity. The Wellcome Trust Monitor documented that Africans generally held positive attitudes towards vaccination because of the continent's recent and ongoing history of successfully fighting infectious diseases.[82] But the widespread suspicion that foreign health and medical researchers and pharmaceutical companies had motives that had nothing to do with the welfare of local populations, rooted no doubt in a colonial history where Africans were treated according to lesser ethical standards, may make the acceptance of vaccines more problematic.[83]

There were other more general rumors and conspiracy theories also making the rounds. One of the earliest was about COVID-19 pathogenesis, asserting that it was not of natural origin. Another rumor linked the SARS-CoV-2 virus to 5G technology 'radiation'. Scientific uncertainty about the virology and disease dynamics of COVID-19 created room for all manner of misstatements. There were the misguided but well-meaning purveyors of hope, who peddled ineffective and at times dangerous curative therapies. False information about epidemiological models also circulated, fueled by the fact that the pandemic turned out less severe in Africa than initially projected, undermining the credibility of implementing public health interventions down the line.[84]

International best practice suggests that direct, honest, and consistent science-based public health messages directed by both governments and leaders and health professionals who have direct personal connections with citizens are the best top-down and bottom-up techniques for counter-acting misinformation, disinformation, and conspiracies. [85]

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[82] *Wellcome Trust Global Monitor 2019: Trust in Science and Health Professionals* (Wellcome Trust, London, 2019), p.64. https://wellcome.org/reports/wellcome-global-monitor/2018/.

[83] See P.W. Geissler and R. Pool, 'Editorial: Popular concerns about medical research projects in sub-Saharan Africa – a critical voice in debates about medical research ethics', *Tropical Medicine and International Health* 11 no.7 (July 2006) pp.975-982.

[84] See O.S. Olatunji et al, 'Infodemic in a pandemic: COVID-19 conspiracy theories in an African country' *Social Health and Behaviour* 3 no.4 (2020) pp.152-157.

[85] P. Ball and A. Maxmen, 'The epic battle against coronavirus misinformation and conspiracy theories' *Nature* 581 (27 May 2020) pp.371-374; Richard G. Peters, Vincent Covello and David McCallum, 'The determinants of trust and credibility in environmental risk communication: an empirical study' *Risk Analysis: An International Journal* 17 no.1 (February 1997) pp.43-54 and R. O., Levine D. (1991) 'Credibility and trust in risk communication' in Eds, R.E. Kasperson and P.J.M. Stallen,

A cross-sectional analysis of 23 countries found that despite the decline of trust in physicians in commodified private oriented health systems, in public sector organized healthcare system trust has remained high.[86] In the African countries under review, both approaches were employed, led from the highest levels. However, in those societies where trust in governments is historically low, greater reliance had to be placed on frontline health workers to disseminate the correct information.

The Fragile State Index measured the degree of state legitimacy and level of trust citizens in the five countries under review had in the delivery and quality of state services (including health services). The results for 2020 are presented in Table 4.7 below:

Table 4.7: State Legitimacy and Trust in Government Services

Country	Egypt	Ethiopia	Kenya	Nigeria	South Africa
State Legitimacy	8.6	8.5	7.9	8.1	6.2
Trust in Public Services	4.2	8.3	7.7	8.9	6.4

Where 0 is highest and 10 lowest.

Source: Fragile State Index (2020) https://fragilestatesindex.org/indicators/

According to the Index, all five countries had poor legitimacy scores, with South Africa, the youngest independent democratic country, scoring the highest, and Egypt, with its more authoritarian history, the lowest. Regarding trust in state services, Egypt scored the best and Nigeria the worst, with South Africa, Kenya and Ethiopia falling in between, and in that order. Under these circumstances, the burden to counteract lies, misstatements of facts, and conspiracies falls on frontline health workers. This plays to Africa's strength, as its health systems are primarily driven by nurses and health workers who tend to be deeply embedded in and trusted by communities.

All of the five countries under review relied on community health workers (trained as part of universal healthcare rollout programs) to communicate COVID-19 exposure risk directly with citizens.[87] Ethiopia mobilized its healthcare extension work-force of over 40,000, mostly women who received one year training and are formally part of the healthcare system. The program, launched in 2003, was designed to

Communicating Risks to the Public. Technology, Risk, and Society (An International Series in Risk Analysis), vol 4. Springer, Dordrecht. https://doi.org/10.1007/978-94-009-1952-5_10/

[86] E. Chih-Han Huang et al, 'Public trust in physicians – Healthcare commodification as a possible deteriorating factor: Cross-sectional analysis of 23 countries' *Inquiry* 55 (Jan-Dec 2018) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5843089.

[87] M. Ballard et al 'Prioritising the role of community health workers in the COVID-19 response' *BMJ Global Health* 5 no.6 (2020) e002550 pp.1-7. https://gh.bmj.com/content/bmjgh/5/6/e002550.full.pdf/

reduce maternal mortality and improve care for HIV infections, Tuberculosis, and Malaria; today it provides a network into Ethiopia's large rural regions. Officials claim to have screened 40 million people across 11 million households since the pandemic began, verifying travel history and conducting routine temperature checks. Critically, community workers also play a very important role in disabusing citizens of harmful disinformation. Ethiopia's Ministry of Health rolled out a mobile phone-based learning course known as Leap, which combines interactive text and audio training with quizzes to combat the effects of disinformation. The conflict between Ethiopia and Eritrea triggered by the internal dispute with the Tigrayan leadership has undoubtedly affected the country's Covid-19 response strategy, but the scale of it is presently not known. [88]

Likewise, the South African government deployed more than 28,000 community health workers to the highest risk communities to undertake active house-to-house COVID-19 case findings. South Africa's community contact-tracing teams, established for TB control, have been used for COVID-19 contact tracing and monitoring of compliance with quarantine requirements. With the highest HIV burden in the world, the country has a network of providers, including tens of thousands of community health workers experienced in conducting door-to-door visits in socially vulnerable communities. An application is used to administer a symptom checklist, data for each household is uploaded along with mobile phone coordinates to a central database to map screening coverage. People with symptoms are then referred to mobile testing stations or facilities.[89]

Kenya, using a whole-of-society approach, mobilized their nurses and community healthcare workers in every local county and district to detect and report cases. Over 40 non-government civil society organizations became engaged and 55,000 community health volunteers started to work in informal settlements, refugee camps and prisons. A government report noted that door-to-door visits have reached over 5 million households to raise awareness, demonstrate preventive measures including cough etiquette, social distancing, face mask wearing, handwashing and to assist with contact tracing. 30,000 handwashing stations have been installed in informal settlements (600 in prisons) and 11 million people have been reached. The government committed an additional $30 million (3,000,000,000 Kenyan shillings) to pay for the additional compensation of healthcare workers.[90]

The WHO/JEE mission report for Nigeria complimented the country for its dedicated, well-trained public health professionals who support public health activities across all levels of the healthcare system. These

[88] https://apolitical.co/en/solution_article/how-ethiopias-community-health-workers-are-hunting-down-covid-19/
[89] S. A. Karim 'The South African Response to the Pandemic' *Correspondence Covid-19 Notes*: *New England Journal of Medicine* 382:e95 (May 29, 2020). https://www.nejm.org/doi/full/10.1056/NEJMc2014960/
[90] *The Covid Response – 60 days On.* Pp.11-12.

professionals and healthcare workers interrupted transmission of the Ebola virus and brought Nigeria closer to polio eradication, a considerable achievement.[91] The WHO Africa Regional Office reported that the Nigerian government mobilized its network of 7,124 community health agents to combat polio and other diseases by using a phone-based application with videoclips in several local languages to educate families.[92] The WHO formally collaborates with the Nigeria CDC in training programs for community health workers in COVID-19 case detection and risk communication.

Finally, a World Bank report noted how Egypt had to confront the COVID19 outbreak with a poorly paid healthcare workforce that had to endure long hours and faced high risks of infection and psychological pressure. 'Further deployment of workers into hotspots and to designated COVID-19 facilities is crucial to help serve the population in need', the report read.[93] UNICEF is co-leading the Egyptian Government's National Response Risk Communication and Community Engagement strategy in coordination with the Ministry of Health and the WHO with the purpose of countering the 'abundant misinformation about the disease and to engage and address the needs of children, parents and women'.[94]

The Global Health Security Index assessed the risk communication capacity for all countries under review before COVID-19 hit. The results are reported in Table 4.8 below:

Table 4.8: Global Health Security Index Risk Communication Benchmarks

	Egypt	Ethiopia	Kenya	Nigeria	So Africa
Risk Communication	75	100	25	25	25
Access communication infrastructure	66	51	58.5	56.7	56.7
Communications healthcare workers	0	0	0	0	0
Linking health and security agencies	0	0	0	0	0

0-33.3 Low Scoring Band 33.4-66.6 Medium 66.7-100 High.

Source: Global Health Security Index (2019) https://www.ghsindex.org

At the time Index data was collected, none of the countries under review had specially designed systems whereby governments could directly communicate with frontline healthcare workers during a public health emergency. Neither did they have a communication platform that linked the soft departments of government

[91] *Mission Report.* Joint External Evaluation of IHR Core Capacities of the Federal Republic of Nigeria June 11-20, 2017 (WHO, Geneva, 2017) p.34.
[92] https://www.afro.who.int/news/nigerias-polio-community-health-agents-take-covid-19-detection/
[93] *The World Bank, Egypt COVID-19 Emergency Response* (PIDA29138, April 28 2020).
[94] *COVID-19 in Egypt: Protecting Children and Young People in a Time of Crisis* (UNICEF Egypt Data Snapshot Issue 5 June 2020) https://www.tandfonline.com/doi/full/10.1080/20905068.2020.1789391/ Also see M. Kamel, 'A view of the health services after COVID-19: an Egyptian Perspective' *Alexandria Journal of Medicine* 56 (2020) Issue 1 https://www.tandfonline.com/doi/full/10.1080/20905068.2020.1789391/

(health and social services) with the hard ones (defense and intelligence), the firewalls between the two sectors still typically in place. Egypt and Ethiopia were reported to have effective risk communication systems. The populations of all five countries had, on average, reasonable access to communications infrastructure, although the millions who live in large informal settlements and refugee camps were likely left in the dark.

COVID-19 has become the driver of innovation and action. The Director of the Nigeria Center for Disease Control, Chikwe Ihekweazu, reported that during the outbreak Nigeria scaled up the establishment of Public Health Emergency Operations Centres across its 36 states and Federal Capital Territory (seven of these are polio emergency operation centres) from 27 to 35 during the outbreak.[95] In Kenya, hotline #719, designed to field calls related to COVID-19, came into being and all calls were filtered through three call centers.[96] Direct communication systems with frontline health-workers have been established in Kenya, Nigeria and South Africa. Initially slow off the mark, it took Egypt five 5 weeks to start their information campaign after their first COVID-19 case was registered on 14 February, but a mere 3 days for Ethiopia (first case 13 March) and the same day (5 March) for South Africa. Kenya and Nigeria pre-emptively launched theirs two weeks and a month respectively before their first cases were registered on 12 March and 28 February (See Table 4.9). This was swift, by any standard.

4.4 - Leadership

Leadership, what it means and why it matters, varies by context and purpose. In the case of responding to infectious disease outbreaks of epidemic or pandemic potential, we have learnt that the following qualities are of the greatest importance in mounting a successful response: (1) immediate recognition of the problem at the highest levels of government even when there is imperfect information, and a swift mobilization of a response machinery to deal with it; (2) the pursuit of a pandemic response as a public and not a private good based on reasoned evidence-based arguments; (3) priority given to the protection of frontline healthcare workers and vulnerable populations who are at greatest risk of infection; and (4) consequence management of the educational implications of closing schools for extended periods of time. In democratic societies, these leadership qualities are exercised in a rights-based framework requiring a high level of citizen consent and cooperation, although certain classes of rights (such as freedom of movement and association) may be legitimately and temporarily constrained, if state actions can be openly and clearly justified by an ethical/legal framework and considered to be proportionate to the particularities of the public health hazard at hand.

[95] Memorandum. C. Ihekweazu, N-CDC. (November 15, 2020).

[96] *The Covid Response – 60 days On. 1st Report of the National Covid-19 Task Force: 13th March -13th May 2020* (Government of Kenya, (Ministry of Health, Government of Kenya) p.6.

4.4.1 - Did leaders recognize the problem and how swift was their response?

Table 4.9: Case Registrations and Government Actions

	Date first case is registered	Start of public information campaigns	Stay at home restrictions	School closures announcement
Egypt	14 February	24 March	16 March - 22 March	15 March
Ethiopia	13 March	16 March	16 -29 March	16 March
Kenya	12 March	25 February	13 - 17 March	15 March
Nigeria	28 February	22, 31 January	18 March - 2 April	20 March
South Africa	5 March	5 March	26 March	15 March

Source: https://askabout.io/covid-19/ask/what-is-the-government-response-timeline-for-egypt/ and Ethiopia, Kenya, Nigeria and South Africa.

On 14 February 2020, Egypt was the first country in Africa to register a case. It took a month for the authorities to close down schools and issue a mandatory stay at home order, and a further week to start a public risk communication campaign. Nigeria was next with its first case on 28 February, and took three weeks to close its schools and issue stay at home orders, but it had tried to prepare its population a month in advance of the first registered case. South Africa started its public information campaign the same day as its first registered case, followed by school closures and mandatory stay-ay-home order 10 and 26 days respectively later. Kenya's response was immediate and swift, closing schools and issuing a (moderate) stay-at-home order three days after its first registered case, after having prepared its population two weeks in advance, knowing that trouble was on its way. Ethiopia registered its first case on 13 March and started its information campaign, closed its schools and ordered a stay-at-home three days later. Egypt and South Africa took the longest to act from the date of first case registration and Kenya the shortest.

4.4.2 - Did the leaders listen to their science communities and lead on the basis of evidence in their public health strategies?

The organization *Frontiers* led a survey administered to 25,307 science researchers on their responses to COVID-19. Of the five countries under review, only South Africa was included in the 20-country survey. One of the questions the respondents were asked to answer is whether policy makers in their countries had sufficiently considered scientific advice in formulating policy responses. Among the 119 South African respondents, 52 per cent strongly agreed, 18 per cent neither agreed or disagreed and 30 per cent disagreed or strongly disagreed. Of the 30 countries the best performer was New Zealand, which likely had one of the

most effective responses to the pandemic, registering scores of 77 per cent, 9 per cent and 15 per cent respectively, and the United States, one of the weakest responders, scores of 18 per cent, 16 per cent and 66 per cent. [97] It would be of interest to learn how the science community in the other African countries reacted to their policy-makers uptake of science advice in their decisions.

The South African survey results are not surprising. The country's health science research and development sector has a strong reputation resulting from its mining engineering history (South Africa was the world's most prolific gold and uranium producer for close to a century). In the case of COVID-19, the government set up bespoke health science advisory services led by distinguished health scientists such as Salim Abdool Karim, Lynne Morris and Glenda Gray. Bill Gates recently added Karim to his heroes list for his role in the fight against COVID-19 and HIV/AIDS.[98] Additionally, five Nobel Laureates in either Physiology or Medicine or Chemistry are South African (Max Theiler, Allan Cormack, Aaron Klug, Sydney Brenner and Michael Levitt).[99]

Egypt has one of the deepest histories in medicine, with strong aspirations for science and innovation. In a report titled *Science and Innovation in Egypt* the authors note that 'after decades of under-investment, poor planning of the way research funding is spent, excessive bureaucracy, uninspiring curricula and political meddling have severely weakened a system that once regularly produced scientists who were among the best in the world.'[100] Ahmed Zewail won Nobel prize for Chemistry and specifically for establishing a new sub-discipline called femto-chemistry. Mohamed El-Baradei, a former director of the International Atomic Energy Agency and Vice-President of Egypt, was awarded the Nobel Peace Prize. Egypt's current health minister, Hala Zayed, has been at the forefront of readying the country for manufacturing, acquiring and distributing SARS-CoV-2 vaccines. She established a Scientific Committee to Combat COVID-19 led by Dr. Hossam Badrawi, a specialist in the use of electron microscopy and who has published widely in obstetrics and gynecology.

The Nigerian Centre for Disease Control, which quickly grew in pre-eminence as a leading public health institute in West Africa, is led by the epidemiologist and public health physician Chikwe Ihekweazu. The agency is responsible for protecting public health and safety through the control and prevention of communicable diseases in Nigeria. It serves as the health science advisory body to the Nigerian Federal Government in shaping its COVID-19 pandemic response. Ndadilnasiya Waziri is the current national

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[97] *The Academic Response to COVID-19: A Survey Report* (Frontiers, October 2020) p.15. https://www.frontiersin.org/articles/10.3389/fpubh.2020.621563/full/

[98] https://www.timeslive.co.za/news/south-africa/2020-12-04-bill-gates-hails-three-south-african-doctors-as-heroes/

[99] See Eds. K. Asmal, D. Chidester and W. James, *South Africa's Nobel Laureates* (Johannesburg, Jonathan Ball, 2004). https://www.aljazeera.com/news/2019/12/9/africas-nobel-prize-winners-a-list/

[100] M. Bond, H. Maram, A. Soliman and R. Khattab, *Science and Innovation in Egypt* (British Council, IDRC, Unesco, Nature Magazine, The Royal Society, Academy of Scientific Research and Technology and Bibliotheca Alexandria, no date).

coordinator of the National Transmission of Polio Program at the African Field Epidemiology Network and leads the training of leaders who nurture greater public health capacity in their countries. The program tracked and controlled the Ebola outbreak in Nigeria in 2014. On June 19, 2020 Nigeria was certified as free of wild poliovirus. A hotspot for zoonotic diseases, the Nigeria-CDC is primed to become one of the world's leading infectious disease research centers.

Kenya is well-known for its achievements in animal and plant health. It is home to the International Livestock Research Institute (ILRI) and the International Center for Insect Physiology and Ecology (ICIPE). The Kenyan Agriculture Research Institute, whose chairman is the distinguished physician, molecular biologist and member of the Human Genome Organisation (HUGO) Onesmo ole-MoiYoi, focuses on plant health and related agricultural research. The first African woman to receive the Nobel Peace prize, Wangari Maathai, a veterinary anatomist and biologist, won the award for her work in sustainable development, botanical conservation and leading the Green Belt Movement. Kenya's COVID19 taskforce draws on professionals from the Kenyan Medical Research Institute (KEMRI), University of Nairobi, Wellcome Trust and the US CDC, and includes globally recognized researchers such as Omu Anzala, Loice Achieng, Marybeth Maritim, Matilu Mwau, James Kiiru and Francis Kuria. KEMRI provides health science advisory services to the government's pandemic response and serves as an incubator of its recently launched public health institute.

Ethiopia is renowned for its paleo-archeology in the area of human origins studies. One of the world's leading paleontologists is Berhane Asfaw of the Rift Valley Research Service. Some of the oldest skeletal evidence for anatomically modern humans have been found there. While it has seen its own Tedros Adhanom Gebreyesus become the Director-General of the WHO, one of the world's most visible global public health servants, it has only recently begun to invest in developing a modern health science capacity. Ethiopia had laid the foundations for an extensive health eco-system by the early establishment of the Ethiopian Public Health Institute in 1996. It is led by Ebba Abate and specializes in national level public health research, public health emergencies like COVID-19, and medical laboratory capacity building activities. The EPHI advises the Ethiopian Minister of Health Amir Aman on COVID19 response.

4.4.3 - Did the leaders give priority to the protection of their health workers?

Egyptian leaders praised the efforts of healthcare workers in public pronouncements (calling them 'heroic'), but put in place prohibitive regulations that essentially prevented citizens from criticizing the government's COVID-19 responses. Professionals that were targeted included journalists, lawyers, and frontline workers. Healthcare workers were warned not to 'leak' information about their conditions of work, threatened if they considered protesting, and some were transferred to isolation centers to keep them from speaking about their conditions of work. At least ten workers were arrested by Egypt's National Security Agency for

'voicing concerns over insufficient personal protective equipment, a lack of testing and infection control measures, overcrowded hospitals and other criticisms of the government's handling of the COVID19 crisis'.[101] An Amnesty International report highlighted the case of Dr. Alaa Shaaban Hamida, who was placed in pre-trial detention after a colleague used her phone to report a suspected coronavirus case to the Ministry of Health.[102] Physicians' pleas for more resources and increased support have been met with silence or denial by the Egyptian Health Ministry.

A study undertaken in the city of Amhara, Ethiopia, assessed the preparedness and responses of healthcare providers to combat COVID19 at the North Shewa Zone Hospitals; the facility-based cross-sectional study was conducted from April to May 2020 among 422 healthcare providers using a self-administered questionnaire. The researchers established that 74.5% of the participants felt unsafe at work, 64.4% felt anxious while working with febrile patients. Only 31% had access to gloves, 37.4% to facemasks, 15.9% to goggles, 14.5% to shoes, and 14.2% to aprons. The study's authors concluded that 'the poor perception of healthcare professionals about not having enough support from medical institutions and public health authorities raises the need to urgently implement strategies to protect healthcare workers in the time of COVID-19 pandemic.[103]

Polet Ouma, Abednego Masai and Israel Nyadera relate the story of a document circulating at the beginning of the pandemic in Kenya among healthcare providers warning them not to attend to patients in case their hospitals failed to provide them with PPE.[104] Kenya faced PPE shortages due to export restrictions imposed by supplier countries and interruptions in global supply chains. With support from the private sector, Kenya started producing their own PPE as well as selected laboratory consumables. Kenya is currently a net exporter of these items to the East African region. Medical doctors in the country have also gone on strike several times in the past to demand better working conditions, the employment of more physicians to ease the doctor-patient ratio, higher salaries and the upgrading of public health facilities. The PERC Biweekly Report for 24 November to 7 December noted that Kenya's second wave continues to take a major toll on healthcare workers, with hundreds of new infections and dozens of deaths reported. On 8 December

[101] I. Clements and J. Leone, 'Egypt is jailing health workers for voicing COVID-19 concerns' (*Physicians for Human Rights* ,August 13 2020) https://phr.org/our-work/resources/egypt-is-jailing-health-workers-for-voicing-covid-19-concerns/

[102] 'Egypt: Healthcare workers forced to make impossible choice between 'death or jail' (*Amnesty International*, 18 June 2020) https://www.amnesty.org/en/latest/news/2020/06/egypt-health-care-workers-forced-to-make-impossible-choice-between-death-or-jail/

[103] G. B. Mulu et al 'Preparedness and responses of healthcare providers to combat the spread of COVI-19 among North Shewa Zone Hospitals, Amhara, Ethiopia, 2020' *Infection and Drug Resistance* 2020: 13 3171-3178 (Dove Press).https://www.dovepress.com/front_end/cr_data/cache/pdf/download_1606921981_5fc7aefd95064/idr-265829-preparedness-and-responses-of-healthcare-providers-to-combat.pdf/

[104] P. Ouma, A. Masai and I. Nyadera, 'Health coverage and what Kenya can learn from the COVID-19 pandemic' *Journal of Global Health* 10 no.2 (August 23, 2020) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7565744/

healthcare workers (excluding doctors) at public hospitals went on strike. The Kenyan National Union of Nurses said that their 23,000 members will not be returning to work until their grievances are resolved.[105]

Health professionals were disaffected and had gone out on strike on numerous occasions after COVID-19 cases were registered in Nigeria, protesting against poor conditions of service, inadequate pay and lack of PPE, the latter an issue they were struggling with the most.[106] In response, by June 9, the Nigerian Health Minister Osagie Ehanire announced payment of a 'hazard allowance' (50% of basic salary) as backpay for their efforts during the particularly difficult months of April and May. The Federal Minister of Labour and Employment saluted the 'gallant workers who are at the frontline taking the risk for all of us'.[107] US $42 million had been set aside for the purpose. The Minister said that the funds would be available within two weeks of the announcement.[108] He also said that the Federal Government approved insurance coverage for the health workers. Still, health workers asked for special resources or support for their most vulnerable frontline colleagues who had contracted COVID19. They said that while staff at isolation centers had received PPE, those working at other medical facilities had run short.

Finally, in South Africa, the unprecedented risk posed to healthcare workers was acknowledged at all levels of government. Financial and administrative commitments were made to ensure procurement and local production of PPE. Administrative and engineering interventions to prevent COVID-19 infections and outbreaks were reportedly implemented at healthcare facilities. PPE was available during the early phase of pandemic, but with rising infections there was pressure on the supply-chain.[109] By 4 August, over 27,000 healthcare workers had tested positive which nationally amounted to 5% healthcare workforce, well below the global average of 10%. Minister of Health Zweli Mkhize reported a death rate of 0.9% among healthcare workers and a recovery rate of 58%.[110] The Human Sciences Research Council (HSRC) and the Nelson Mandela School of Medicine at the University of Kwazulu-Natal conducted a national survey of health workers' responses to COVID-19 and established that about two-thirds had some form of COVID-19 related training such as screening and isolation procedures but only half said they were trained in treatment

[105] PERC Biweekly Report (24 November-7 December 2020).
[106] A. Okunola, '5 challenges facing healthcare workers in Nigeria as they tackle COVID-19' *Global Citizen* (June 9 2020). https://www.globalcitizen.org/en/content/challenges-for-health-care-workers-nigeria-covid/
[107] I. Odoh, 'FG set to pay hazard allowance to health workers' *Business Day* (Lagos) June 9, 2020.
[108] P. Adepoju, 'On the frontline of Nigeria's coronavirus fight, health workers brace for inevitable' *Devex* (14 August 2020) https://www.devex.com/news/on-the-frontline-of-nigeria-s-coronavirus-fight-health-workers-brace-for-inevitable-97928/
[109] A. Dramowski et al, 'South African healthcare workers and COVID-19: A shared responsibility to protect a limited resource' *South African Medical Journal* 110 no.7 (2020) http://www.samj.org.za/index.php/samj/article/view/12977/9279/
[110] 'Covid-19 impact on SA healthcare workers: 230 dead' *Medical Brief* (August 19th 2020). https://www.medicalbrief.co.za/archives/covid-19s-impact-on-sa-healthcare-workers-230-dead/

guidelines.[111] They found that nurses lacked confidence in their knowledge about COVID-19 more than others.

The National Education, Health and Allied Workers' Union (NEHAWU) brought their members out on strike to protest against poor working conditions and urged the government to end the practice where tenders for the manufacturing and procurement of PPE were apparently awarded to individuals politically connected to the governing African National Congress. The country's Special Investigating Unit said that it is probing more than 20 cases of corruption related to the contracts regarding provision of health supplies to government.[112]

4.4.4 - Did leaders ensure that school closures and re-openings were responsibly managed?

In April 2020, UNICEF Executive Director Henrietta Fore stated that 'in education, an entire generation of children have seen their education interrupted, Nationwide school closures have disrupted the education of more than 1.57 billion students – 91 percent – worldwide. We know from previous shutdowns that schoolchildren, and especially girls, who are out of school for extended periods of time are much less likely to return when classrooms reopen. The closures of schools also eliminates access to school-based nutrition programmes, driving malnutrition rates upwards.'[113] More than 1500 members of the United Kingdom's Royal College of Paediatrics and Child Health concurred with the searing comment that continued school closures risk 'scarring the life chances of a generation of young people'.[114] Children staying at home also constrain the ability of parents to work. In many settings, children are vulnerable when left alone at home. South Africa reported a dramatic rise in domestic violence during its lockdown period.[115] During the West African Ebola outbreak of 2014-2016 teenage pregnancies increased.

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[111] 'Front line talk – South African healthcare workers' response to the COVID19 Pandemic' (Cape Town, Human Sciences Research Council and University of Kwazulu-Natal, 5 August 2020) National Survey - sample size 7067.
[112] 'South Africa healthcare workers protest, threaten strike' Aljazeera (3 September 2020) https://www.aljazeera.com/news/2020/9/3/south-africa-healthcare-workers-protest-threaten-strike/
[113] Henrietta Fiore, 'Don't let children be the hidden victims of COVID-19 pandemic' (UNICEF, New York, 9 April 2020) https://www.unicef.org/press-releases/dont-let-children-be-hidden-victims-covid-19-pandemic/
[114] Open letter from UK Paediatricians about the return of children to schools. (Royal College of Paediatrics and Child Health, London, June 17 2020) https://www.rcpch.ac.uk/sites/default/files/2020-06/open_letter_re_schools_reopening_2020-06-17.pdf/
[115] B.J. Hall and J.D. Tucker, 'Surviving in place: The coronavirus domestic violence syndemic' *Asian Journal of Psychiatry* 53: 102179 (October 2020) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7246009/ and B. Adebayo, 'South Africa has the continent's highest COVID-19 cases. Now it has another pandemic on its hands' CNN (June 19, 2020) https://www.cnn.com/2020/06/19/africa/south-africa-gender-violence-pandemic-intl/index.html/ accessed December 15, 2020.

Table 4.10: Pattern of schools being open or closed during the COVID-19 pandemic

Country	Dates 2020									
	1 April	1 May	15 May	1 June	15 June	1 July	1 August	1 September	1 October	17 October
Egypt	C	AB	C	C	C	AB	AB	AB	AB	PO
Ethiopia	C	C	C	C	C	C	C	C	C	C
Kenya	C	AB	C	C	C	C	C	C	C	C
Nigeria	C	C	C	C	C	C	C	C	PO	PO
South Africa	AB	AB	AB	C	PO	C	AB	FO	FO	FO
AB – Academic break C – Closed due to COVID-19 FO – Fully open PO – Partially open										

Source: https://en.unesco.org/covid19/educationresponse , (Accessed October 18, 2020).

In Ethiopia and Kenya, schools have been closed and/or out of session for more than 8 months, Egypt 7 months (schools partially reopened in October), Nigeria 6 months (partially reopened in October) and South Africa for 5 months (reopened in September). The number of lost weeks of in-class education is considerable. A survey of ministries of education officials in 118 countries established that on average a quarter (47 days) of the regular school year was lost due to Covid-19. In high-income countries 27 days were lost, 48 in upper middle, 68 in lower middle income and 62 in low income countries.[116] Table 4.11 presents data of how many children in the five countries under review were affected by school closures, read against historical attendance and completion rates. This is, of course, alarming.

Table 4.11: Number of Learners Affected by Closures, and pre-COVID-19 Attendance and Completion Rates (Primary School)

Country	Number of Learners	Attendance Rate for Primary School	Completion Rate for Primary School
Egypt	26,071,893	97%	91%
Ethiopia	24,497,627	68%	47%
Kenya	15,257,191	85%	79%
Nigeria	39,440,016	67%	71%
South Africa	14,612,546	99%	96%

Source: https://data.unicef.org/topic/education/covid-19/ (Accessed October 18, 2020)

[116] *What have we learnt: Overview of findings from a survey of ministries of education on national responses to COVID-19* (Paris: UNESCO, UNICEF and the World Bank, 2020) p.15. There is a difference between countries located in the northern and southern hemispheres (about 30 days) largely because most upper middle to higher income countries are located in the northern hemisphere and lower income ones in the southern hemisphere. The academic year cycle corresponds with the calendar year in the southern hemisphere and, with the summer break being in December to January, the ratio between days lost to COVID-19 and days on vacation would be impacted. Of the five countries under review South Africa is the only country located in the southern hemisphere.

It is one thing for leaders to shut down schools, a decision that should never ever be taken lightly given the potential cumulative consequences. It is quite another thing for leaders to mitigate learning losses, deploy effective remote learning strategies and reopen schools with the highest levels of safety considerations. Effective interventions require that student educational levels be assessed and monitored, teachers retrained for online learning, additional budgets set aside, the scale of which depending in part of what quality of communications infrastructure and supportive digital backbone education officials and teachers have to work with. Table 4.12 illustrates the immense challenge. Cellular (but not smart) phone penetration levels are high in Africa but for internet access, which is best suited for providing online materials and typically more cheaply and efficiently using a fiber-optic cable backbone, it is poor to middling. Ethiopia recorded a low of 15.7/100 for internet access and South Africa a high of 55/100, the latter not an impressive figure either. Internet connections are frequently unreliable and in rural areas on average only a third of the population has access to electricity. It has been established that educational materials have to be delivered via cellphones or tablets reaching women and mothers to be most effective. It is noteworthy that Kenya, regarded as the leading center of digital innovation in Sub-Sahara Africa and therefore the most likely to succeed with an effective online platform, announced on 2 September 2020 that the 2019-2020 school year will be considered by the officials as a 'lost year'.[117]

Table 4.12 - Access to Communications Infrastructure

GHS Index 3.6: Access to Communications Infrastructure	Egypt	Ethiopia	Kenya	Nigeria	South Africa
3.6.1: Internet Users	45.8	15.7	16.9	26.2	55.0
3.6.2: Mobile subscribers	79.5	41.3	63.4	54.8	100
3.6.3: Female access to mobile phone	75.9	65.5	98.3	79.3	100
3.6.4: Female access to the internet	63.0	81.5	55.6	66.7	88.9

0-33.3 Low Scoring Band 33.4-66.6 Medium 66.7-100 High.

Source: Global Health Security Index (2019) https://www.ghsindex.org

In the report *What Have We Learnt*?, UNESCO/UNICEF/WORLD BANK provide guidance to education authorities and leaders about what should be done to respond to the challenge, in ten areas and steps: (1) assess the scale of lost instruction days; (2) ensure that teachers monitor, track and assess student learning progress whilst at home; (3) when schools reopen, have a plan to remediate learning loss; (4) include remote learning in educational response; (5) boost access to online learning; (6) have polices ready to support teachers; (7) support parents and caregivers; (8) have school reopening plans; (9) health protocols must be ready and tested; and (10) finance and resource the strategies. Down the line, student drop-out and

[117] 'Covid-19: An unprecedented crash test for African education systems' (UNESCO, Senegal, September 2 2020) https://dakar.iiep.unesco.org/en/news/covid-19-unprecedented-crash-test-african-education-systems/

disengagement rates should be monitored, the continued role of distance learning assessed, effectiveness of remediation strategies tracked, new approaches to learning assessments developed, decisions regarding reopening of schools localized, effectiveness of health and safety measures and skills development and support to teachers, including psycho-social support systems for mental health, evaluated.[118]

The WHO provides practical guidelines for the safe reopening of schools.[119] Have the leaders for the five African countries under review responded accordingly? There is no assessment data available that would allow the question to be answered and what follows is suggestive. It is important to remember Ethiopia and Nigeria are federations, South Africa has a quasi-federal hybrid system and Kenya and Egypt have singular administrations. In federations with devolved systems it is much more difficult to ensure that national policies are implemented and even more challenging to achieve uniformity in outcome. State capacity is typically the weakest in rural areas, especially in such complex societies like Nigeria and Ethiopia with their worsening threat environments. The role of UNICEF in supporting the implementation of WHO guidelines in the countries with weak capacity is of the greatest importance in assuring safe and secure reopening.

In Egypt, Education Minister Tarek Shawki announced (on September 8) new regulations for the school year, dubbing 2020/2021 as the year of 'returning to school.' International schools re-opened on September 15 while national schools did so on October 17. If more than one confirmed coronavirus case was detected in any class within two weeks, the school will be closed for 28 days. If more than one class was closed in one school within 2 weeks, the school would be closed for 28 days. Minister Shawki pointed out that support platforms were available to students at all levels, and that those who have internet access at home can benefit from educational channels, the electronic library platform and live broadcast platforms. Earlier, when Egypt's school suspension began on March 15, the Ministry enabled access for 22 million students to the Egyptian Knowledge Bank and a digital platform whereby they could use cell phones and tablets to access educational materials. Government paid for the SIM cards in a partnership with the cellular network operators.[120] The students who did not have access could attend school and utilize its resources. Online curriculum and technology were to be made available to all students. High school students would receive a government-supplied tablet. An organized online teachers' academy would, as a financial incentive, provide

[118] See *What have we learnt: Overview of findings from a survey of ministries of education on national responses to COVID-19* p.8.

[119] https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-schools/ See also CDC guidelines: https://www.cdc.gov/coronavirus/2019-ncov/community/schools-childcare/index.html/ (Accessed 14 December 2020).

[120] 'How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic)' (The World Bank) https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-covid-19-pandemic/ (accessed November 25 2020).

certificated in-service training opportunities.[121] With 12.2 million elementary students enrolled, Egypt has the largest school system in the Middle-East North Africa region.[122]

In Ethiopia, on September 18, the Minister of Health advised Parliament to reopen schools provided that certain conditions were met. Grades 8 and 12 returned to classrooms for least 3 weeks to sit for national examinations while reopening would gradually be extended to other grades. The Ministry established that 90 per cent of families wanted schools to reopen but needed assurances on COVID-19 preventive measures. The maximum number of students in a classroom would be limited to 25 and end the old practice of having 70. The introduction of a double-shift system, the construction of more classrooms and the use of other institutions were measures introduced. Earlier, when schools were closed, radio and television broadcasts and digital platforms were established for instructional purposes.[123] Although some children have been able to access online and distance learning, many – especially those in remote rural areas – have not. It is estimated that every second child may have gone without any form of education during the Covid-19 period. The Ethiopian authorities took important steps, but by September UNICEF reported that most of the regions had not allocated funding for reopening preparedness to support water provision and sanitizers and many had inadequate plans in place.[124] Education is devolved to Ethiopia's 30 regions and public schooling is run largely by local authorities.

During school closures, the Kenya Institute of Curriculum Development worked on materials for remote learning, including developing lessons for TV, Radio and Internet and ensuring that parents knew where the resources were and how to access them. In order to provide wider internet access, the Kenya Civil Aviation Authority in partnership with Alphabet Inc and Telkom Kenya launched Google's Loon Balloons floating over its airspace carrying 4G base stations. Safaricom, a private mobile network operator, partnered with Eneza Education, Longhorn Publishers and Viusasa support primary and secondary school students

[121] https://egyptindependent.com/egypts-education-ministry-sets-30-coronavirus-related-health-measures-ahead-of-academic-year/
https://egyptindependent.com/egypt-announces-new-system-for-high-school-regulations-for-school-year-amid-covid-19/
https://www.egypttoday.com/Article/1/92663/Egypt-s-Education-Ministry-announces-COVID-19-preventive-measures-during/ (Accessed 2 December 2020).

[122] https://wenr.wes.org/2019/02/education-in-egypt-2/ (Accessed 2 December 2020)

[123] How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic)'.

[124] Adele Khodr, 'The case for safely reopening schools in Ethiopia' (UNICEF Ethiopia, October 1 2020)
https://www.unicef.org/ethiopia/stories/case-safely-reopening-schools-ethiopia/ https://allafrica.com/stories/202009100812.html/
https://riseprogramme.org/blog/reopening-schools-ethiopia-perspectives
https://www.aa.com.tr/en/africa/virus-cases-surpass-90k-as-schools-reopen-in-ethiopia/2013601
https://addisstandard.com/in-depth-analysis-is-ethiopia-ready-for-school-reopening-amid-covid-19-surge/ (Accessed 7 December 2020)

with free access to educational e-content.[125] UNICEF partnered with the Government of Kenya to develop guidelines for schools, helped to distribute soap and install hand-washing facilities at schools that lacked them. UNICEF welcomed the Kenyan Ministry of Education's plan to reopen schools from 12 October, starting with Grade 4, Class 8 and Form 4.[126] Learners, teachers and school workers were required to wear face masks at all times, maintain physical distancing of at least a meter and check for COVID-19 symptoms daily. Schools limited the entrance of outsiders, including parents.[127] Every school had a qualified nurse in charge. However, by 2 November, as the partial reopening of schools entered its fourth week, at least 35 schools across the country reported positive cases. The surge is blamed on the easing of restrictions. Critics have called for renewed school closures to protect teachers and learners but the education authorities insist that children are safe and learning proceed without interruption.[128] Schooling in Kenya is provided in their 47 districts and system of counties and funded by the central government.[129]

The Nigerian Ministry of Education ordered all schools to reopen on October 12 and mandated that they adhere to guidelines provided by the Nigerian CDC. These included norms of personal hygiene, how students in school and boarding houses were to wash their hands properly and use their masks. Government provided thermometer infrared devices to check temperature. A Ministry of Education spokesperson said that despite measures to help students cope with the suspension of classes, poorer students have been more affected because of their inability to afford remote learning. Schools tried as much as possible to provide online lessons, but the degree to which learners signed on the system was reportedly poor.[130] The Federal Ministry of Education's Universal Basic Education Commission had set up a Task Team that established the West African Examinations Council e-Learning portal, a Mobile Classroom App and a partnership with School Gate for all primary school students to access courses free of charge.[131] UNICEF was working with partners across Nigeria to ensure that children get back to school in a safe environment. 'We have bought 200 buckets, soaps, hand sanitizers, 2,300 facemasks, first aid drugs and writing materials, and distributed among Ja'en and its neighborhood. We've also been engaging mothers in our communities through house-to-house campaigns on the resumption of schools for mothers to send their children back to school' said Hauwa Muhammad, coordinator of Mothers' Association, Ja'en Primary School, Gwale LGA in Kano

[125] How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID 19 pandemic.
[126] 'Unicef welcomes schools reopening in Kenya' (UNICEF Kenya, October 6, 2020).
[127] http://www.xinhuanet.com/english/2020-09/16/c_139372959.htm/ (Accessed 7 December 2020)
[128] https://www.pri.org/stories/2020-10-16/after-months-closure-kenyas-schools-adjust-sudden-reopening/ (Accessed 2 December 2020).
[129] https://wenr.wes.org/2015/06/education-kenya/ (Accessed 2 December 2020).
[130] https://www.voanews.com/africa/nigeria-government-calls-reopening-schools-after-6-month-covid-lockdown/ (Accessed 2 December 2020).
[131] How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic.

State.[132] Schools are run by states and local authorities, and in those parts of Nigeria (especially the north) where they (the authorities) have no, little or a contested presence, the probability of adherence to WHO guidelines is likely low to unknown.

Finally, South Africa's Minister of Basic Education Angie Motshekga had issued WHO based standard operating procedures when schools reopened in June, which the provincial authorities constitutionally responsible for schooling had to implement. The national department provided a range of resources in support of the effort, especially to those provinces (South Africa has nine provinces) that are more rural, poorer and more weakly governed such as the Eastern Cape and Limpopo that are currently experiencing a spike in COVID19 infections.[133] During the lockdown period learner access to educational material and online learning was more challenging in rural areas the country's sprawling informal settlements. At the time, the South African Broadcasting Corporation launched the education television and radio curriculum support programs. The state telecom operator Telkom established zero rated education websites to provide cost free access to learners.[134] The lockdown was an opportunity for the country to redefine a curriculum designed for blended learning.[135] Motshekga noted with concern that by October the return rate was between 80 and 90 per cent at the schools she visited. 'We are encouraged and humbled by what we see in schools' she said, noting that her department hardly saw any new school closures, which she attributed to the high degree of adherence to the revised operating procedures.[136] South Africa has a national end-of-year high school matric examination which all graduating students have to take. This went smoothly, except for the fact that because the mathematics and physical examination papers were leaked the students, to their utter consternation, will be obliged to retake them, and this against the objection of teachers' unions. In the face of unremitting objections, government abandoned the plan.

4.5 - Multilateralism in Action

The WHO's International Health Regulations (2005) (IHR) serve as international law regulating the reporting of and response to disease outbreaks. Based on mid-19th century efforts to stop the spread of plague, yellow fever, smallpox and cholera across borders, the IHR was formally adopted in 1969 by the

[132] O. Enemaku, 'In Northwest Nigeria, communities prepare for re-opening of schools shutdown by COVID-19' (UNICEF Nigeria, October 26 2020).
[133] https://www.education.gov.za/covid19supportpackage.aspx/ (Accessed 2 December 2020).
[134] How countries are using edtech (including online learning, radio, television, texting) to support access to remote learning during the COVID-19 pandemic).'
[135] L. Ramrathan, 'School curriculum in South Africa in the Covid-19 context' Prospects (August 6, 2020) https://link.springer.com/article/10.1007/s11125-020-09490-1/ (Accessed 27 November 2020)
[136] https://www.news24.com/news24/southafrica/news/hardly-any-schools-being-closed-and-reopened-motshekga-on-decline-in-covid-19-cases-at-schools-20201001/ (Accessed 27 November 2020)

World Health Organisation (WHO) and last revised in 2005. It is the only international legal treaty that empowers the WHO to coordinate a global surveillance system that, in IHR 2005 language, must act to 'prevent, protect against, control, and provide a public health response to the international spread of disease that are commensurate with and restricted to public health risks and that avoid unnecessary interference with international traffic and trade.'[137]

The revised IHR was passed in 2007. But when the H1N1 Swine Flu pandemic outbreak of 2009 hit the world, little seemed to have changed. The 2012 targeted date by which WHO Member States were to reach compliance with the revised 2005 IHR came and went with only 20 per cent, most of them from the developed north, having reached the required targets. Shaken by the 2009 H1N1 pandemic, it was the Obama Administration's National Security Council that proceeded to act by leading the establishment of the multi-country Global Health Security Agenda (GHSA) in 2014, coincidentally during early stages of the West African Ebola outbreak of 2014-2015. The purpose of the GHSA was not to replace but to accelerate IHR compliance by providing support to countries to assess and close their gaps through concerted collective action. The Obama White House secured $1 billion from the US Congress for this purpose.

In the spirit of multilateralism, the GHSA evolved into a consortium of countries that included players such as China that voluntarily collaborated with the purpose of strengthening three pillars of global health security – detection, prevention and response. These three categories were further broken down into eleven (nineteen today) so-called 'action packages' – working groups led by technical experts from member countries and partners – based on a health security framework initially developed by the Atlanta-based Center for Disease Control and Prevention.[138] To define mutually agreed upon targets required a universally applicable common set of objective metrics, and the GHSA introduced the Joint External Evaluation (JEE) as a mechanism that would determine country gaps and create a collaboratively framed plan to close these over a defined period of time.[139]

As the WHO is the custodian of the IHR, it followed that the JEE had to carry the imprimatur of its moral authority. Individual countries had to request an evaluation and do an internal gap assessment - using the WHO/JEE framework - first. An external team of technical experts would then visit the country, review the findings and find consensus with government officials about what the gaps were, framing recommendations

[137] *International Health Regulations* (1969). Third Annotated Edition. World Health Organisation. (1983).
[138] T. Inglesby and J. E. Fisher, 'Moving ahead on the Global Health Security Agenda' *Biosecurity and Bioterrorism* 12 No.2 (10 April 2014 | https://doi.org/10.1089/bsp.2014.3314).
[139] N. Kandel et al, 'Joint external evaluation process: bringing multiple sectors together for global health security' *Lancet* 5, Issue 9 (E857-8, September 1, 2017).

for how to fill them according to the priorities set by the home country. Mission reports were published and placed on the WHO and JEE website. Next steps were to develop and adopt National Action Plans for Health Security (NAPHS), mobilize resources for implementation, and test any improvements in their systems that did not necessarily require large funding inputs.[140]

Comparatively speaking, as we have shown, none of the five countries had the capability to prevent an outbreak, Nigeria the least able and Kenya the most. South Africa and Kenya have high-scoring detection capabilities, Nigeria, Egypt and Ethiopia medium to low. All five countries have low to medium-scoring rapid response capabilities, with South Africa on the stronger end of the spectrum. The quality of and access to healthcare citizens have were low across the board, with South Africa being the least challenged and Egypt the most. All countries did medium to well with signing and concluding international conventions and treaties.

Benchmarking evaluations were made before the COVID-19 pandemic struck the world. This report has reviewed how government health security eco-systems for Egypt, Ethiopia, Kenya, Nigeria and South Africa coped in real-time against the assessed capabilities. Risk assessments have their limitations as predictive tools because, by their nature, pandemics are typically caused by novel pathogens that exploit weaknesses we had little to no idea existed or mattered. Every pandemic therefore always brings surprises. The world is aware that, before COVID-19, the United States of America had the highest-ranked systems in the world only to witness in alarm how the federal leadership failed to mobilize its vast health security assets to proper effect. Risk assessment metrics are therefore to be used less as a predictive and more as a planning tool. Leadership during pandemic response and other new variables revealed by COVID-19 as important will be part of revised assessments to better prepare for the next round, but then, too, there will be new surprises.

From a planning perspective, the question is how countries can return to the path of building their core capacities to meet revised[141], post-COVID-19 IHR standards and requirements. The task is significant, as this will have to be done under circumstances where their economies have shrunk - some devastatingly so – and with a severely diminished public purse. Prior to COVID-19, all of the five African countries surveyed here had developed their NAPHS but had not secured budgets to fund them.[142] Only Nigeria made their

[140] C.T. Lee et al, 'Action-based costing for National Action Plans for Health Security: Accelerating progress toward the International Health Regulations' *Health Security* 18, no. S1 (January 18, 2020, S53-S63 doi: 10.1089/hs.2019.0063).
[141] See an earlier call for revisions by R. L. Katz and S. F. Dowell, 'Revising the International Health Regulations: call for a 2017 Review conference' *The Lancet Global Health* 3, Issue 7 (July 1, 2015) pp. E352-E353.
[142] For South Africa, see J. Daven, W. James and M.J. Kahn, 'Investing in health security preparedness' in Ed. W. James, *Vital Signs: Health Security in South Africa* (Johannesburg, Brenthurst Foundation, 2020) pp.76-93.

NAPHS public.[143] After COVID-19 the prospects for mobilizing resources to support the NAPHS are more promising. No political leader, save those in chronic denial, can fail to see that investments in health security designed to prevent, detect, and respond to future pandemics are of the greatest importance to their country's survival and national interest, and therefore deserve to be among the most important priorities on which to focus.

Accordingly, national resource mobilization of pandemic preparedness should become a high priority for all countries. The World Bank has an established pandemic financing facility[144], and the Africa Development Bank has COVID-19 pandemic financing instruments. There are also initiatives underway to establish more pandemic financial facilities, including a matching fund.[145] Additionally, the Global Preparedness Monitoring Board (GPMB), formed in 2018 and headed by former WHO Director-General, Gro Harlem Brundtland, will be instrumental in informing governments how best to develop preparedness for future pandemics. Importantly, for African countries, the African Union's youngest agency, the Africa Center CDC, modelled after the US CDC, established in 2017 and led by the virologist John Nkengasong, has quickly grown into valuable technical support agency for member states whose mission includes helping with resource mobilization.[146]

With a vast continent of 54 countries and one disputed territory to cover, the Africa CDC has decentralized its support by way of five regions – North (Egypt as headquarters), West (Nigeria), East (Kenya), Central (Gabon) and South (Zambia) – called Regional Collaborating Centres (RCCs) to act as regional hubs that serve member states in the field. Priority areas of effort are readying emergency preparedness and response, building laboratory systems and networks, establishing and supporting existing national public health institutes and research programs, developing public health information systems and extending surveillance and disease intelligence platforms. For COVID-19 in Africa, the Africa CDC coordinated regional efforts in mobilizing urgently needed resources and political will by establishing the African Union COVID-19 Response Fund, the COVID-19 Africa Pool Procurement Portal, the Partnership to Accelerate COVID-19 Testing (PACT) and the African Task Force for Coronavirus Preparedness and Response (AFTCOR), all aimed at mobilizing resources to support national responses, political commitments by Member States, and a regional solidarity approach to the pandemic. To ensure the region is well informed and kept up to date

[143] *National Action Plan for Health Security Federal Republic of Nigeria 2018-2022* (Ministry of Health, Lagos, November 2018).
[144] https://www.worldbank.org/en/topic/pandemics/brief/pandemic-emergency-financing-facility/
[145] https://www.nti.org/newsroom/news/preventing-next-pandemic-challenge-fund-build-health-security/ and https://apps.who.int/gpmb/annual_report.html/
[146] G.Watts, 'John Nkengasong: long-term vision for Africa CDC' *The Lancet* 393, Issue 10191 (June 29, 2019: DOI: https://doi.org/10.1016/S0140-6736(19)31420-5).

with status of the pandemic and latest developments in the evolution of the pandemic, the Africa CDC uses varies information sharing platforms including its websites that provides daily updates on COVID-19 epidemiology, policy updates and other valuable technical support materials, weekly press releases, webinars and online ECHO sessions coordinated by RCCs in their respective regions.[147]

[147] https://www.brookings.edu/blog/africa-in-focus/2020/04/15/the-coming-of-age-of-the-africa-centers-for-disease-control/ (Accessed 20 November 2020)

-5-

Next Steps

The number of new COVID-19 cases reported daily in the months of July and August in Africa declined rapidly. This trend changed during the month of October with many countries now experiencing either their first major increase in the number of new COVID-19 cases or their second wave of the pandemic. About half (27 of 55) of African Union Member States reported increases in new cases and including in hotspot countries like Kenya, Tunisia and war-torn Libya. As the pandemic continues to evolve across Africa, the Africa-CDC put together a guidance document that Member States can use to re-evaluate, re-strategize and re-invigorate their COVID-19 responses to handle a second and possibly a third wave of the pandemic, this time with the prospect of having vaccines in hand to accelerate reaching the goal of herd immunity.[148]

In *Next Steps* we assess where the countries under review are in relation to their ability to manufacture, acquire and distribute vaccines. The picture presently is not promising. We also review the prospects for economic recovery and the opportunities countries have to secure more funding for pandemic response and preparedness. The picture here is concerning, particularly for Nigeria and South Africa. We finally examine what needs to be reformed in the health security global architecture and the commitments and actions UN agencies, the Africa CDC and the national governments should consider undertaking to strengthen surveillance systems, generate additional evidence and science, upscale testing and continue to strengthen their health systems. Our principal recommendation is that the Africa CDC – the principal enabler of change and progress in public health on the African continent - should be strengthened with an accelerated program of partnerships to upgrade its five Regional Collaborating Centres (RCCs) headquartered in Egypt, Kenya, Nigeria, Gabon and Zambia (serving Africa Union Member States respectively in North, East, West, Central and Southern Africa) into fully-fledged public health institutes. Example of such partnerships – for example in West Africa between the West African Health Organisation (WAHO) and the Africa-CDC West Africa RCC - has already begun.

5.1 - Vaccines

There are four scenarios that can result in the control of an epidemic or pandemic: (1) in the case of SARS, testing, tracing and isolation, along with protecting healthcare workers was sufficient to end the epidemic. With SARS, infected individuals usually did not transmit virus until several days after symptoms began and were most infectious only when severe symptoms develop, around day ten. Effective patient isolation was enough to control spread; (2) sufficient numbers of citizens become infected to achieve herd

[148] *Responding to the second wave of Covid-19 in Africa* (Addis Ababa, Africa CDC, Rapid Alert 27-11-20).

(community) immunity, a situation where there are not enough susceptible individuals remaining in the community to sustain the epidemic, as occurred with the 1918-1919 Influenza pandemic, alongside monumental levels of mortality; (3) the development of safe orally ingested agents that can interrupt transmission as in the AIDS/HIV scenario; and (4) the development of safe and effective vaccines that can be used to successfully immunize a very high proportion of citizens in a community and induce herd immunity. There are multiple examples of the success of this strategy including the use of the smallpox vaccine to eradicate smallpox and the widespread use of the measles vaccine to dramatically reduce childhood measles cases and deaths.

The scenario that is likely to control the COVID-19 pandemic without excessive loss of life is the development, deployment, and widespread uptake of safe and effective COVID-19 (SARS-CoV-2) vaccines. Given the magnitude of the ongoing pandemic the WHO has called upon all nations to prepare for the purchase, distribution, public health messaging, and administration of COVID-19 vaccines as they become available.

With the emergence of several effective COVID-19 candidate vaccines,[149] the issue of equitable distribution has come into acute focus. This is particularly important for the African region. The establishment of the Access to COVID-19 Tools (ACT) Accelerator and, in particular, the COVAX Facility have been positive developments in this regard.[150] However, there are still significant concerns pertaining to access for many countries of the Global South, especially given the rising 'vaccine nationalism' reflected in the efforts made by wealthier countries to secure vaccine stockpiles.[151,152] Within this context, it is important to understand what the current vaccine procurement, manufacturing and distribution capabilities are for some of the larger countries on the continent. The following provides a synopsis of this information with respect to Egypt, Ethiopia, Kenya, Nigeria and South Africa.

5.1.1 Egypt

Egypt has been vocal in advocating for greater access to the future COVID-19 vaccine. Indeed, at the recent 67th session of the WHO Regional Committee for the Eastern Mediterranean, Egypt's Health Minister,

[149] WHO. *Draft landscape of COVID-19 candidate vaccines.* Geneva: World Health Organization, 2020. Available from: https://www.who.int/publications/m/item/draft-landscape-of-covid-19-candidate-vaccines (accessed November 23 2020).
[150] GAVI. *COVAX.* Geneva: GAVI, 2020. https://www.gavi.org/covax-facility (accessed November 23 2020).
[151] J. Nkengasong, N. Ndembi, A. Tshangela, and T. Raji, 'COVID-19 vaccines: how to ensure Africa has access' *Nature (*October 6 2020) https://www.nature.com/articles/d41586-020-02774-8 (accessed November 23 2020).
[152] E. A. Nelson, 'Vaccine Nationalism and Africa.' *Think Global Health (*September 16 2020). https://www.thinkglobalhealth.org/article/vaccine-nationalism-and-africa (accessed November 26 2020).

Hala Zayed, appealed for the provision of the vaccine for free to low-income countries, and at affordable prices to middle-income countries.[153]

Given its potential as an export hub to the Middle East and Africa, and its growing ability to manufacture vaccines, Egypt has been seen as a potential strategic partner for vaccine development by a number of countries.[154] In September 2020, an agreement was reached between the Chinese company, Sinopharm, and Egypt's VACSERA in relation to conducting a trial phase of a Chinese manufactured candidate vaccine in the country. Furthermore, an agreement with the Russian Direct Investment Fund could also see the importation of millions of doses of a Russian manufactured vaccine (Sputnik V, developed by the *Gamaleya National Research Institute)* via the Egyptian company, Pharco.[155,156] In November, Zayed also announced that the Egyptian government had secured enough doses of the Pfizer (US) and Oxford (UK) candidate vaccines to provide for 20% and 30% of the country's need, respectively.[157]

Although Egypt has shown its ability to procure vaccines, and has some manufacturing capacity, the country's ability to roll-out the vaccines when they become available remains in question. Although it has successfully conducted largely scale vaccination programmes (notably its recent hepatitis C eradication efforts), the country has a weakened health system, further strained by the pandemic.[158] Its capacity, therefore, to ensure a rapid in-country distribution of the vaccine appears to be very limited.

5.1.2 Ethiopia

Ethiopia is facing the impact of the COVID-19 pandemic in an environment of rising domestic insecurity. The political turbulence that has been exacerbated by the recent conflicts around its Tigray province[159]

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[153] 'Egypt's health minister calls for WHO to provide free COVID-19 vaccines to low-income countries.' *Ahram Online.* October 12 2020. http://english.ahram.org.eg/NewsContent/1/64/388195/Egypt/Politics-/Egypts-health-minister-calls-for-WHO-to-provide-fr.aspx (accessed November 25 2020).

[154] J. Malsin, 'Covid-19 Vaccine Makers See Egypt as Crucial Launchpad.' *The Wall Street Journal.* October 26 2020. https://www.wsj.com/articles/covid-19-vaccine-makers-see-egypt-as-crucial-launchpad-11603707672 (accessed November 25 2020).

[155] Al-Youm, A-M. 'WSJ: Egypt set to be a distribution hub for coronavirus vaccines.' *Egypt Independent.* October 27 2020. https://egyptindependent.com/wsj-egypt-set-to-be-a-distribution-hub-for-coronavirus-vaccines/ (accessed November 26 2020).

[156] A. Sharma, 'Russia's sovereign wealth fund partners with Pharco to supply Covid-19 vaccine to Egypt.' *The National.* September 30 2020. https://www.thenationalnews.com/business/technology/russia-s-sovereign-wealth-fund-partners-with-pharco-to-supply-covid-19-vaccine-to-egypt-1.1086011 (accessed December 16 2020).

[157] 'Egypt reserved doses of much-awaited Pfizer and Oxford trial vaccines, says Health minister.' *Ahram Online.* November 10 2020. http://english.ahram.org.eg/NewsContent/1/64/393466/Egypt/Politics-/Egypt-reserved-doses-of-muchawaited-Pfizer-and-Oxf.aspx (accessed November 25 2020).

[158] A-M Al-Youm, 'WSJ: Egypt set to be a distribution hub for coronavirus vaccines.' *Egypt Independent.* October 27 2020. https://egyptindependent.com/wsj-egypt-set-to-be-a-distribution-hub-for-coronavirus-vaccines/ (accessed November 26 2020).

[159] S. Tisdall, 'If Ethiopia descends into chaos, it could take the Horn of Africa with it.' *The Guardian*. November 22 2020. https://www.theguardian.com/commentisfree/2020/nov/22/if-ethiopia-descends-into-chaos-it-could-take-the-horn-of-africa-with-it (accessed November 25 2020).

threatens its political stability (which is likely to have a knock-on effect on crucial services such as healthcare).

In terms of procurement, Ethiopia is largely dependent on its participation in COVAX. Indeed, a recent analysis undertaken by the Duke Global Health Innovation Center found that Ethiopia is reliant on COVAX to provide future COVID-19 vaccine coverage for 20% of its population, with no alternatives of acquiring additional doses at this stage.[160]

Ethiopia appears to have some vaccine production capability, with a key role being played by the *Vaccines and Diagnostic Production Directorate* of the Ethiopian Public Health Institute.[161] However, Ethiopia does not currently have the ability to produce vaccination doses at quantities required for a large-scale, population-level needs. Indeed, even before the pandemic, it spent approximately US$150 million on vaccine procurement per year; most of which came through donor funding.[162]

Interestingly, Ethiopia does appear to have some capacity for the vaccine rollout. It recently was able to vaccinate almost 15 million against measles, even in the midst of the COVID-19 pandemic.[163] Furthermore, it also seems capable of leveraging private sector logistics networks to assist with the future COVID-19 vaccine distribution.[164]

5.1.3 Kenya

Kenya has actively participated in COVID-19 vaccine trials. This, notably, includes participation in the phase 1 trial of the Oxford/AstraZeneca candidate vaccine, with country support provided through the KEMRI/Wellcome Trust Research Programme.[165] This participation, together with its engagement in COVAX, could provide Kenya with some access to the future vaccine. However, the Kenyan Ministry of Health has indicated that the vaccine coverage could reach only 3% of the population in the first part of the

[160] DGHI. *Will Low-Income Countries Be Left Behind When COVID-19 Vaccines Arrive?* Durham: Duke Global Health Institute, Duke University, 2020. https://globalhealth.duke.edu/news/will-low-income-countries-be-left-behind-when-covid-19-vaccines-arrive (accessed November 25 2020).
[161] EPHI. *Vaccines and Diagnostic Production Directorate.* Addis Ababa: Ethiopian Public Health Institute, n.d. https://www.ephi.gov.et/index.php/services/vaccines-and-diagnostic-production-directorate (accessed November 25 2020).
[162] G. Makenga, S. Bonoli, E. Montomoli, T. Carrier and J. Auerbach, 'Vaccine production in Africa: a feasible business model for capacity building and sustainable new vaccine introduction.' *Frontiers in Public Health*, March 20 2019; 7, p.56
[163] WHO. *Ethiopia vaccinates nearly 15 million children against measles despite COVID-19 challenges.* Brazzaville: World Health Organization - Regional Office for Africa, 2020. https://www.afro.who.int/news/ethiopia-vaccinates-nearly-15-million-children-against-measles-despite-covid-19-challenges (accessed November 26 2020).
[164] African Aerospace. 'Ethiopian ready for COVID-19 vaccine distribution.' *African Aerospace.* November 3 2020. https://www.africanaerospace.aero/ethiopian-ready-for-covid-19-vaccine-distribution.html (accessed November 25 2020).
[165] L. Ruvaga, (2020) 'Kenya Launches Human Trials of COVID-19 Vaccine.' *Voice of America.* November 5 2020. https://www.voanews.com/covid-19-pandemic/kenya-launches-human-trials-covid-19-vaccine (accessed November 25 2020).

rollout (projected to start in 2021) - although more recent negotiations through GAVI may see some expansion of this coverage.[166,167]

Although Kenya has some limited vaccine manufacturing capacity in the veterinary sector[168] and is participating in the important partnerships such as the *African Vaccine Manufacturing Initiative*,[169] it does not appear to have the ability to produce future COVID-19 vaccine products at a scale needed for the country's population. It will, therefore, be largely dependent on the importation of vaccine doses.

Kenya has begun to take steps in preparation for the actual rollout. This includes establishing public-private partnerships as well as outlining a prioritization strategy. The latter will give preference, in the initial phases, to healthcare workers and those with vulnerabilities (e.g., patients with specific co-morbidities, the elderly). The strategy is to be concretized in the form of future guidelines that will be produced by the Kenyan government.[170] Although it is unclear if the logistical capability is in place for the rollout process, Kenya's successful implementation of past vaccination programs (e.g., the pneumococcal vaccine program launched in 2011[171]) is a positive indicator.

5.1.4 Nigeria

In an effort to co-ordinate an inter-governmental response to the pandemic, the Nigerian federal government established the Presidential Task Force (PTF) on COVID-19 in early March 2020.[172] Furthermore, support was given to Nigeria's *National Agency for Food & Drug Administration and Control* (NAFDAC) from key government actors (including the PTF) to fast-track regulatory processes related to a future COVID-19

[166] V. Oyeko, 'Kenya to get Covid-19 vaccine from 2021' *The East African (*September 23 2020). https://www.theeastafrican.co.ke/tea/science-health/kenya-to-get-covid-vaccine-from-2021-2305978 (accessed November 25 2020).
[167] N. Agutu, 'How Kenya will administer Covid-19 vaccine when it arrives.' *The Star (*November 19 2020). https://www.the-star.co.ke/news/2020-11-19-how-kenya-will-administer-covid-19-vaccine-when-it-arrives/ (accessed November 24 2020).
[168] FAO. *Kenya Veterinary Vaccines Production Institute Order, 1990 (Cap. 446).* Rome: The Food and Agriculture Organization of the United Nations, 2012. http://www.fao.org/faolex/results/details/en/c/LEX-FAOC128833/ (accessed November 25 2020).
[169] AVMI. *Establishing sustainable vaccine development and manufacturing in Africa.* Cape Town: African Vaccine Manufacturers Initiative, 2017. https://www.dcvmn.org/IMG/pdf/26th_wiliam.pdf (accessed November 25 2020).
[170] 'How Kenya will administer Covid-19 vaccine when it arrives.'
[171] L.L. Hammitt et al 'Effect of ten-valent pneumococcal conjugate vaccine on invasive pneumococcal disease and nasopharyngeal carriage in Kenya: a longitudinal surveillance study' *The Lancet (*May 25 2019) 393 (10186), pp.2146 - 2154.
[172] PTF. *Objectives.* Abuja: Presidential Task Force, The State House, 2020. https://statehouse.gov.ng/covid19/objectives/ (accessed November 25 2020).

vaccine.[173, 174] Nigeria has also been active in advocating for greater global access to the vaccine (including a strong endorsement of the *People's Vaccine* initiative issued by President Muhammadu Buhari in October 2020[175]). The above notwithstanding, no reliable source of information could be found that detailed the actual quantum of doses which has (or is aimed to be) secured for Nigeria.

In terms of manufacturing capacity, Biovaccines Nigeria Limited (BVNL) and Innovative Biotech Nigeria are two major vaccine manufacturers in the country.[176] Although the details are not yet clear, Innovative Biotech appears to be partnering with US-based companies for the potential manufacturing of the future vaccines,[177] while BVNL has signed a Memorandum of Understanding with the Nigerian government which may boost local vaccine capacity development significantly in last 2021 or early 2022.[178] However, it is unlikely that local manufacturing capacity is going to be able to meet the targets for domestic COVID-19 vaccine coverage. Furthermore, despite various claims, local efforts have not yet resulted in the production of a novel candidate vaccine.[179]

A detailed strategy for the actual COVID-19 vaccine distribution in Nigeria does not appear to have been developed yet. However, a substantial capacity for planning the future rollout process could be found in the country's public health institute, the *Nigeria Centre for Disease Control* (NCDC). The NCDC already has an established relationship with the Coalition for Epidemic Preparedness Innovations (CEPI) with regard to general vaccine research and development[180] (a relevant point is that the CEPI currently co-leads COVAX with GAVI). In terms of vaccine delivery, the *National Primary Healthcare Development Agency*

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[173] NAFDAC. *Guidance on Regulatory Preparedness for Licensing or Access to COVID-19 Vaccines*. Abuja: National Agency for Food & Drug Administration & Control, 2020. https://www.nafdac.gov.ng/wp-content/uploads/Files/Resources/Guidelines/DRUG_GUIDELINES/Guidance-Document-on-Covid-19-Vaccine-Preparedness-updated.pdf (accessed November 25 2020).

[174] PFT (2020b) *Remarks By Minister of Health, Dr. Osagie Ehanire At The PTF On COVID-19 Press Briefing, 27 Aug 2020.* Abuja: Presidential Task Force, The State House. https://statehouse.gov.ng/covid19/2020/08/27/remarks-by-minister-of-health-dr-osagie-ehanire-at-the-ptf-on-covid-19-press-briefing/ (accessed November 25 2020).

[175] UNAIDS (2020) 'President of Nigeria unites behind the call for a People's Vaccine for COVID-19.' *Geneva: The Joint United Nations Programme on HIV/AIDS*. October 16 2020. https://www.unaids.org/en/resources/presscentre/pressreleaseandstatementarchive/2020/october/20201016_president-nigeria-unites-behind-call-for-peoples-vaccine-for-covid19 (accessed November 25 2020).

[176] TBI. *A Covid-19 Vaccination Plan for Africa.* London: Tony Blair Institute for Global Change, 2020. https://institute.global/advisory/covid-19-vaccination-plan-africa (accessed November 25 2020).

[177] C. Muanya, 'Reviving local production of vaccines.' *The Guardian.* November 12 2020. https://guardian.ng/features/science/reviving-local-production-of-vaccines/ (accessed November 25 2020).

[178] C. Muanya, 'Why Nigeria is yet to produce vaccines locally, by COVID-19 panel chair.' *The Guardian.* November 16 2020. https://guardian.ng/features/health/why-nigeria-is-yet-to-produce-vaccines-locally-by-covid-19-panel-chair/ (accessed November 25 2020).

[179] D. Ajikobi, (2020) 'No, Nigeria hasn't found Covid-19 vaccine yet – but hunt is on.' *Africa Check.* June 24 2020. https://africacheck.org/reports/no-nigeria-hasnt-found-covid-19-vaccine-yet-but-hunt-is-on/ (accessed 25 November 25 2020).

[180] AidStream. 'Research and development of vaccines.' *Aid Stream.* August 30 2016. https://aidstream.org/who-is-using/NO-BRC-917687811/27701 (accessed November 25 2020).

(NPHCDA) has played a key role in past immunization programs and could provide crucial institutional memory for the future implementation of the COVID-19 vaccine rollout. Indeed, both the NCDC and NPHCDA have been instrumental in the countries' response to the pandemic thus far.[181, 182]

5.1.5 South Africa

As noted earlier, South Africa responded to the pandemic by implementing an early, stringent lockdown (in March 2020), followed by lockdown level adjustments with active case-finding, surveillance and hotspot analysis. To guide the country's response, a Ministerial Advisory Committee (MAC) on COVID-19 was established.[183] Even in the early stages of the response, communication focused on the importance of accessing a future vaccine for the country.[184] In late September 2020, an additional MAC was announced in the form of the Ministerial Advisory Committee on Coronavirus Vaccines *(*MAC-Vacc). The expressed purpose of the MAC-Vacc is to focus on the progress of COVID-19 vaccine efforts, and to ensure that adequate doses are made available for South Africa's population needs once a safe and effective vaccine is developed.[185]

In terms of procurement, it has been estimated it would cost the South African government approximately ZAR 2 billion (US$ 128 million) to acquire enough COVID-19 vaccine doses via COVAX to cover 10% of its population.[186] Importantly, on 24 November 2020, South Africa's Finance Minister, Tito Mboweni, announced a payment of ZAR 500 million (US$ 33 million) to COVAX, with a further commitment to find ZAR 4.5 billion (US$ 295 million) in the budget to ensure that adequate doses are made available in South Africa.[187] The above notwithstanding, a press statement released on 4 December 2020 by the Ministry indicated a commitment of ZAR 2.2 billion (US$ 145 million) to COVAX, with a down payment of ZAR

[181] NCDC (*COVID-19 Response. Mid-Action Review – Strategic Directions.* Abuja: Nigeria Centre for Disease Control, 2020. https://covid19.ncdc.gov.ng/media/files/20200716_COVID-19_response_strategic_directions.pdf (accessed November 25 2020).
[182] NPHCDA. *Preparedness and Response to Coronavirus Disease 2019 (COVID- 19) at Primary Healthcare and Community Level*. Abuja: National Primary Healthcare Development, 2020. https://www.alnap.org/system/files/content/resource/files/main/guide_on_phc_preparedness_and_response-covid-19.pdf (accessed November 25 2020).
[183] Abdool Karim, SS. *SA's COVID-19 epidemic: Trends & Next steps.* Pretoria: National Department of Health, 2020. https://sacoronavirus.co.za/2020/04/13/sas-covid-19-epidemic-trends-next-steps/ (accessed November 25 2020).
[184] Nordling, L. 'South Africa flattens its coronavirus curve—and considers how to ease restrictions.' *Science*. April 15 2020. https://www.sciencemag.org/news/2020/04/south-africa-flattens-its-coronavirus-curve-and-considers-how-ease-restrictions (accessed November 25 2020).
[185] NDoH. *Update on Covid-19 (28th September 2020).* Pretoria: National Department of Health, 2020. https://sacoronavirus.co.za/2020/09/28/update-on-covid-19-28th-september-2020/ (accessed November 25 2020).
[186] Winning, A. 'South Africa should aim to cover 10% of population via COVAX, advisors say.' *Reuters.* November 11 2020. https://uk.reuters.com/article/health-coronavirus-safrica-vaccines/south-africa-should-aim-to-cover-10-of-population-via-covax-advisors-say-idUKL8N2HW353 (accessed November 25 2020).
[187] BusinessTech. 'South Africa paid R500 million for access to Covid-19 vaccines – with billions more budgeted.' *BusinessTech.* November 25 2020. https://businesstech.co.za/news/trending/451502/south-africa-paid-r500-million-for-access-to-covid-19-vaccines-with-billions-more-budgeted/ (accessed November 25 2020).

327 million (US$ 22 million) which was to made by 15 December 2020 through a contribution from the Solidarity Fund (which was established as part of the country's response to the pandemic).[188]

A key player in South Africa's vaccine manufacturing capacity is the Biovac Institute – a Cape Town-based company established as a partnership between government and the private sector.[189] Notably, the CEO of Biovac, Morena Makhoana, is also a member of the MAC-Vacc.[190] It is estimated that Biovac would be able to produce up to 30 million of a COVID-19 per annum. Furthermore, the CEPI has identified Biovac as a possible partner for vaccine product manufacturing (although there does not yet appear to be a formal agreement).[191] Additionally, Aspen Pharmacare (a South African pharmaceutical company) announced, in November 2020, that one of its subsidiaries had entered into an agreement with Johnson & Johnson with regard to its candidate vaccine. In relation to this, Aspen has invested over ZAR 3 billion (US$ 198 million) in a Port Elizabeth-based facility which could serve as a manufacturing site (which eventually could have a production capacity of over 300 million doses per annum, according to Aspen).[192]

South Africa has also participated in a number of COVID-19 vaccine trials, including those for the Pfizer/BioNTech[193] and the AstraZeneca/Oxford[194] candidate vaccines. However, it is not clear if this will translate into eventual vaccine access. Pfizer, for example, has indicated that it currently does not intend to use South African facilities for the manufacturing of its future COVID-19 vaccine.[195]

Finally, a strategy is currently being developed in relation to the vaccine prioritization and rollout, and it is understood that the MAC-Vacc is playing a key role in developing this.[196] Furthermore, the National Department of Health has proven immunization programmatic capability, and the country's *National*

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[188] NDoH. *South Africa's Access to COVID-19 Vaccines.* Pretoria: National Department of Health, December 4 2020. https://sacoronavirus.co.za/2020/12/04/south-africas-access-to-covid-19-vaccines/ (accessed December 6 2020).
[189] Biovac. *Welcome to Biovac.* Cape Town: The Biovac Institute, 2020. https://www.biovac.co.za/ (accessed November 25 2020).
[190] NDoH. *Update on Covid-19 (28th September 2020).* Pretoria: National Department of Health, 2020. https://sacoronavirus.co.za/2020/09/28/update-on-covid-19-28th-september-2020/ (accessed November 25 2020).
[191] Roelf, W. and Winning, L. South Africa's Biovac in talks to manufacture COVID-19 vaccines. *Daily Maverick.* October 14 2020. https://www.dailymaverick.co.za/article/2020-10-14-south-africas (accessed November 25 2020).
[192] BusinessTech. 'South Africa's Aspen agrees with Johnson & Johnson over Covid-19 vaccine candidate.' *BusinessTech.* November 2 2020. https://businesstech.co.za/news/business/445142/south-africas-aspen-agrees-with-johnson-johnson-over-covid-19-vaccine-candidate/ (accessed November 25 2020).
[193] MedicalBrief. 'Pfizer/BioNTech: Phase 3 clinical trial for potential COVID-19 vaccine commences in SA.' *MedicalBrief.* November 30 2020. https://www.medicalbrief.co.za/archives/pfizer-biontech-phase-3-clinical-trial-for-potential-covid-19-vaccine-commences-in-sa/ (accessed November 25 2020).
[194] Nortier, C. South Africa resumes Oxford Covid-19 vaccine trial after reassurance on safety. *Daily Maverick.* September 18 2020. https://www.dailymaverick.co.za/article/2020-09-18-sa-resumes-oxford-covid-19-vaccine-trial-after-reassurance-on-safety/ (accessed November 25 2020).
[195] Allison, S. 'Lowdown on Pfizer's Covid vaccine.' *Mail & Guardian.* November 15 2020. https://mg.co.za/health/2020-11-15-lowdown-on-pfizers-covid-vaccine/ (accessed November 25 2020).
[196] NDoH. *South Africa's Access to COVID-19 Vaccines.* Pretoria: National Department of Health, December 4 2020. https://sacoronavirus.co.za/2020/12/04/south-africas-access-to-covid-19-vaccines/ (accessed December 6 2020).

Institute for Communicable Diseases (NICD) is likely to be closely consulted as part of the distribution planning process. At this stage the rollout process is projected to commence in mid-2021.[197]

5.2 General Observations

5.2.1 Vaccine pipeline flows: access

For the five countries, access to vaccine pipeline outputs is largely being secured via COVAX. This has come with significant challenges; while COVAX has secured almost one billion doses to date, this still represents only half of the goal of securing two billion doses for middle- and low-income countries (many of which are on the continent).[198] Possible alternative flows do exist for some the countries; this includes agreements between Egypt and China with regards to the Sinopharm candidate vaccine[199,200] as well as agreements with Russia with regards to the supply of the Sputnik V candidate vaccine to Egypt.[201] Although a private sector agreement between Johnson & Johnson and Aspen Pharmacare for future access to their candidate vaccine in South Africa, as discussed earlier, it is not clear as to how this will translate into an increase in local availability.[202] The current vaccine pipeline flow is depicted in Figure 5.1.

5.2.2 Vaccine pipeline flows: targets & policy support

The main objective of securing a flow of COVID-19 vaccines to the countries (and, indeed, the continent) is to reach sufficient immunization coverage so as to reach herd immunity thresholds. Here, a simple equation for vaccine coverage (V_C) can be formulated using the basic reproduction number (R_0) and vaccine effectiveness (E) as follows:[203] $V_C = (1 - 1/R_0)/E$. Using a similar equation, the proportion of the population

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[197] Hlatshaneni, S. 'Could SA have a Covid-19 vaccine next year?' *The Citizen.* November 25 2020. https://citizen.co.za/news/covid-19/2400873/could-sa-have-a-covid-19-vaccine-next-year/ (accessed November 25 2020).

[198] WHO. *172 countries and multiple candidate vaccines engaged in COVID-19 vaccine Global Access Facility*. August 24 2020 https://www.who.int/news/item/24-08-2020-172-countries-and-multiple-candidate-vaccines-engaged-in-covid-19-vaccine-global-access-facility (accessed December 16 2020).

[199] SABC News. *Egypt receives first batch of Sinopharm coronavirus vaccines.* December 11 2020. https://www.sabcnews.com/sabcnews/egypt-receives-first-batch-of-sinopharm-coronavirus-vaccines/ (accessed December 16 2020).

[200] Reuters. *WHO says almost 1 billion vaccine doses secured for low- and middle-income countries.* December 11 2020. https://in.reuters.com/article/health-coronavirus-who-covax/who-says-almost-1-billion-vaccine-doses-secured-for-low-and-middle-income-countries-idINKBN28L2CO (accessed December 16 2020).

[201] Reuters. *Russia to supply Egypt with COVID-19 vaccine in expansion push.* September 30 2020. https://fr.reuters.com/article/uk-health-coronavirus-russia-vaccine-egy/russia-to-supply-egypt-with-covid-19-vaccine-in-expansion-push-idUKKBN26L1AI (accessed December 16 2020).

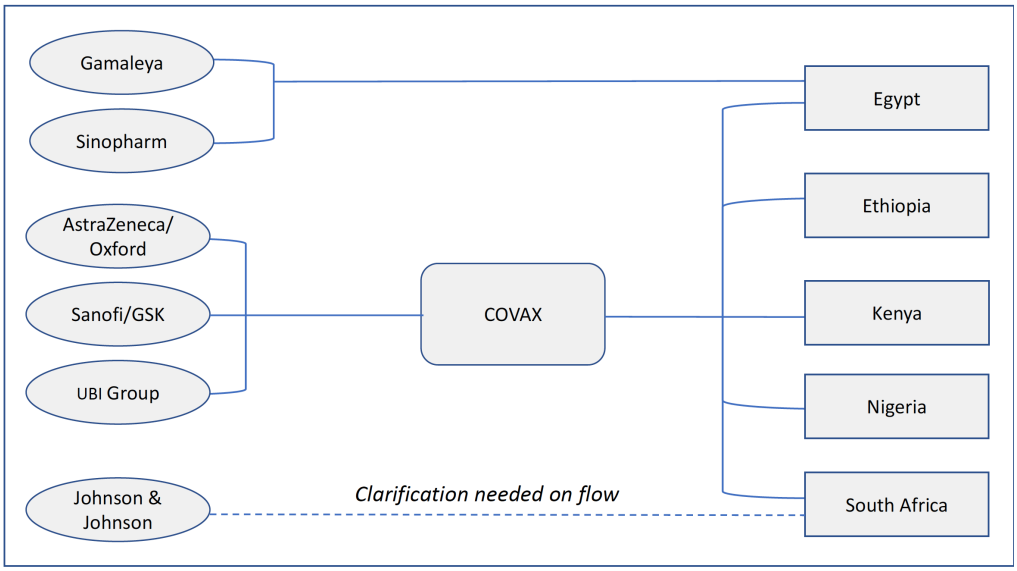
[202] Gonzalez, LL. ;Covid-19: What local vaccine production means.' *Daily Maverick*. December 10 2020 https://www.dailymaverick.co.za/article/2020-12-10-covid-19-what-local-vaccine-production-means/ (accessed December 16 2020).

[203] Fine, P. Eames, K. Heymann, DL. ' "Herd Immunity": A Rough Guide.' *Clinical Infectious Diseases,* April 1 2011; 52 (7), pp. 911–916.

needed to stop transmission so as to achieve herd immunity is currently projected to be 75% - 90%.[204] This represents a very high target for vaccine coverage and, by extension, inflow quantities. Indeed, it has been estimated that as much as US$12 billion would be needed for the 1.5 billion doses required to cover approximately 60% of the population of the African continent.[205]

In terms of co-ordinated strategic policy support, the *COVID-19 Vaccine Development and Access Strategy*, developed by the Africa Centres for Disease Control and Prevention in August 2020, outlined steps pertaining to the financing of access to vaccines as well as addressing certain supply chain/procurement issues.[206] This has been further strengthened with the incorporation of the *African Vaccine Acquisition Task Team* (AVATT) into the continental strategy.[207]

Figure 5.1: Current COVID-19 vaccine pipeline flow



Sources: Bloomberg. U.S. *Approves First Coronavirus Vaccine to End the Pandemic.* December 12 2020. https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/?sref=leQ3i2ya (accessed December 16 2020). Egypt Today. *Egypt's health minister says Sinopharm vaccine will be distributed free of charge.* December 11 2020. https://www.egypttoday.com/Article/1/95210/Egypt's-health-minister-says-Sinopharm-vaccine-will-be-distributed-free (accessed December 16 2020). Gonzalez, LL. ;Covid-19: What local vaccine production means.' *Daily Maverick*. December 10 2020 https://www.dailymaverick.co.za/article/2020-12-10-covid-19-what-local-vaccine-production-means/ (accessed December 16 2020).

[204] Anderson, RM. Vegvari, C. Truscott, J. Collyer, BS. 'Challenges in creating herd immunity to SARS-CoV-2 infection by mass vaccination.' *The Lancet*, November 4 2020; 396(10263), pp.1614-1616.
[205] Jerving S. 'Widespread COVID-19 vaccination in Africa will likely start mid-2021.' *Devex*. November 26 2020. https://www.devex.com/news/widespread-covid-19-vaccination-in-africa-will-likely-start-mid-2021-98653 (accessed December 16 2020).
[206] Africa CDC. *COVID-19 Vaccine Development and Access Strategy.* August 2020. https://africacdc.org/download/covid-19-vaccine-development-and-access-strategy/ (accessed December 16 2020).
[207] African Union. *Statement on AU Vaccines Financing Strategy.* November 8 2020. https://au.int/en/pressreleases/20201108/statement-au-vaccines-financing-strategy (accessed December 16 2020).

5.2.3 Logistical challenges related to distribution

A key theme in all five countries - indeed, a common trend globally - has been a large focus, to date, on vaccine development and acquisition/manufacturing with relatively little attention given to the actual (and imminent) implementation of COVID-19 vaccination programmes. Whilst this is understandable, given the dynamic nature of the pandemic, it now presents the urgent challenge of having to rapidly develop logistical plans for vaccine distribution.

An example of the complexity that this entails can be observed in the planning needed for cold chain maintenance. With regard to this, the Moderna, Sputnik and Oxford/AstraZeneca candidate vaccines have reported storage temperatures of -20°C (-4°F), -18°C (-0.4°F) and 2 to 8°C (35.6 to 46.4°F) respectively – hence, the selection of vaccines could have significantly different implications for distribution planning.[208] The Pfizer/BioNTech, for example, has a storage temperature of -70°C (-94°F). If a cold transport of 2 to 8°C is assumed, this would mean that the vaccine would have to be administered within six hours if dosages are to transported to satellite points.[209] Logistical difficulties such as these would pose significant distribution challenges in all five countries under discussion.

5.2.4 Global health security considerations

It is also important to consider the planning of COVID-19 vaccination programmes within the broader context global health security. The Global Health Security (GHS) Index provides an important measure here in the form of the country immunization score (which uses data related to measles vaccination rates and the availability of foot-and-mouth disease vaccination data). The measure forms a component of the broader domain related a country's ability to prevent the emergence/release of pathogens.[210] Relevant data are provided in Table 5.1 below:

Table 5.1: GHS Index – Country Immunization Scores*

Country	Immunization Score	Rank by Score (out of 195 countries)
Egypt	95.6	71
Ethiopia	93.9	87

[208] TWC India Edit Team. 'COVID-19 Vaccine Race: All You Need to Know About Cold Storage Requirements and Available Infrastructure in India.' *TWC India*, November 26 2020. https://weather.com/en-IN/india/coronavirus/news/2020-11-26-covid-19-vaccine-race-all-you-need-to-know-about-cold-storage (accessed December 6 2020).
[209] Sky News. 'COVID-19 vaccine: How exactly does the cold supply chain work?' *Sky News*, December 3 2020. https://news.sky.com/story/covid-19-vaccine-how-exactly-does-the-cold-supply-chain-work-12149118 (accessed 6 December 2020).
[210] GHS Index. *The Global Health Security Index. Building Collective Action and Accountability*, 2019. https://www.ghsindex.org/wp-content/uploads/2020/04/2019-Global-Health-Security-Index.pdf (accessed December 6 2020).

Kenya	72.8	161
Nigeria	50.0	170
South Africa	84.2	140

Source: https://www.ghsindex.org/

Table 5.2 (below) provides a summary of the capabilities of the respective countries in terms of COVID-19 vaccine procurement, manufacturing and distribution.

Table 5.2: Current capabilities with respect to a future COVID-19 vaccine

Country	**Procurement**	**Manufacturing**	**Distribution**
Egypt			
Ethiopia			
Kenya			
Nigeria			
South Africa			

Key:

Developed capacity
Moderate capacity
Little to no capacity

5.3 Economic Pathways to Recovery and Pandemic Finance

5.3.1 Recovering Economic Growth

Like Africa's economic growth and development pre-COVID-19, the continent's trajectory and pathway to recovery will not be even across all countries. This is true for the five countries in this study. The state of economic structures, the investment environment and business confidence of each country leading into COVID-19 will determine the ability, pace and nature of recovery.

While a great deal of uncertainty around the immediate future prevails, and information around COVID-19 and the economic impact is only now being revealed and understood, it appears that some countries are already on the path to recovery while others are stalling or struggling to find direction. The nature of recovery and the reforms adopted for sustainable and competitive economic inclusion will be essential to

understanding the true trajectory and path to economic progress post-COVID-19. This will distinguish those which used the crisis as an opportunity to reset their structures and trajectories from the rest.[211]

In the case of Egypt, a strong rebound is expected late in 2021 and into 2022. The country should recover pre-COVID-19 levels of growth by 2022, which will increase to around 6% on the back of business confidence and investment, and especially as international tourism recovers, and trade and commodity prices normalize.[212]

The Ethiopian economy has responded well to stimulus measures and international aid, which suggests a relatively quick and positive recovery. But much will hinge on crucial reforms, like the liberalization of strategic sectors, and the management of sociopolitical tensions and even the closure of schools, as a large majority of the population are school-attending citizens. In the immediate future, economic growth should return to 2018 and 2019 levels of 7% or even 8% by 2022. But the long-term implications of COVID-19 in Ethiopia depends heavily on so-called 'non-economic' factors associated with education and political stability. Add to this security concerns and the recent escalation that has brought the country to the brink of a civil war, and it is clear that the economic trajectory carries widespread complexity. For now, Ethiopia appears to be on a pathway to post-pandemic economic recovery through liberalization and investment growth.[213]

Kenya is expected to recover faster than the other economies, given its strong standing and economic growth pre-COVID-19, along with its deep connectivity with global markets. By 2021 the Kenyan economy is expected to grow by over 5%, which is on par with levels of growth in 2018 and 2019. This is based on growing investor confidence, a speedy recovery in 2020 following carefully managed lockdowns, and an end to the locust-induced agricultural devastation.

Structural deficiencies are likely to hamper recovery in Nigeria. Growth projections in 2021 and 2022 remain modest, at between 2-3%, as the economy remains dependent on oil prices and investment is constrained by ongoing regulatory requirements. While the oil price recovery in 2021 and 2022 should bolster the economy, Nigeria is in desperate need of reforms to encourage competitiveness and stimulate business confidence and investment in non-oil producing sectors. With this reset of reforms, Nigeria's long-term prospects look promising, on the back of a large and youthful population, and an innovative business sector imbued with a start-up culture.

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[211] For a detailed insight into country forecast see: https://www.focus-economics.com/countries.

[212] For a country overview see: https://www.worldbank.org/en/country/egypt/overview#1 and https://africaincmag.com/2020/08/12/egypts-economy-may-rebound-to-6-5-in-2021-new-imf-forecast-shows/

[213] For a detailed overview of the outlook in Ethiopia and other African countries, see: https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdf/

Finally, South Africa's slow recovery remains a concern for its citizens, and the continent at large. In the case of South Africa, confidence and recovery appears to be directly related to the approach adopted for management of the pandemic relative to existing constraints and economic costs. South Africa implemented the most severe and prolonged countrywide lockdown measures of any other African country. But this came at a serious cost. The economic consequences have been severe and will last longer than anticipated, with a slow recovery and continued absence of business confidence and investment interest, not to mention increased capital outflows. Modest economic growth is expected to return in 2021, with pre-COVID-19 levels of output and productivity only likely to resume as late as 2023 and 2024. COVID-19 has exposed structural flaws in South Africa's economy. The reforms to address these fundamentals have been avoided up until now, but can no longer be delayed in the interest of recovery under the severe social constraints, prevailing divisions and deficiencies that exist.[214]

5.3.2 - Response Financing: Support and Stimulus Packages

Each country in this study responded differently to the Covid-19 pandemic. Their economic responses have differed and will continue to be different in months and even years to come. The initial responses were geared specifically to mitigate the impact of Covid-19, first on the people and healthcare systems, and second on the economy, business and households.

Monetary policy responses are reflected mostly in interest rate cuts. All countries in this study cut their interest rates dramatically, with Egypt implementing the sharpest cut and South Africa enjoying its lowest interest rates in history.

Fiscal responses differ across the five countries and gives an interesting initial perspective of the national financial response to the crisis, spread across healthcare and economic stimulus.

Egypt, South Africa and Nigeria dedicated a relatively small percentage of their total government expenditure (just 0.6% and 0.1% in the cases of Egypt and Nigeria) to Covid-19 healthcare spending, while Kenya and Ethiopia made 1.6% and 4% of expenditure available.

Meanwhile the economic stimulus as a percentage of GDP provides an interesting and instructive view of the financial preparedness of each of the countries. South Africa, Egypt and Ethiopia dedicated an impressive 10.3%, 2.5% and 2% of GDP respectively to economic stimulation in their countries. Kenya and Nigeria allocated a mere 0.6% and 0.4% to economic stimulus. Interestingly, half of Egypt's stimulus package was devoted to tourism and export subsidies, while Ethiopia arranged free rail transport between

[214] For further insight into South Africa's slow recovery, see: https://businesstech.co.za/news/finance/432148/it-will-take-years-to-get-south-africas-economy-back-to-pre-covid-levels-economists/

Ethiopia and Djibouti – the regional port – as a direct enabler of essential trade. All countries provided corporate support, tax deferral or unemployment benefits.[215]

In general, for the countries in this study and across the African continent, business support was typically provided through tax relief, subsidies, financial support and specific measures to bolster SMMEs. Household support came in the form of cash transfers, food assistance and individual tax relief. This was apart from the health spending mentioned above. Ethiopia's food support programs, for example, reached 14% of its population, while Kenya distributed food aid to over 8% of the most vulnerable in the country.[216]

All the countries in this study relied on external financing or aid, and private sector initiatives launched in response to Covid-19 economic needs and stimulation, especially in the SMME sector.[217]

A number of global initiatives and funds were established in response to the financial needs associated with the pandemic and its aftermath. Some involved collaborative efforts across various organizations, while others were augmented from existing multilateral initiatives championed by the usual players from the World Bank, the IMF, WHO and OECD, all of which included Africa in their strategic engagement and allocation. The IMF provided financial support for fiscal budget and balance of payment needs across the continent and funding through its Rapid Credit Facility and other financial instruments. Meanwhile, the World Bank has provided around $7 billion in support to African governments, with additional benefits through the World Bank's Covid-19 Fast Track Facility to strengthen healthcare response measures. Ethiopia received nearly $83 million for public health, emergency supplies and diagnostic capacity-building measures for national preparedness and response.[218]

In addition to this, a growing number of Africa-specific initiatives were established in response to the specific shortage of resources for a crisis of this nature across the continent, and an increasing concern around the prolonged economic and developmental impact anticipated. These are worth mentioning.

The African Development Bank Group introduced a COVID-19 Response Facility (CRF) of up to $10 billion to support Regional Member Countries and private sector clients in their efforts to address the impacts of the COVID-19 pandemic.[219] In addition to this, in September, the African Development Bank's

[215] These figures are drawn from the Milken Institute, https://covid19africawatch.org/africa-policy-monitor/.
[216] Figures are based on the Milken Institute's Covid-19 Africa Watch (https://covid19africawatch.org/the-fiscal-response-to-covid-19-from-african-governments/).
[217] See the Appendix for more detail on these initiatives and financing provided.
[218] See https://covid19africawatch.org/the-fiscal-response-to-covid-19-from-african-governments/.
[219] See https://www.tralac.org/news/article/14499-african-development-bank-group-unveils-10-billion-response-facility-to-curb-covid-19.html/

Board of Directors approved another $27.33 million in grants to boost the African Union's (AU) efforts in mobilizing a continental response to curb the COVID-19 pandemic.[220]

Meanwhile, the Development Bank of Southern Africa (DBSA) has committed $9 million (or R150 million) to a variety of impactful COVID-19 relief projects, including an intervention to support government in increasing its testing capacity, development of non-invasive ventilators, provision of isolation pods to increase the number of available hospital beds, provision of prefabricated screening units, support of various municipality water projects as well as providing support with PPE to the South Africa district municipalities and the broader Southern African region.[221]

In October the AU Covid-19 Response Fund was launched with a goal to raise $300 million to tackle the direct effects of COVID-19 in Africa. By the end of October, AU Chairperson, South Africa's President Cyril Ramaphosa, said the AU COVID-19 Response Fund had raised $44 million.[222]

5.3.3 - Preparedness Financing

The outbreak of the Covid-19 global pandemic revealed how vulnerable most African countries were to the financial implications of such a crisis. Responding to COVID-19 has required substantial financial resources, which no African country has. Despite almost two decades of consistent growth, most African countries are still dependent on varying degrees of external assistance and aid. Even the largest and wealthiest African nations, some of which have been covered in this study, are unable to address the economic crisis that has followed Covid-19.

South Africa, for example, declared an extended state of emergency and rolling lockdowns, announced a $30 billion relief fund at the start of the pandemic, at a time of ballooning debt and further downgrades by credit rating agencies.[223] In short, the macroeconomic risks facing most Africa countries, which have been exacerbated by this crisis, emphasizes the importance of a post-pandemic economic response that will strengthen Africa's financial resilience across the board. This must be supported by – or perhaps even initiated by – the various multilateral lending and development institutions with a vested interest in the continent. The World Bank, for one, has started working with countries to be financially prepared for costly

[220] See https://www.afdb.org/en/news-and-events/press-releases/african-development-bank-approves-2733-million-ramp-african-unions-covid-19-response-initiative-37795/

[221] See https://mg.co.za/special-reports/2020-07-27-dbsa-acts-directly/

[222] See https://au.int/en/newsevents/20201016/african-union-au-covid19-response-fund-launch-300m-fundraising-help-tackle. https://www.sanews.gov.za/south-africa/au-covid-19-response-fund-raises-usd-44-million.

[223] This has been covered through the pandemic by World Bank blog articles. See: https://blogs.worldbank.org/africacan/southern-africa-why-risk-financing-critically-important-during-covid-19-recovery.

shocks of this nature, developing complimentary risk financing instruments such as contingency funds, contingent credit and insurance.[224] This builds on the World Bank's pandemic preparedness research and financing that was initiated a few years ago, but does not yet have an overtly Africa-wide focus.

Newer initiatives like the Pandemic Action Network (PAN), which launched an agenda for international action for pandemic preparedness in October, have far reaching and ambitious proposals that seeks better preparedness in Africa. The PAN's agenda for international action, which seeks an increase in investments in pandemic preparedness and response, capacity building to detect, prevent and respond to outbreaks, strengthening of early detection, analytics and data systems, an acceleration of global health research, a more secure and reliable access to PPE and other pandemic supplies, and improved leadership around health security, highlights all the needs for Africa, but fails to recognize the absence of resources in Africa and how this would be funded across the region where it is most relevant. It carries noble and exciting ideas, but seems to lack practical application in the African context.[225]

Other initiatives and publications by the World Economic Forum (WEF) and the Organisation for Economic Co-operation and Development (OECD) advocate non-governmental actors beyond conventional multilateral organizations. The role of business in mitigating the risk of infectious diseases, backed by an economic and investment rationale, is one that should be explored more seriously in the African context where there is a prevalence of institutional voids and where multilateral organizations lack the reach and agility required to action locally relevant responses with a quick turnaround.

Capacity, speed of execution and agility are directly or indirectly referred to throughout the various approaches and forums convened around pandemic preparedness in Africa. It is clear this needs to be nurtured and built internally. But the absence of resources and complete lack of local funding requires multilateral players and the business sector to fund and enable this. It will need to be initiated by multilateral organizations in Africa and beyond, the likes of the World Bank, AfDB and DBSA. The sustainability and capacity-building needed will require nation states to assume control in their local context, with the ongoing and overt support of the African business sector.

5.4 Governance and Systems Strengthening

The WHO IHR is the sole international law agreed to by member states governing the response of countries to infectious diseases of international concern. They were last revised in 2005. It took ten years to complete

[224] https://blogs.worldbank.org/africacan/southern-africa-why-risk-financing-critically-important-during-covid-19-recovery.
[225] See Pandemic Action Network (PandemicActionNetwork.org).

the process, and two more for the Regulations to come into force.[226] The world has since experienced a number of pandemics in startlingly quick succession - pandemic influenza H1N1 in 2009, MERS in 2012, re-emerging wild-type Poliovirus in April 2014, Ebola Viral Disease in 2014-2016 and Zika in 2015. The COVID-19 pandemic today is the most contagious thus far. It may be that even with vaccines in hand, the pandemic will be the longest lasting one of all the outbreaks to which we have born witness in the 21st century.

Every pandemic outbreak brings surprises that inevitably will test the adequacy and reach of the IHR. There have been calls to revise and update the regulations since 2007.[227] The voracious spread of COVID-19 has added alarm and urgency to the call, not least because of the criticism levelled at China that it tried to hide the facts about the original outbreak and failed to timeously lodge a report as required under the IHR. On May 19 2020 the World Health Assembly adopted one of the most far-reaching resolutions in decades to comprehensively review (1) the effectiveness of the mechanisms at WHO's disposal; (2) the functioning of the International Health Regulations (2005) and the status of implementation of the relevant recommendations of IHR Review committees; (3) WHO's contribution to United Nations wide efforts; and (4) the actions of WHO and their timeliness pertaining to the COVID-19 pandemic – and to make recommendations to improve capacity for global pandemic prevention, preparedness, and response, including through strengthening the WHO Health Emergencies Program.[228] To carry out the review, the Director-General of the WHO, Tedros Adhanom Ghebreyesus, appointed an Independent Panel for Pandemic Preparedness and Response (IPPPR) co-chaired by the former Prime Minister of New Zealand, Helen Clark, and the former Prime Minister of Liberia, Ellen Johnson Sirleaf.

While the world eagerly awaits the appearance of the IPPPR[229], our review of the experience of Egypt, Ethiopia, Kenya, Nigeria, and South Africa provides insight into the challenges that countries confronted, opportunities they seized, and innovations they pursued. Our review highlights the critical importance of having a continent-wide institution like the Africa-CDC serve as a bridge between global organizations like the WHO and individual countries. We cannot emphasize enough how important it is to leverage and build an asset such as the Africa-CDC in the developing world where resources are spread so thin. Before the

[226] See S.E. Davies, A. Kamradt-Scott and S. Rushton, *Disease Diplomacy: International Norms and Global Health Security* (Baltimore, Johns Hopkins University Press, 2015).
[227] R. Katz and S.F. Dowell, 'Revising the International Health Regulations: call for a 2017 Review Conference' *Lancet Global Health* 3 Issue 7 (July 1, 2015) E352-E353.
[228] *COVID-19 Response* (Agenda item 3, 73rd World Health Assembly, WHA 73.1, WHO, 19 May 2020).
[229] The WHO announced on 17 December 2020 that an international team of scientists will visit China next month to investigate the origins of the coronavirus pandemic, about a year after it emerged in the central Chinese city of Wuhan. Beijing, which has said it is open to a WHO-led investigation, has not confirmed the visit on the time of writing.

Africa-CDC was launched in 2017, the only comparable entity was the Pan American Health Organization (PAHO) but it is largely a geographical division of the WHO covering North and South America. In addition to revising the IHR we therefore make recommendations to strengthen the Africa CDC by building out its Regional Collaborating Centers (RCCs) as public health institutes in their own right, as originally conceived as the next stage in their development. Finally, having a more effective WHO IHR and a stronger Africa-CDC will only make a meaningful difference if individual African countries – and leading ones such as the ones under review in this report – invest in upgrading their health security systems. The architecture for doing so was laid down by the WHO JEE technical assessment processes and the development of the National Action Plans for Health Security (NAPHS). We call on national governments to return to that process with renewed urgency, vigour and boldness.

5.5 Enabling Global Environment

The global context in which the COVID19 pandemic is playing itself out today is very different to that we had 20 years ago. The Global Alliance for Vaccines and Immunization (GAVI) was established in 2000 by the WHO, UNICEF, the World Bank and the Bill and Melinda Gates Foundation, to make vaccinations accessible to children worldwide and strengthen primary care facilities in the developing world. When it became clear that only 20 per cent of WHO Member States complied with the IHR 2005 by the target date set for 2012, the Barack Obama White House launched the multi-country Global Health Security Agenda in 2014 and secured $1 billion from the US Congress to fund the gap assessment process that became known as the WHO Joint External Evaluation or JEE. In 2017 the Coalition for Epidemic Preparedness (CEPI) was established by the Government of Norway, the Bill and Melinda Gates Foundation, the Wellcome Trust, the World Economic Forum and India's Department of Biotechnology, to fund early investment strategies for vaccine research and development for emerging diseases. In 2018 the United Nations, the WHO and the World Bank created the Global Preparedness Monitoring Board (GPMB) to monitor global threats and make recommendations to leaders to increase preparedness for global health security emergencies.[230]

These noteworthy developments made a meaningful difference to many aspects of health security today. Absent in these arrangements is a globally operable response facility that has the authority to work with partner countries to more vigorously detect and respond to outbreaks. The world awaits the recommendations of the WHOs Independent Panel for Pandemic Preparedness and Response (IPPPR) regarding regulatory change. Without second-guessing its recommendations, we hope that careful

[230] See C. Clinton and D. Sridhar, *Governing Global Health: Who Runs the World and Why?* (New York, Oxford University Press, 2017).

consideration will be given to setting up a globally operable entity with the mandate and authority to rapidly investigate outbreaks. The facility should be independent - and therefore be independently funded - and not be beholden to governments. One possibility may well be to expand the mandate of the Global Preparedness Monitoring Board. The United Nations Office for Disaster Risk Reduction would be a valuable partner in addition to the core health – WHO and UNICEF - UN agencies. The IHR deals with outbreaks caused naturally or accidentally. For deliberately caused outbreaks, it is essential for such a facility to develop links and establish lines of communication with the Implementation Support Unit (ISU) of Biological Toxins and Weapons Convention (BWC) and the Office of the Secretary General of the United Nations for country compliance with UN Security Council Resolution 1540 (UNSCR 1540), which deals with weapons of mass destruction.

5.6 Africa CDC and its Regional Coordinating Centers

As we noted before, the Africa-CDC was launched in 2017 as a specialized technical institution of the African Union operating on a continent-wide basis in support of the public health initiatives of Member States.[231] Strategic areas of focus for the Africa-CDC include emergency preparedness and response, laboratory systems and networks, national public health institute and response, public health information systems, and surveillance and disease intelligence.

In April 2019, the Africa-CDC launched the Initiative to Strengthen Biosecurity and Biosafety to protect African countries against deliberate or accidental release of bacteria, viruses, and/or other harmful biological agents. The Initiative's intention is to help build stronger biosecurity and biosafety compliance regimes consistent with the norms laid down by the IHR (2005), the BWC and UNSCR 1540. Under the Initiative, the Africa-CDC is building up its Regional Collaborating Centres (RCCs) headquartered in Zambia, Gabon, Kenya, Nigeria and Egypt to be more than regional administrative units by developing their capacity to conduct regional education and training workshops and to upscale country systems to protect laboratory staff and related workers from exposure to dangerous pathogens and to ensure that they do not fall into the wrong hands. Africa CDC is supporting the development of tools, a model legal framework, and training materials for implementing biosafety and biosecurity initiatives at country level.[10]

The RCCs were intended to go a step further and become regional public health institutes in their own right by taking on regional functions in surveillance, prevention and emergency response. In support of the concept we would like to recommend the establishment of rapid response entities at the RCCs to investigate

[231] Africa CDC, 'Africa CDC - Centres for Disease Control and Prevention | African Union Headquarters | Official Website | Home Page', accessed February 9, 2020, http://www.africacdc.org/#.

infectious disease outbreak of concern and to support Member States that need it to mount proportionate responses. The funding of RCCs as evolving public health institutes will be a challenge in the current environment. However, Africa has organized trade blocs, airlines, tourist companies and other private sector enterprises that have a self-interest in stopping infectious disease outbreaks from crossing national borders. National governments should make a contribution. Global partnerships with a regional focus could be seen by donors and philanthropies as attractive. Creating public-private-partnerships can be felicitous structures that more efficiently and accountably align private and public sector interests in health security. Relatively small investments now will bring great returns by preventing or mitigating the effects of catastrophes costing exponentially more.[232]

5.7 Country-level Recommendations

In the end, it is up to individual countries to invest in upscaling the health security systems for their populations. Table 5.3 presents the indices for the biggest challenges they face. The data is from 2019 and will have to be revised in the light of the systems innovations countries introduced to cope with the COVID-19 pandemic. Still, they indicate how far countries have to travel to meet optimal benchmarks in the respective technical areas.

Table 5.3: Selected health security indicators

Country:	Egypt	Ethiopia	Kenya	Nigeria	So.Africa	Global Ave
Rapid Response Capability (overall)	45	44.7	37.1	43.8	57.7	38.4
Linking Public Health and Security Authorities	0	0	0	0	100	22.6
Clinics Hospitals Community Care Capacity	5.6	42.2	42.2	2.8	52.6	52.6
Healthcare access	46.1	19.8	42.7	71.7	48.8	48.8
Medical countermeasures/personnel deployment	0	33.3	33.3	0	33.3	33.3

0-33.3 Low Scoring Band 33.4-66.6 Medium 66.7-100 High.

Source: Global Health Security Index (2019) https://www.ghsindex.org

All five countries under review have been assessed by the WHO/JEE process. Every country has developed their National Action Plans for Health Security (NAPHS) and set targets that have to be met over a period of time. Some are short-term and can be introduced now, others medium and yet others, longer-term. We recommend in sum that national governments should commit to:

- Increasing testing, ongoing contact tracing and monitoring of indicators such as excess mortality and impacts on essential health services;

[232] See Peter Sands, *Outbreaks readiness and Business Impact: Protecting Lives and Livelihoods across the Global Economy* (World Economic Forum in collaboration with the Harvard Global Health Institute, January 2019).

- Setting up systems to capture mortality data than would allow for the measurement of excess deaths due to COVID19;
- Planning for and funding the acquisition of vaccines, and establish a timeline and roll-out strategy based on clear ethical and health security principles;
- Ensuring country compliance with existing and new generation WHO international health regulations by encoding them in domestic law;
- Providing additional resources to strengthen the public health capacities of the Africa CDC RCCs based in Egypt, Gabon, Kenya, Nigeria and Zambia;
- Funding innovative research and development pathways – including data collection platforms – to support and guide public health interventions;
- Providing the resources to enable their countries to meet the targets set out in their National Action Plans for Health Security (NAPHS);
- Improving security and public health coordination. Training opportunities and simulation exercises should be made available to the police and security forces;
- Stress testing their health security capacities. By holding annual simulation exercises, countries will show commitment to a functioning system;
- Publishing the results of their interventions to stop episodic disease outbreaks. In doing so, countries demonstrate that their response capabilities are functional;
- Ensuring that they implement the WHO and UNICEF guidelines for closing and reopening of schools;
- Filling the institutional voids needed to drive economic development and growth needed to sustain public health expenditure to meet the Sustainable Development Goals or SDGs;
- Enacting crucial reforms to modernize economies, build and upgrade infrastructure and re-build trade regimes; and
- Invoking a shared view of citizenship (and the obligations of citizenship) in a renewed social compact that embraces rather than retreats from a new globalism.

Appendix I – Country Overviews

Table A1: Demographic Map and Trends

Country/Region	Population	Median Age (years)	Percentage Population over 65 years	Urban Population	Urban Population (%)	GDP per Capita (2017)
World	7.8 billion	30.9	9%	4.4 billion	56.2 %	$10,632
Africa	1.3 billion	19.7	3%	588 million	43.8 %	-
Egypt	102 million	24.6	5%	44 million	43.0 %	$11,608
Ethiopia	115 million	19.5	4%	25 million	21.3 %	$1,903
Kenya	54 million	20.1	2%	15 million	27.8 %	$3,292
Nigeria	206 million	18	3%	107 million	52 %	$5,887
South Africa	59 million	27.6	5%	40 million	66.7 %	$38,824

Sources: Based on a collection data sourced from the IMF, World Bank, AfDB and Worldometers.

Table A2: Country Disease Profiles

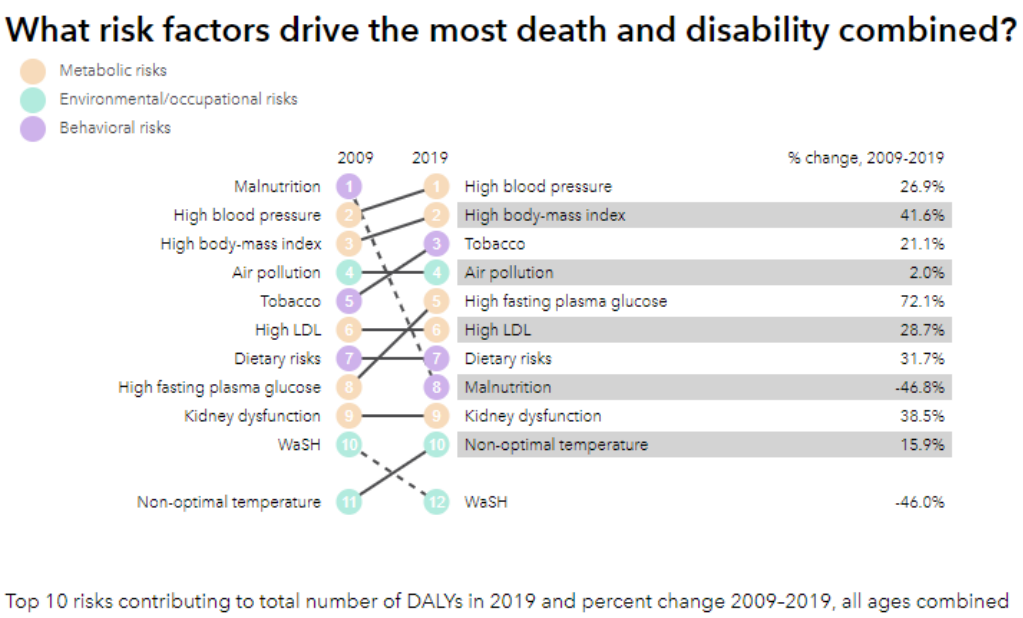
	Egypt	Ethiopia	Kenya	Nigeria	South Africa
Total Fertility Rate	2.7	4.4	3.0	4.7	2.1
Educational Attainment (Years)	9.7	3.2	8.0	6.8	9.8
Female Life Expectancy (Years)	74.3	70.4	68.8	62.8	69.7
Male Life Expectancy (Years)	68	66.7	63.2	65.8	62.8
Under-1 Mortality (deaths per 1000 live births)	12.3	38.4	30.5	63.9	31.2
Under-5 Mortality (deaths per 1000 live births)	15.5	51.8	39.7	101.9	36.6
Leading Cause of Death	Ischemic Heath Disease	Neonatal Disorders	HIV/AIDS	Neonatal Disorders	HIV/AIDS
Leading Cause of Death (Infectious Disease)	Lower Respiratory Infection	Diarrheal Diseases	HIV/AIDS	Malaria	HIV/AIDS
Healthcare Access and Quality (UHC Index)	54.8/100	46.5/100	51.6/100	38.3/100	59.7/100
Public Expenditure on Healthcare per Capita (USD)	$88	$7	$38	$11	$284

Source: Institute for Health Metrics and Evaluation – Country Profiles. http://www.healthdata.org/results/country-profiles (Accessed 14 December 2020).

Factors Driving Death and Disability

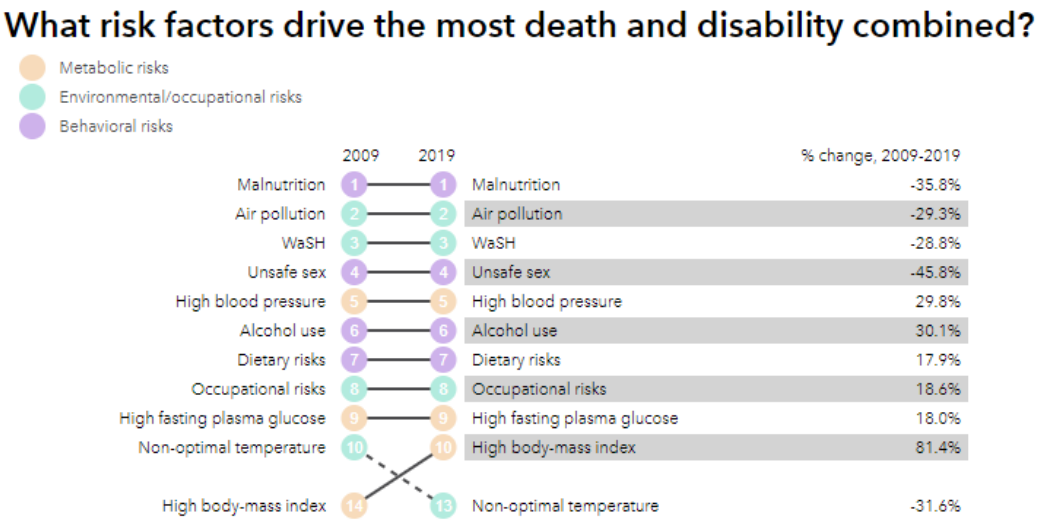
[The source for Figures A1-A5 is Institute for Health Metrics and Evaluation – Country Profiles. http://www.healthdata.org/results/country-profiles (Accessed 14 December 2020)].

Figure A1: Egypt



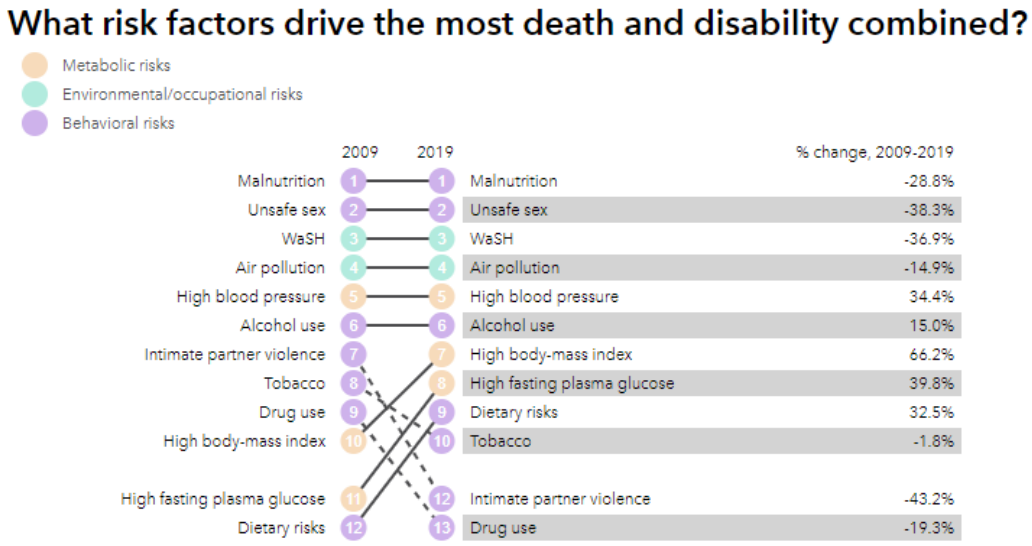
Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009-2019, all ages combined

Figure A2: Ethiopia



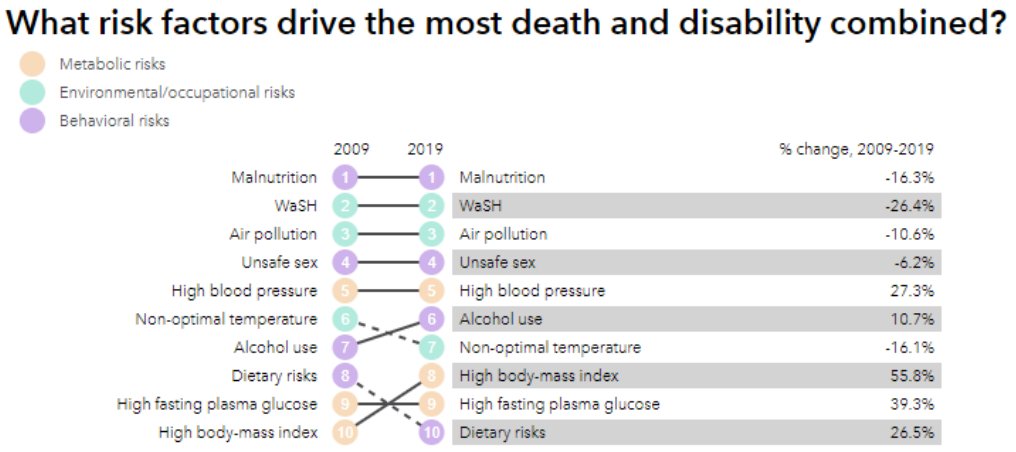
Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009-2019, all ages combined

Figure A3: Kenya



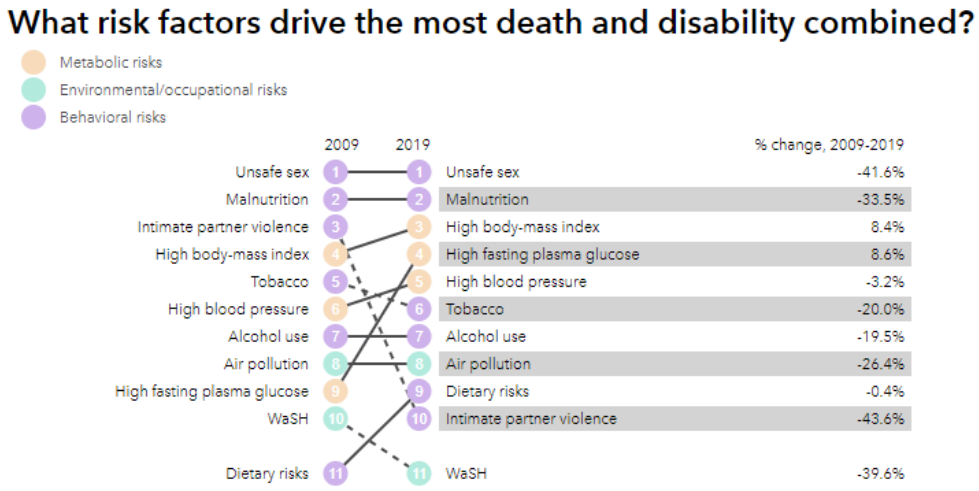
Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009-2019, all ages combined

Figure A4: Nigeria



Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009-2019, all ages combined

Figure A5: South Africa



Top 10 risks contributing to total number of DALYs in 2019 and percent change 2009-2019, all ages combined

Appendix II – COVID-19 Epidemiological Trends in Egypt, Ethiopia, Kenya, Nigeria, and South Africa

Epidemiological Trends

Sources for population and Figures A6-A30: Worldometers – Countries in the world by population. https://www.worldometers.info/world-population/population-by-country/ (Accessed 12 December 2020); World Bank – population ages 65 and above (% of the total Population) https://data.worldbank.org/indicator/SP.POP.65UP.TO.ZS (Accessed 12 December 2020).

Egypt

Total Population (as of 12 December 2020): 102,334,404

Population over 65 Years of Age (2019): 5.3%

Figure A6: Daily New Coronavirus Cases in Egypt

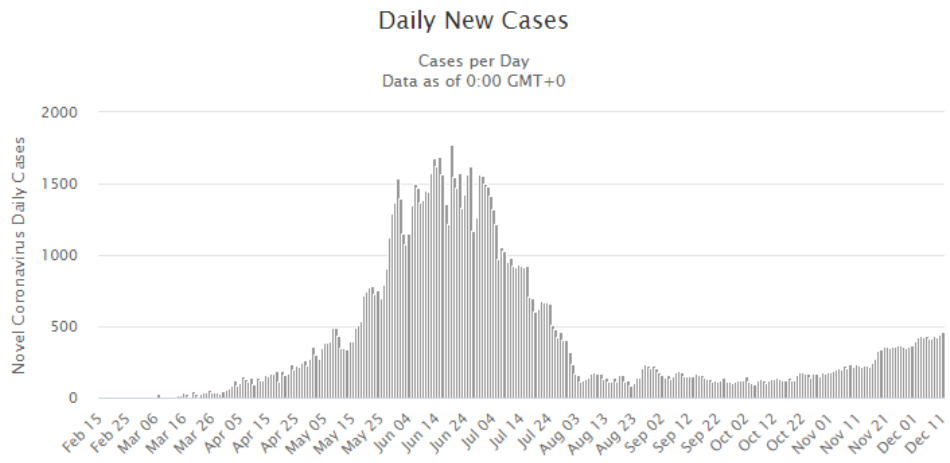


Figure A7: Active Coronavirus Cases in Egypt

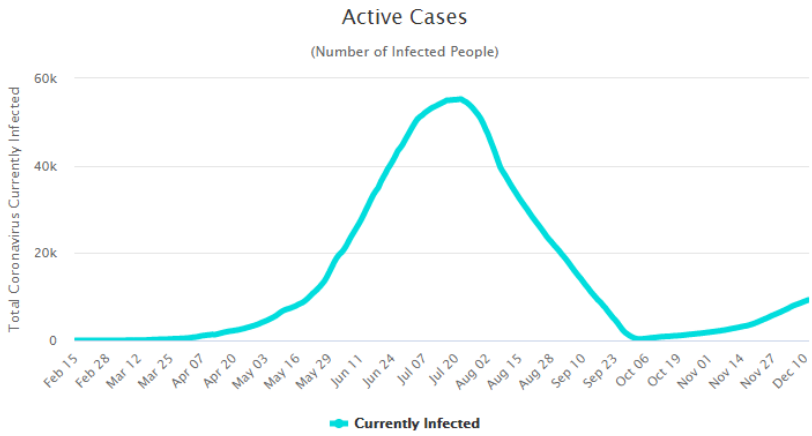


Figure A8: Total Coronavirus Cases in Egypt

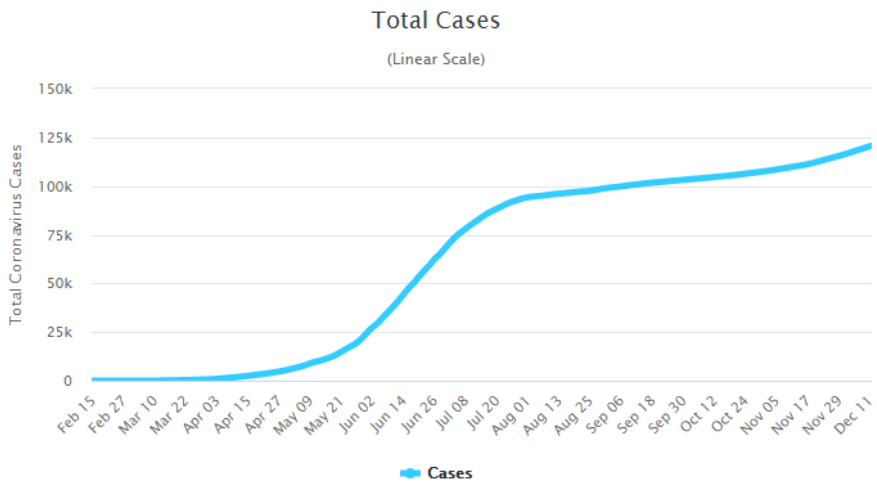


Figure A9: Daily New Coronavirus Deaths in Egypt

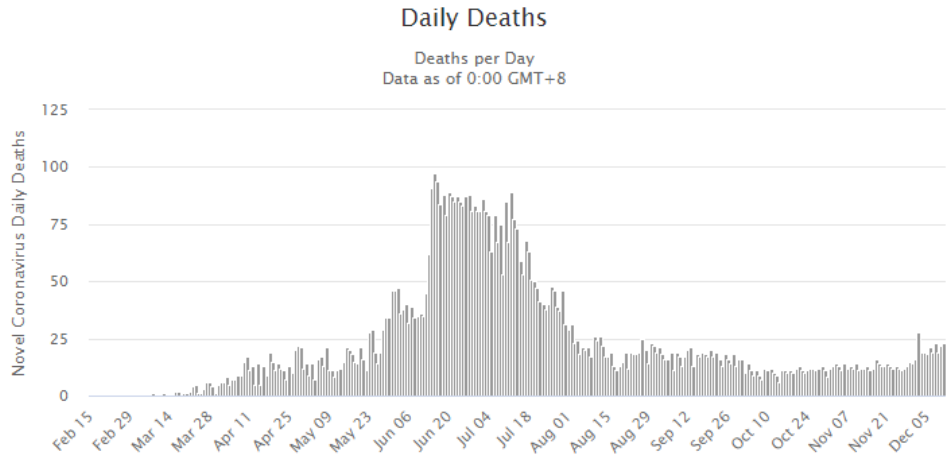
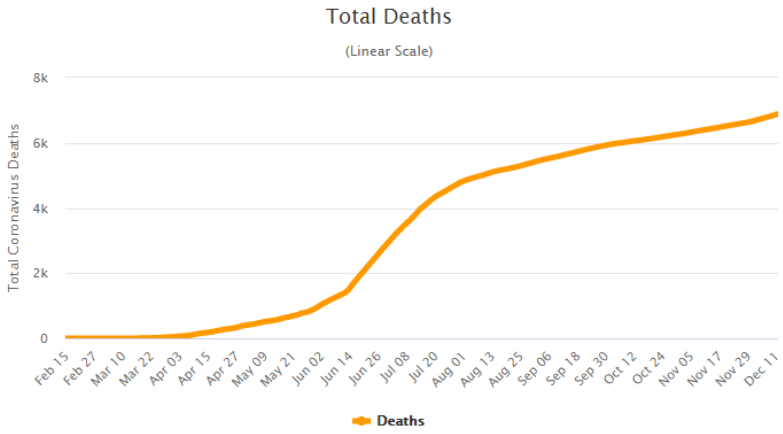


Figure A10: Total Coronavirus Deaths in Egypt



Ethiopia

Population (as of 12 December 2020): 116,297,313

Population over 65 Years of Age: 3.5%

Figure A11: Daily New Coronavirus Cases in Ethiopia

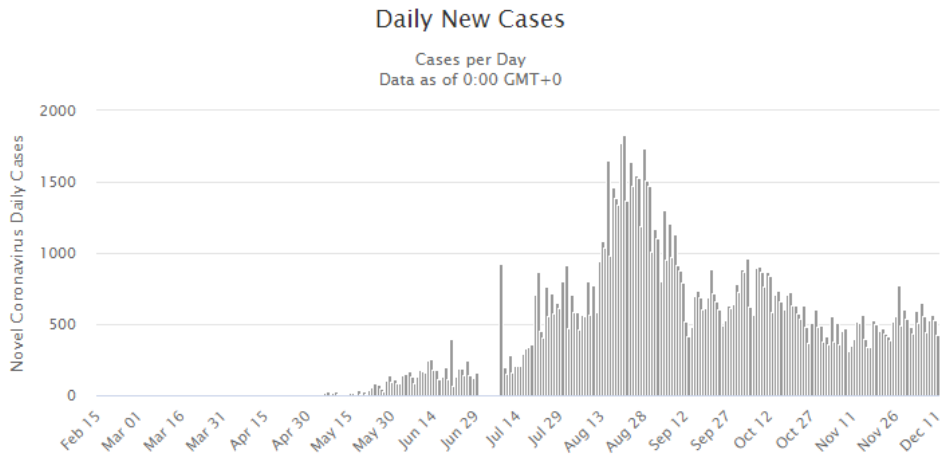


Figure A12: Active Coronavirus Cases in Ethiopia

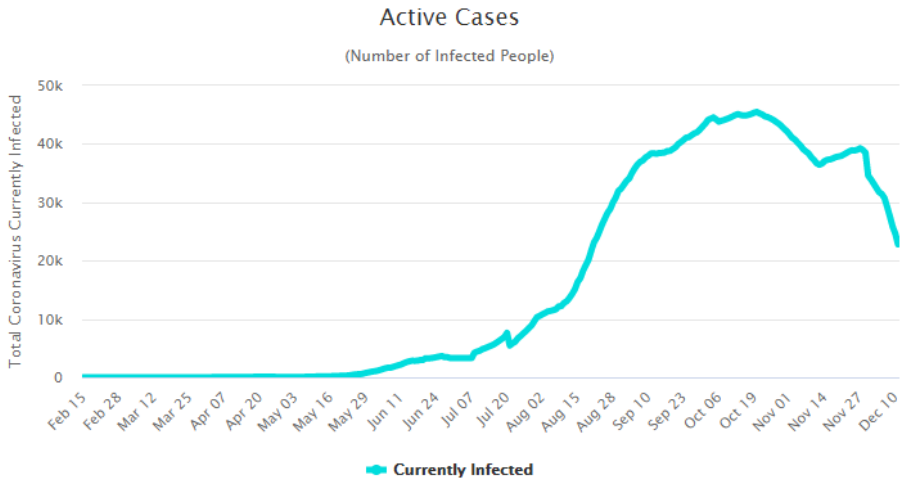


Figure A13: Total Coronavirus Cases in Ethiopia

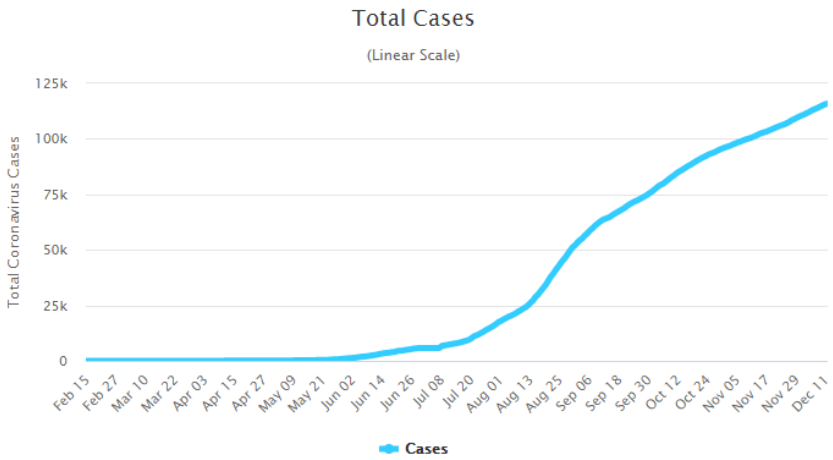


Figure A14: Daily New Coronavirus Deaths in Ethiopia

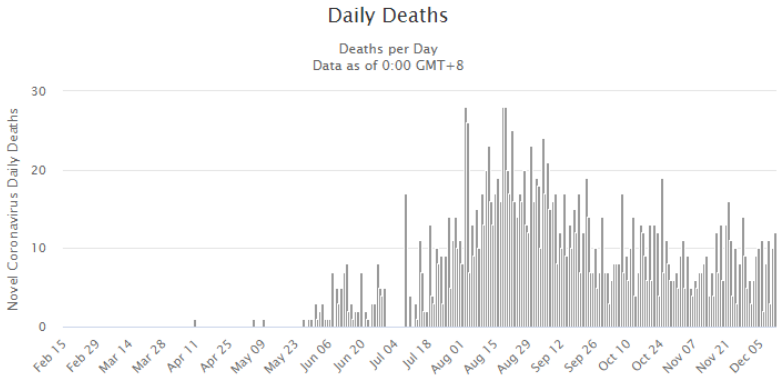
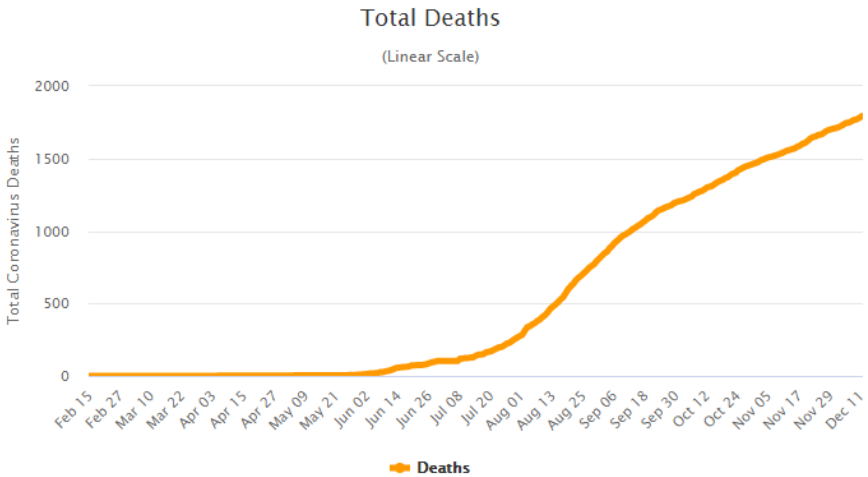


Figure A15: Total Coronavirus Deaths in Ethiopia



Kenya

Population (as of 12 December 2020): 54,323,707

Population of 65 Years of Age: 2.4%

Figure A16: Daily New Coronavirus Cases in Kenya

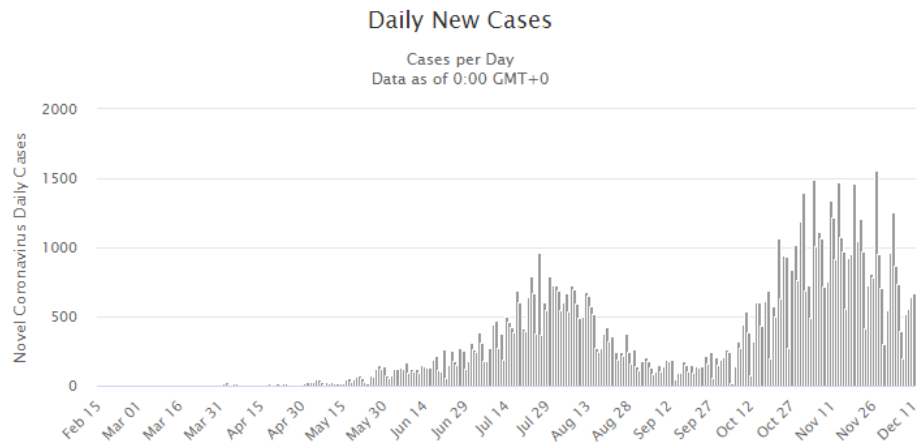


Figure A17: Active Cases in Kenya

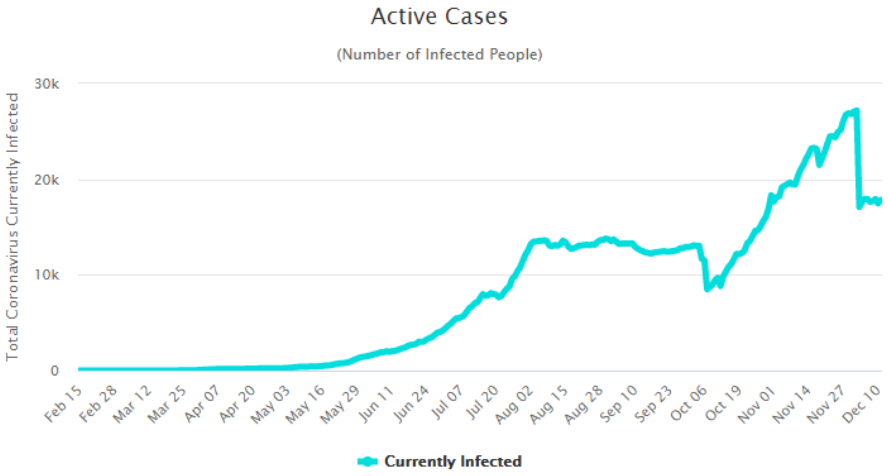


Figure A18: Total Coronavirus Cases in Kenya

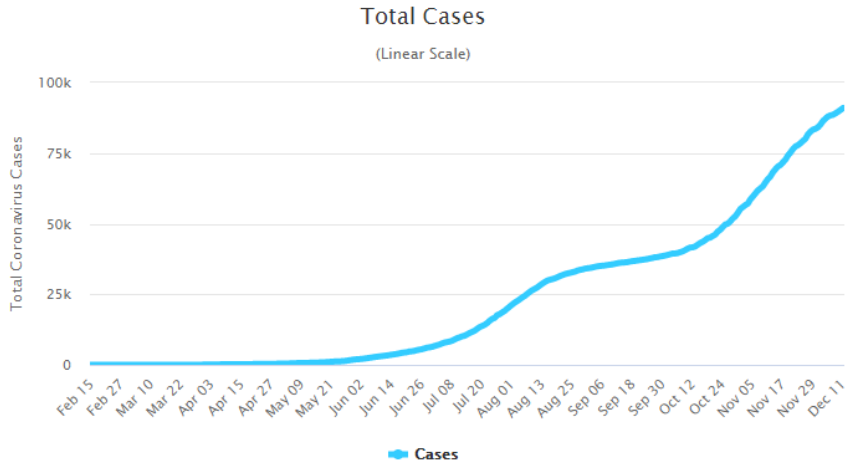


Figure A19: Daily New Coronavirus Deaths in Kenya

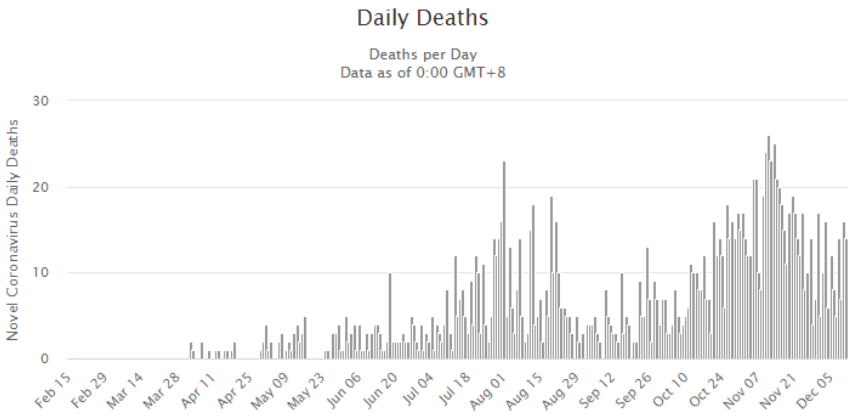
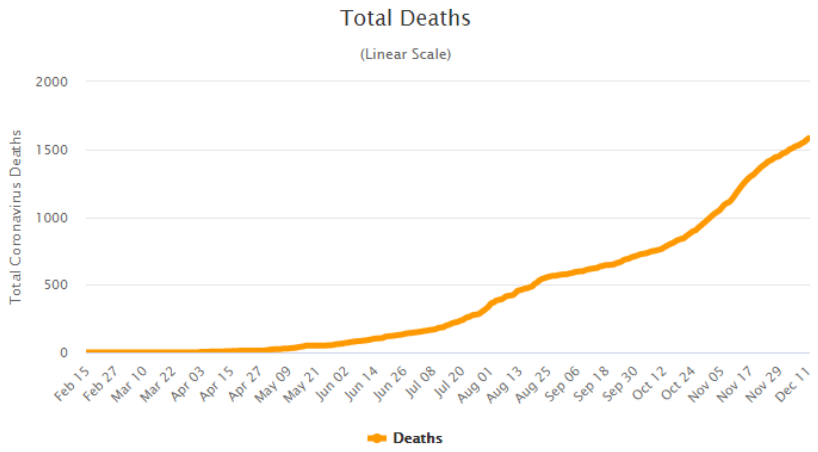


Figure A20: Total Coronavirus Deaths in Kenya



Nigeria

Population (as of 12 December 2020): 206,139,589

Population over 65 Years of Age: 2.5%

Figure A21: Daily New Coronavirus Cases in Nigeria

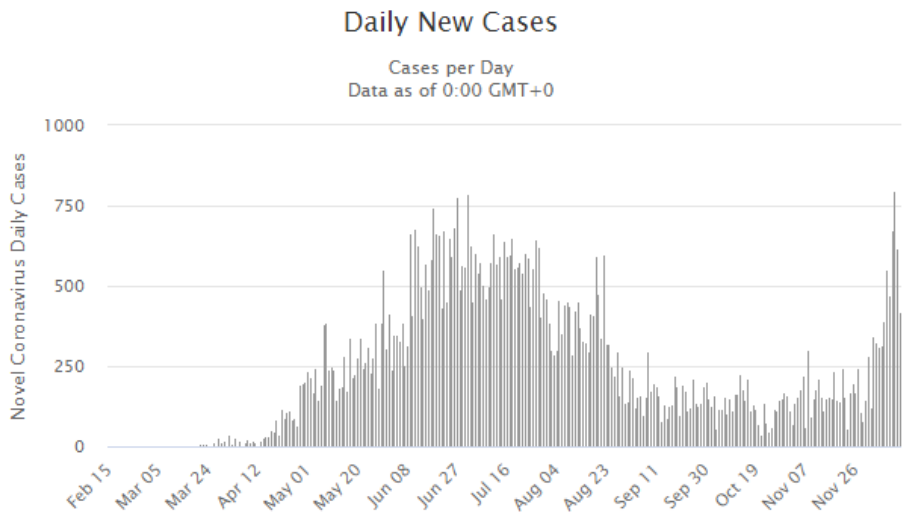


Figure A22: Active Coronavirus Cases in Nigeria

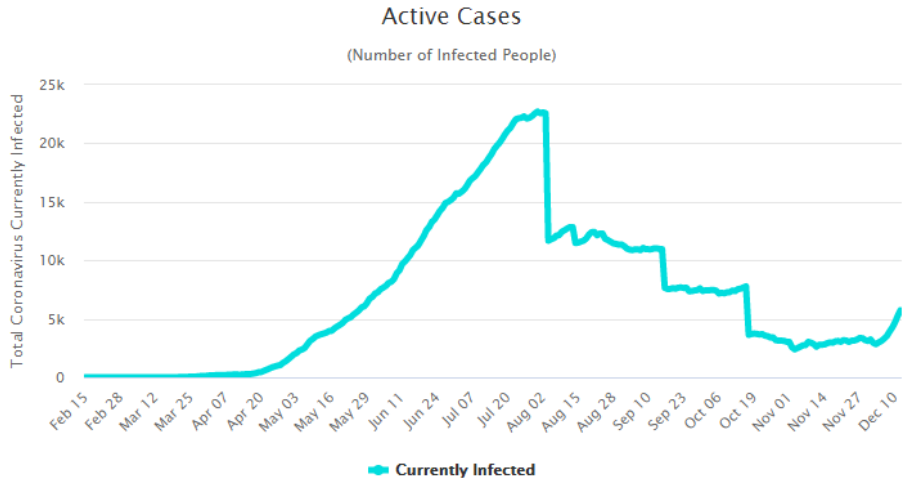


Figure A23: Total Coronavirus Cases in Nigeria

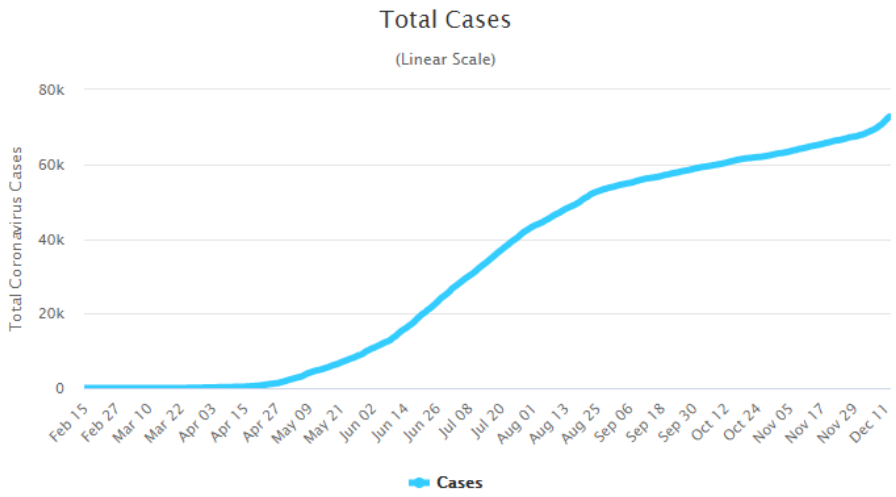


Figure A24: Daily New Coronavirus Deaths in Nigeria

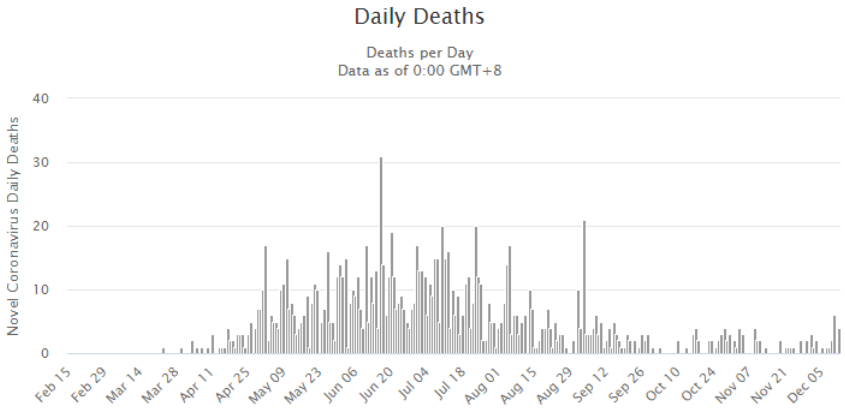
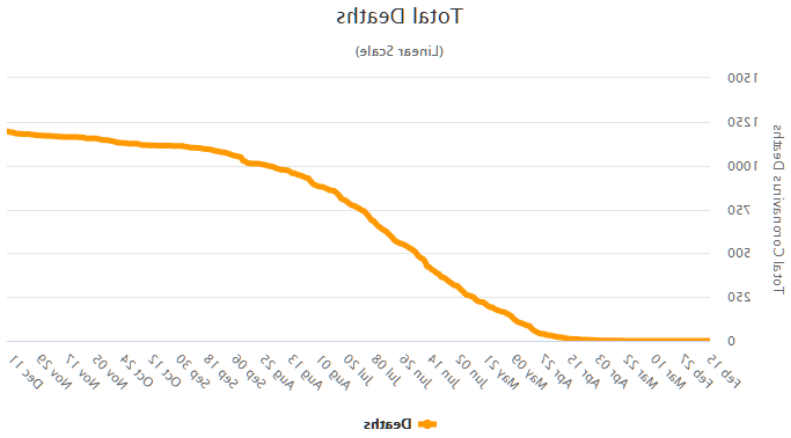


Figure A25: Total Coronavirus Deaths in Nigeria



South Africa

Population (as of 12 December 2020): 59,308,690

Population over 65 Years of Age (2019): 5.4%

Figure A26: Daily New Coronavirus Cases in South Africa

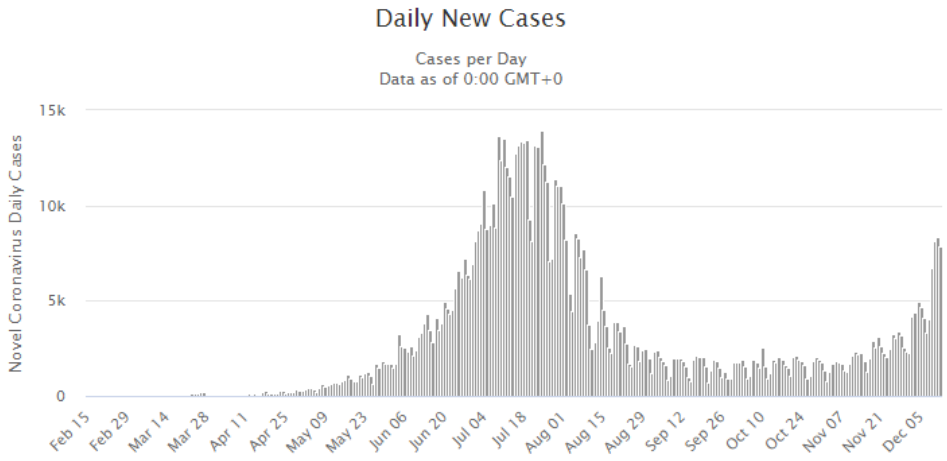


Figure A27: Active Coronavirus Cases in South Africa

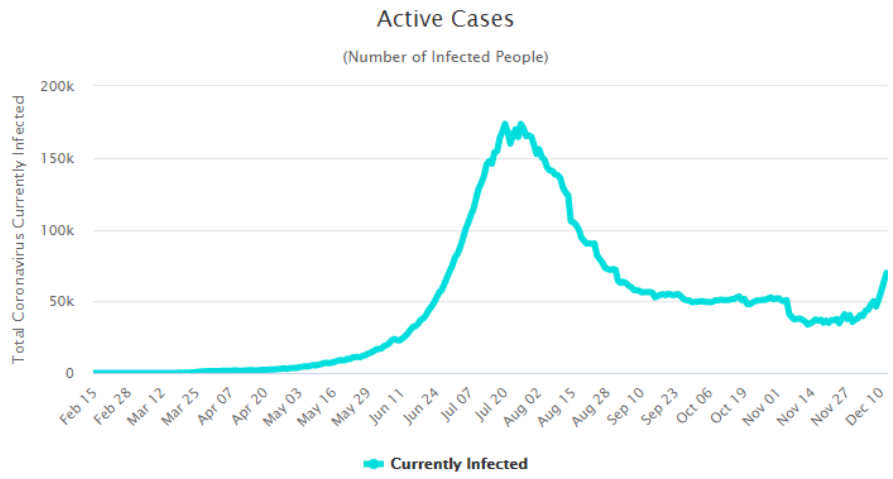


Figure A28: Total Coronavirus Cases in South Africa

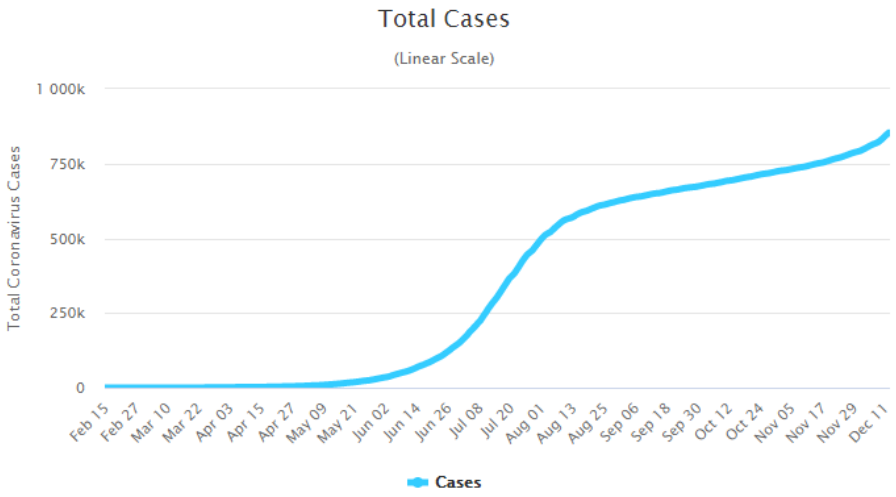


Figure A29: Daily New Coronavirus Deaths in South Africa

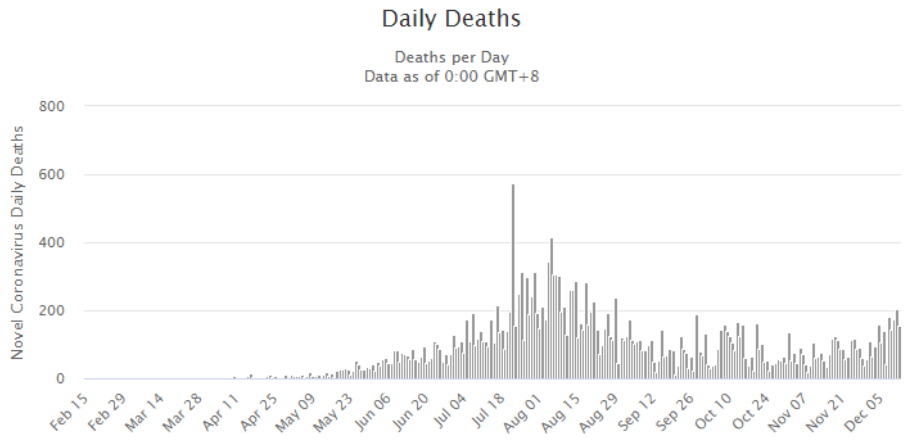
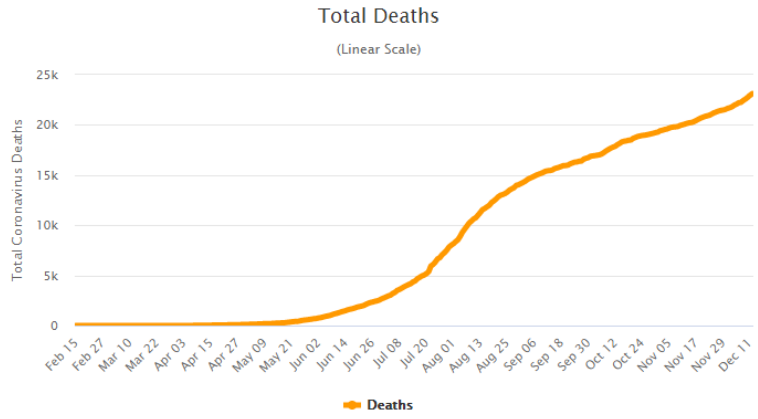


Figure A30: Total Coronavirus Deaths in South Africa



Appendix III – Economic Responses

Table A3: Economic Relief: Government Programs and Multilateral Support

(March 2020 – September 2020)

Country	GDP	Government relief packages	Targeted funding for healthcare by government	Emergency support (IMF, World Bank, AfDB)
Egypt	US$250.9 billion	US$6.13 billion package (1.8% of GDP) *(May 27, 2020).*	US$508.89 million was allocated for essential medical supplies, and bonuses for medical staff in quarantine hospitals and labs.	· US$2.772 billion, IMF *(May 11, 2020)* · US$5.2 billion loan, IMF *(June 26, 2020)*
				· US$50 million, World Bank *(May 17, 2020)*
				· US$500,000 emergency assistance grant, AfDB *(May 27, 2020)* · US$265 million budget support loan for electricity sector, AfDB *(June 17, 2020)*
Ethiopia	US$84.36 billion	US$1.64 billion in funding for food, health, shelters (1.9% of GDP) *(May 31, 2020).*	US$154 million (0.15% of GDP	· US$411 million, IMF *(April 30, 2020)*
				· US$82.8 million, World Bank ($41.3 million grant and $41.3 million credit) *(April 2, 2020)* · US$250 million ($125 million grant and $125 million credit), World Bank *(June 17, 2020)*
				· US$165.08 million, African Development Fund (ADF) grant *(July 3, 2020)*

Country	GDP	Government relief packages	Targeted funding for healthcare by government	Emergency support (IMF, World Bank, AfDB)
Kenya	US$87.91 billion	· US$503 million for 8-Point Economic Stimulus programme (0.06% of GDP) *(May 19, 2020).*	US$15.6 million for hiring of healthcare workers and hospital improvements.	· US$ 739 million, IMF *(May 6, 2020)* · US$1 billion budget support, World Bank *(May 20, 2020)* · US$50 million loan, World Bank *(April 2, 2020)* · US$223.1 million loan, AfDB *(May 22, 2020)*
Nigeria	US$397.3 billion	US$5.96 billion stimulus package which focuses on job-intensive projects including in agricultural, road, and housing sectors (1.6% of GDP) *(June 16, 2020).*	· US$2.7 million for Nigeria's Center for Disease Control. · US$18 million for testing. · US$28 million grant to the Lagos State.	· US$3.4 billion, IMF *(April 28, 2020)* ·US $114.28 million financing, World Bank *(August 7, 2020)* · US$288.5 million loan, AfDB *(June 5, 2020)*
South Africa	US$368.3 billion	US$30.7 billion COVID-19-relief package (10% of GDP) *(April 21, 2020).*	· US$1.3 billion made available for health. · US$ 982.6 million will be transferred to provinces as an adjustment to the provincial equitable share allocation). · US$337 million is allocated to the National Department of Health.	· US$4.3 billion, IMF *(July 27, 2020)* · US$288 million loan, AfDB *(July 22, 2020)*

Table A4: COVID-19 Government Economic Interventions: Interest Rates and Investments

	Interest rates	Investment
Egypt	The Central Bank cut interest rates by three percentage points	2020-2021: US$17.6 billion allocated to improve general services and raise standards of living. $13.3billion is financed by the treasury, US$3.3billion is sourced from various funds.
Ethiopia	Development Bank of Ethiopia (DBE) cut interest rates by 4% for borrowers from tourism and hospitality services (including hotels), and poultry farming and processing. Commercial lending rate for other sectors and industries were cut by 3.5%.	July 2020: Changes to the Investment Proclamation, enabling foreign investors to enjoy a greater opportunity with regards to the areas that they can invest in.
Kenya	Interest rate cut by two percentage points, to nine-year low of 7%.	May: Govt announced plans to spend US$503 million on a stimulus package to support businesses by providing credit guarantees, loans to small businesses and help prop up tourist facilities for post-Covid recovery.
Nigeria	Interest rate cut from 13.5% to 12.5%.	Stimulus spending package of about US$5.9 billion on retaining or create jobs in key areas like agriculture and housing, undertake growth enhancing and job creating infrastructural investments, promote manufacturing and local production.
South Africa	Interest rates cut by a total of three percentage points, to a 50-year low of 7%.	Plans for US$91 billion in infrastructure investments over next decade.

Table A5: Stimulus Programmes for Business Recovery and SMME Support

Country	Small Business Relief	Programmes and additional funding
Egypt	· The price of natural gas and electricity has been reduced for industrial use. · US$100 million loan from the European Bank for Reconstruction and Development (EBRD), to be lent to businesses most affected by the pandemic, especially SMEs. · US$118.7 million announced in finance for SMEs from Egypt EIB and the Banque du Caire.	· Expansion of the targeted cash transfer social programs, Takaful and Karama. · US$32 monthly grants for irregular workers for 1.6 million beneficiaries. · Pensions have been increased by 14%.
Ethiopia	US$50 million liquidity by National Bank for private banks to enable them to provide debt relief and additional loans.	· The Urban Productive Safety Net Programme will be expanded to 16 additional cities over the first two months of FY 2020/21, in collaboration with the World Bank, at an estimated cost of $88 million
Kenya	· US$30 million as seed capital for SME Credit Guarantee Scheme.	· US$20 million soft loans to hotels and related establishments. · US$15 million to assist flower and horticultural producers to access international market. · US$92.2 million to the elderly, orphans and other vulnerable members of society through cash transfers.
Nigeria	· US$136.6 million credit relief to businesses affected by the coronavirus pandemic, including petty traders and small enterprises.	US$52 transfers to poor and vulnerable households registered in the National Social Register (NSR).
South Africa	· US$ 9.2 million seed capital Solidarity Fund. · US$ 30.7 million Small, Medium and Macro Enterprises (SMMEs) Debt Relief Financing Scheme · US$860 million- COVID-19 Temporary Employer/Employee Relief Scheme – · Rupert Family's R1bn Sukuma Relief Programme (+-US$63 million) from the Rupert Family. · The South African Future Trust (SAFT) established by the Oppenheimer family to provide financial support to the employees of qualifying SMEs, R1 bn (+-R63 million).	· US$22 COVID-19 Social Relief of Distress grant for 6 months will be paid to individuals who are currently unemployed and do not receive any other form of social grant or UIF payment. · Tax-compliant businesses with a turnover of less than US$3.1 million will be allowed to delay 20% of their pay-as-you-earn liabilities and a portion of their provisional corporate income tax payments without penalties or interest over first 6 months of lockdown.

Table A6: GDP Percentage Growth Rates, 2018-2021[233]

Region	2018	2019	2020 Forecast	2021 Forecast
World	3.3	2.7	-5.0	4.8
Sub Saharan Africa	2.9	2.7	-3.0	3.2

[233] The is average based on World Bank and IMF figures and forecasts. They indicate greater resilience in 2020, with a smaller economic contraction. But this may also be due to the relative lack of connectivity with the rest of the world. More concerning is slower and smaller recovery of growth in 2021.