Institute of Economic Affairs

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THE DAY AFTER TOMORROW

AFRICA'S BATTLE WITH COVID-19 AND THE ROAD AHEAD

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CONTENTS

Foreword 10

Executive Summary 13

I. Risks 18

1.1 **A Health and Demographic Risk Profile for the African Continent** 20
Prachi Mittal and Oommen C. Kurian

1.2 **Some matter more than others: Africa's economic vulnerabilities** 31
Annapurna Mitra and Alisha George

1.3 **Fragile States, Corruption and Conflict: Assessing Political Risks in Africa** 46
Leo Kipkogei Kemboi and Jackline Kagume

1.4 **Moored in the Digital Doldrums: Mapping Africa's Technological Challenges** 53
Arjun Jayakumar

II. Response 59

2.1 **Africa's Health Response to Covid-19: The continent fights back** 61
Meghna Chadha and Ananya Pushpa Gandhi

2.2 **An Assessment of the Economic Responses to Covid-19 in the African Continent** 77
Noah Wamalwa, John Mutua and Raphael Muya

2.3 **The Politics of the Pandemic: Cultivating a Pan-African Response** 90
Meghna Chadha

2.4 **How Africa Leveraged Technology to Combat Covid-19** 98
Sadhika Sasiprabhu

III. Resilience 105

3.1 **Building Resilient Healthcare Systems in the African Continent** 107
Abhishek Mishra and Alisha George

3.2 **Built to last: African economies must use the pandemic to build back better** 115
Maureen Barasa, Annah-Grace Kemunto and Kwame Owino

3.3 **One ring to rule them all: Fostering socio-political resilience for effective crisis response** 126
Sangeet Jain

3.4 **Tech to the rescue: How to make Africa's digital transformation work for resilience** 138
Sangeet Jain and Sadhika Sasiprabhu

Conclusion 149

Annexe 152

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Foreword

As it entered the third decade of the 21st century, little did the world expect to find itself trapped in an Orwellian reality, where disruption is the norm, chaos dominates order, and the individual's primary motive is pursuit of some semblance of normalcy. For decades, epidemiologists and virologists have warned of the potential of pathogens in causing infectious diseases that wreak inevitable havoc. This was not some form of prescience, but a caution backed by extensive research. The world today is not unacquainted with health crises, having faced widespread outbreaks of Ebola, HIV/AIDS, SARS, and influenza, among others; yet none of them had affected the world to this scale.

COVID-19 has now spread across more than 200 countries, and the global imperative is to curtail the pandemic's further spread, design effective treatments, and develop a vaccine.

As the African continent battled the emergence of the pandemic on its shores, the 54-country-strong African Union rose to the occasion, exhibiting continental pride and acting with tenacity. While Africa has had earlier experience with public health emergencies, it still found itself grappling with devising appropriate responses to COVID-19.

The Observer Research Foundation and the Institute of Economic Affairs Kenya join hands in presenting this thoroughly researched, in-depth analysis of the COVID-19 situation across Africa.

There is universal recognition that decisive action grounded in science and propelled by policy is the only way to combat the COVID-19 crisis. The key is remaining mindful of the pandemic's socio-political, humanitarian and economic repercussions, and the constraints within which strategies must be formulated. The COVID-19 pandemic has amplified how effectively people can work together in the face of adversity. This report shows how fortification efforts will prove effective in mitigating the current crisis, and prepare the world for other similar challenges in the future.

Executive Summary

The COVID-19 pandemic has been widely described as unforeseen, and a "black-swan event". It is, however, nothing of the kind.[1] Scientists had long warned the world about the eventuality of such a pandemic. It is therefore nothing short of a failure of policy for the international community to have been caught unawares by the magnitude of the COVID-19 outbreak.

For a long while, it seemed that the African continent had been spared the same magnitude of the pandemic that many countries in other regions were suffering. As of 30 June 2020, the continent had reported only 3.9 percent of the total global case count.[2] Since then, however, the crisis has caught up with Africa, and at the time of producing this report, there were 736,288 COVID-19 cases (5% of all cases globally) and 15,418 deaths in the continent. Among all African countries, South Africa (68.4 percent), Egypt (4.3 percent), Algeria (3.1 percent), Nigeria (3.2 percent), and Kenya (2.8 percent) accounted for 82 percent of all COVID-19 cases reported in the continent.[3]

This report provides an account of Africa's battle against COVID-19, maps a profile of the continent's vulnerabilities that render it susceptible to systemic collapse, and analyses ways in which it can build resilience in the face of future crises. The report takes a systemic perspective, and provides analyses oriented around four axes—health, economic, socio-political and technological systems; and three key elements—risk, response and resilience.

Even as the report is divided into these elements for purposes of clarity, it is crucial to understand the complex, interconnected nature of these systems. Inevitable trade-offs arise when crises hit, but their effects tend to cascade across systems.[4] The devastation caused by COVID-19 in Africa, for example, is made formidable not only due to healthcare system weaknesses but also the precarity of economies, varying degrees of socio-political turbulence, as well as the inability of technology to buffer the impact of the crisis.

An even more critical caveat relates to the scope of this report. The African continent is not a monolith, and capturing the nuances of its response to the COVID-19 pandemic is beyond the scope of a single report. It is therefore our endeavour to provide policy blueprints and recommendations in broad strokes, and map trends rather than magnify peculiarities.

Section I: Risks

The report opens with mapping pre-existing risks and vulnerabilities in Africa that the pandemic has the potential to exploit and exacerbate. **Chapter 1** is a broad health and demographic profile of the continent. Prachi Mittal and Oommen C. Kurian

(1) Bernard Avishai, *'The pandemic isn't a black swan but a portent of a more fragile global system',* April 2020, <https://www.newyorker.com/news/daily-comment/the-pandemic-isnt-a-black-swan-but-a-portent-of-a-more-fragile-global-system>

(2) *'Outbreak Brief 24: Covid-19 Pandemic',* Africa CDC, 30 June 2020https://africacdc.org/download/outbreak-brief-24-covid-19-pandemic-30-june-2020/

(3) *'Outbreak Brief 27: Covid-19 Pandemic',* Africa CDC, 21 July 2020, <https://africacdc.org/download/outbreak-brief-27-covid-19-pandemic-21-july-2020/>

(4) *'Tackling coronavirus: contributing to a global effort',* OECD, June 2020. <https://read.oecd-ilibrary.org/view/?ref=134_134038-wshg4ioc55&title=Shaping-Government-interventions-for-a-faster-and-more-resilient-economic-recovery>

analyse the demographic risks: including age distribution and population density, and healthcare risks: including the continent's non-communicable disease (NCD) burden, access to clean water, food and nutritional insecurities, and its progress in achieving the Sustainable Development Goals. The chapter also analyses the gaps in health capacities in Africa: with a profile on hospital infrastructure and healthcare workers, and provides an assessment of healthcare expenditure.

Chapter 2 profiles the economic vulnerabilities of the continent. The continent's experience with COVID-19 has been defined so far more by economic upheaval than overwhelmed healthcare systems, due to early lockdowns and the precarious nature of economies in the continent. The coming recession is likely to reverse hard-won development gains for Africa, pushing millions back into extreme poverty. The chapter draws an estimate of the differential impact of the pandemic on various economic indicators. High levels of debt and trade dependence are highlighted as particular weaknesses for African economies, leaving them overexposed to the virus' impact. Annapurna Mitra and Alisha George draw some insightful conclusions, for instance, that the impact on growth so far has been most striking in relatively well-off countries in Africa, even as the impact on poverty levels shall be disproportionately worse for poorer countries.

Chapter 3 is an exposition of the political factors that may amplify and complicate response to crises in Africa. While these risks are not exclusive to the continent, the specificities of their manifestation in Africa is discussed. Leo Kemboi and Jackline Kagume argue that instability, corrosive corruption and conflict have rendered some states politically fragile, and they will require assistance to bolster state capacity and combat the pandemic effectively. Weak state capacities, corruption and neopatrimonialism encumber crisis response, as does lack of political legitimacy and authority. The pandemic is only likely to exacerbate instability unless managed properly.

The world has turned to technology solutions to keep economies afloat as the pandemic struck. However, the shortcomings of Africa's technology ecosystem have prevented it from leveraging the full range of benefits that innovation has to offer, in providing a buffer against the pandemic's effects. In **Chapter 4**, Arjun Jayakumar discusses the nature of three broad technological risks faced by the African continent—i.e., low R&D capacity, a gaping digital divide, and poor technological capabilities.

Section II: Response

The second section of the report presents an analysis of Africa's response over the first four months of the COVID-19 pandemic, along the four axes of health, economic, political and technological response. In many ways, Africa's response to the pandemic was both timely and robust. As the first wave of the pandemic sweeps across the continent, an analysis of successful practices as well as erroneous steps which cost the continent over the past months, can help enable a much more informed response.

Chapter 5 presents an analysis of the healthcare response mounted by African countries, by examining indicators such as testing rates, the progression in clinical management of cases, private sector response, as well as the ways in which countries like Nigeria and Sierra Leone have leveraged their experience of tackling the Ebola and HIV epidemics, in managing the current pandemic. Meghna Chadha and Ananya Pushpa Gandhi provide an assessment of Africa's response, including the importance of addressing stigmas and mental health as crucial elements of the healthcare response, and the need to train professionals accordingly. The chapter also provides insights into Africa's progress towards developing a vaccine for COVID-19.

The world has responded to the wholesale economic devastation caused by the pandemic by deploying a range of ameliorative fiscal and monetary policies, and Africa is no exception. Noah Wamalwa, John Mutua and Raphael Muya summarise the fiscal, monetary and tax policy measures deployed by 31 African countries to tackle the economic impact of the COVID-19 outbreak in **Chapter 6**. The chapter also discusses the role of international support extended by the World Bank, IMF, African Development Bank and bilateral partners in addressing deteriorating fiscal positions and debt burdens across the region.

Chapter 7 provides a critique of the politics of pandemic response in Africa. Meghna Chadha discusses the range of measures deployed by countries to ensure compliance, from social distancing to the imposition of lockdowns. The chapter also includes

an analysis of the best and worst performers in the region, and explores whether political regimes matter when it comes to crisis response.

The pandemic has catalysed the use of technological solutions across the world. In **Chapter 8**, Sadhika Sasiprabhu takes a sweeping look at the acceleration of innovation in Africa sparked by the pandemic. Crucially, technological innovation in the field of healthcare and diagnostics has tremendous potential to bolster weak healthcare capacities in the continent. The chapter demonstrates how a number of African countries have also deployed innovations in the field of contact tracing, e-learning, supply of essential commodities and e-commerce and e-money, to ameliorate the pain inflicted by COVID-19-induced lockdowns.

Section III: Resilience

The COVID-19 pandemic has revealed the state of unpreparedness of countries across the world. The upheaval presents an opportunity to recognise the pressing need to build resilience into the complex systems we inhabit, as we navigate the crisis and work to rebuild and recover from the devastation it has wrought.

In **Chapter 9**, Abhishek Mishra and Alisha George address the question of the moment: how to make Africa's healthcare systems more robust and resilient to crisis. Their chapter analyses four significant elements of developing health resilience in the continent: household capacity, healthcare workers, training and capacity building, and financing. The chapter also analyses the role of international coordination in bolstering health-system resilience, and in this regard, explores the synergies and potential for cooperation between India and Africa.

Chapter 10 asks what building economic resilience implies for the African continent. Maureen Barasa, Annah-Grace Kemunto and Kwame Owino put forth a number of policy priorities for Africa, in its quest to build back better after the COVID-19 pandemic. These include a drive towards structural transformation and economic diversification across the region, the need for social security frameworks to be strengthened and decoupled from formal employment, a green stimulus to help combat the looming climate crisis in time, a push towards investing in human capital and capabilities, resilience across production, banking and financial systems, as well as the dire state of debt unsustainability in the continent. The pandemic's impact will affect the ability of African countries to work towards these goals, but with the state driving policy agendas proactively, economies can begin moving in a more sustainable direction.

Chapter 11 focuses on the underlying dynamic driving resilience across systems: socio-political resilience. The pandemic will be a stress-test for the strength of communities and political systems. The COVID-19 crisis has revealed that resilience is not only a function of better healthcare and economic systems, but is also fundamentally determined by political will and social cohesion. Sangeet Jain discusses the five critical components of resilience at the nation-state level in the African context: political legitimacy and trust, collaborative governance, leadership, combating corruption, and the need for transparent communication. The chapter also examines the role of global collaboration, knowledge-sharing mechanisms and foreign aid in enabling Africa to weather crises more effectively in the future.

The final chapter of the report, **Chapter 12**, envisions an agenda for building technological resilience in the African continent. Sangeet Jain and Sadhika Sasiprabhu outline a blueprint for fostering an inclusive, people-centred technological transformation, and the need to incentivise innovation that meets pressing societal needs. The chapter also discusses the key constraints for digitalisation in Africa, such as lagging investment and the digital divide, and advances policy recommendations to help circumvent them.

I. RISKS

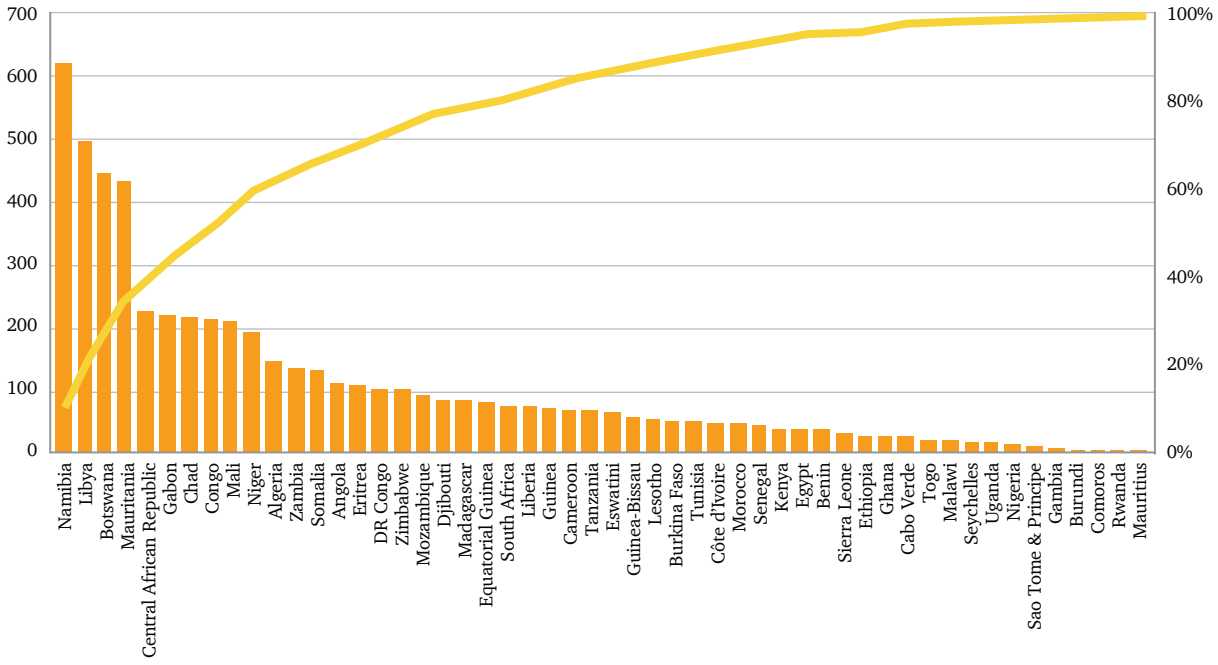
A Health and Demographic Risk Profile for the African Continent

Prachi Mittal and Oommen C Kurian

The novel coronavirus (COVID-19) has caused a wave of eerie morbidity around the world ever since it was first declared a pandemic in early March. The African continent has been fortunate in being belatedly hit by the virus, granting countries crucial time to prepare themselves for its onslaught. Many African states imposed lockdowns immediately, stemming the pace of the contagion. However, several health crises brewing across the continent have been compounded by the lockdowns since they have rendered countries more vulnerable by leaving them bereft of assistance from across borders.

The outbreak of the Ebola virus, first discovered in 1976, became severe over the 2014-16 period, causing 11,310 deaths across the African continent.[1] Another outbreak between 2018-2020 in the Democratic Republic of Congo affected 3470 people and killed 2287.[2] The Ebola outbreak was a wake-up call for the continent to fill in crucial gaps in its healthcare capacity. The experience of healthcare workers and decision-makers in Africa in tackling the Ebola crisis will undoubtedly be invaluable in combating the COVID-19 pandemic. The African public has hopefully also internalised the need for necessary precautions, such as washing/sanitising hands and maintaining physical distance - fundamental tools to weather such crises.[3]

Figure 1: Population density
(per sq. km land)



Data Source: The World Bank

In this chapter, the health and demographic risks faced by the 54 African countries have been profiled. Health indicators, capacities, demographic profiles, hygiene profiles and the role of foreign assistance will be broadly analysed. Such an outline of the prevailing risks and gaps at the country level could enable decision-makers to address the current and future pandemics in more effective evidence-based ways.

Demographic Risk Profile

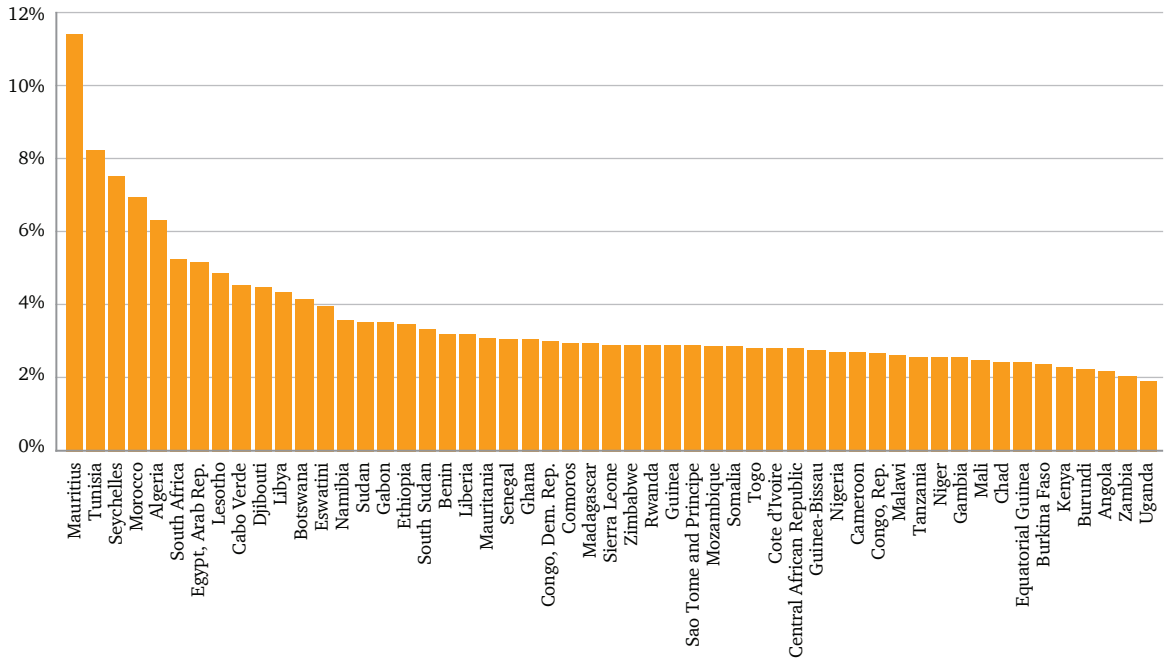
Demography plays a vital role in understanding the spread of any disease. The basic precaution to be taken in tackling the coronavirus pandemic is social distancing. Living conditions matter—a crowded set up can stimulate the spread at a higher rate than in uncongested spaces. Similarly, the age distribution is also important to understand the potential morbidity burden of disease in any society. Younger populations have higher immunity to combat any disease, and those with non-communicable diseases (NCDs) are known to be particularly vulnerable to the virus.

Indicators like population density and the percentage of population aged 65 and over have been selected as the key factors representing a demographic risk for this study. Population density refers to the population per land area in square kilometres (the number of people concentrated per square kilometre). Research has shown that high population densities catalyse the spread of COVID-19, and contact rates are directly proportional to population density.[4]

Population density = midyear population / land area in square kilometres[5]

Mauritius, Rwanda, Comoros and Burundi have the highest population densities among the African countries being studied, while Botswana, Libya and Namibia have the lowest population densities (See Figure 1). High population density usually corresponds to a higher degree of urbanisation and, consequently, increased vulnerability to a pandemic like COVID-19, unless specific containment measures are undertaken. People are getting infected by SARS-CoV-2, the virus

Figure 2: Population aged 65 and above
(% of total population)



Data Source: The World Bank

that causes COVID-19, irrespective of their age. Mortality has also been observed among younger people (in the 30-50-year age group). But the older population (those aged 65 and above) remain significantly more vulnerable to the disease.

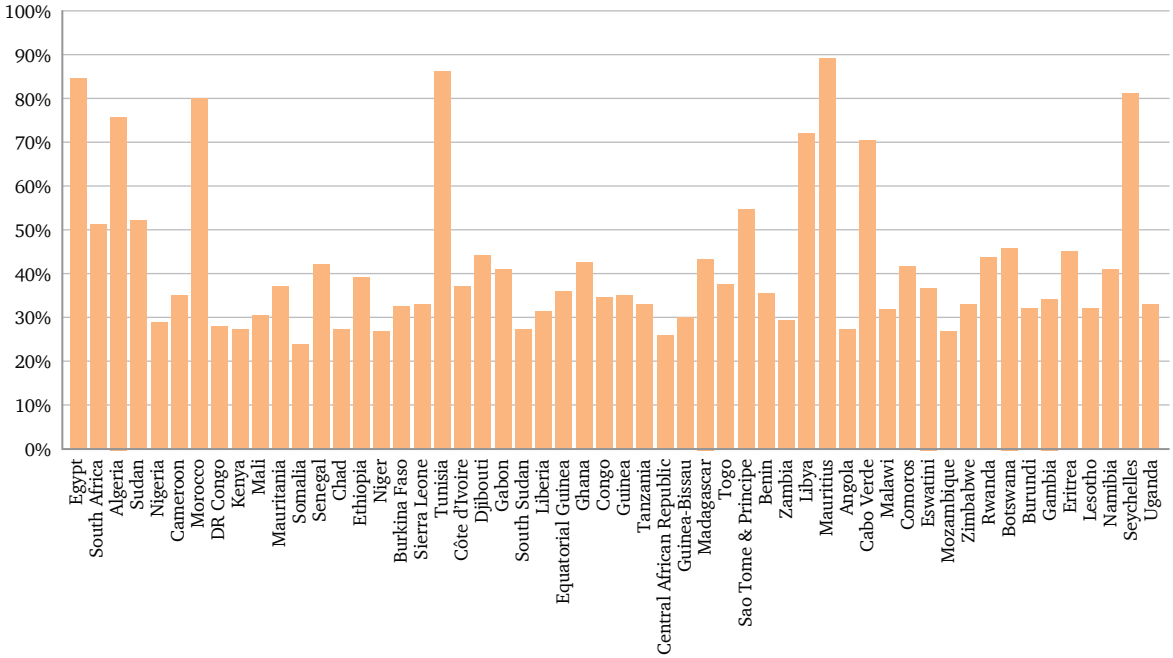
There are multiple possible reasons for why older people are more vulnerable to COVID-19. First, the probability of the prevalence of NCDs, like cancer and diabetes, is higher among the elderly. Additionally, older people also have weaker immune systems to fight off diseases.

Notably, barring a few relatively prosperous countries with higher life expectancies (such as Mauritius, Tunisia, Seychelles, Morocco, Algeria, South Africa and Egypt), most African countries have a very low number—under five percent—of ageing populations (see Figure 2). Even so, the absolute number of the elderly in the continent is still high, and the potentially high fatality rate of COVID-19 in this age category can wreak havoc, given the weaknesses in African healthcare systems.

Health Risks

The elderly and those who suffer from NCDs, such as diabetes, asthma, and heart or kidney ailments, have strictly been advised to remain indoors by experts, given the likelihood of them developing serious illnesses if they contract the coronavirus. Among these illness categories, the death rates are high for COVID-19. Therefore, the focus is on profiling the cause of death by NCDs (percentage of total). According to the World Bank, "Non-communicable diseases include cancer, diabetes mellitus, cardiovascular diseases, digestive diseases, skin diseases, musculoskeletal diseases, and congenital anomalies"[6].

Figure 3: Cause of death by NCDs
(% of total)



Data Source: The World Bank

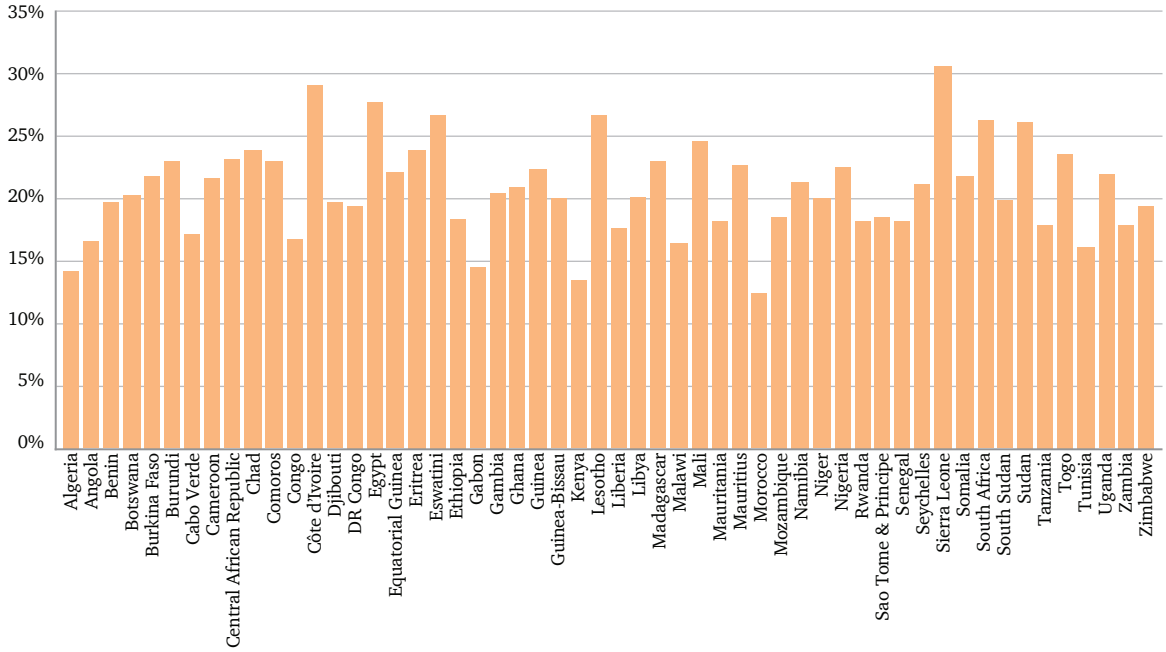
Not many countries in Africa exhibit a high percentage of deaths due to NCDs (see Figure 3). Egypt, Algeria, Morocco, Cabo Verde and Seychelles appear to be among those with a high burden of NCD prevalence. Tellingly, these countries also happen to be among the top 10 worst-affected by COVID-19 in Africa.

To analyse mortality from cardiovascular disease (CVD), cancer, diabetes or chronic respiratory disease (CRD) between the ages 30 and 70, a column bar graph has been plotted (see Figure 4). The data for the mortality percentage due to these diseases in the 30-70 age group is skewed, and so an average has been calculated. On average, approximately 21 percent of the population within the age bracket of 30-70 years in the African continent has died from CVD, cancer, diabetes or CRD. This highlights that there is a high percentage of people who need to be extra cautious with regard to the spread of the coronavirus across Africa.

In general, populations around the world are living healthier and longer lives than ever before, and the global average life expectancy is now above 70 years. Life expectancy is an important measure of population health; it implies the number of years a person is expected to live.

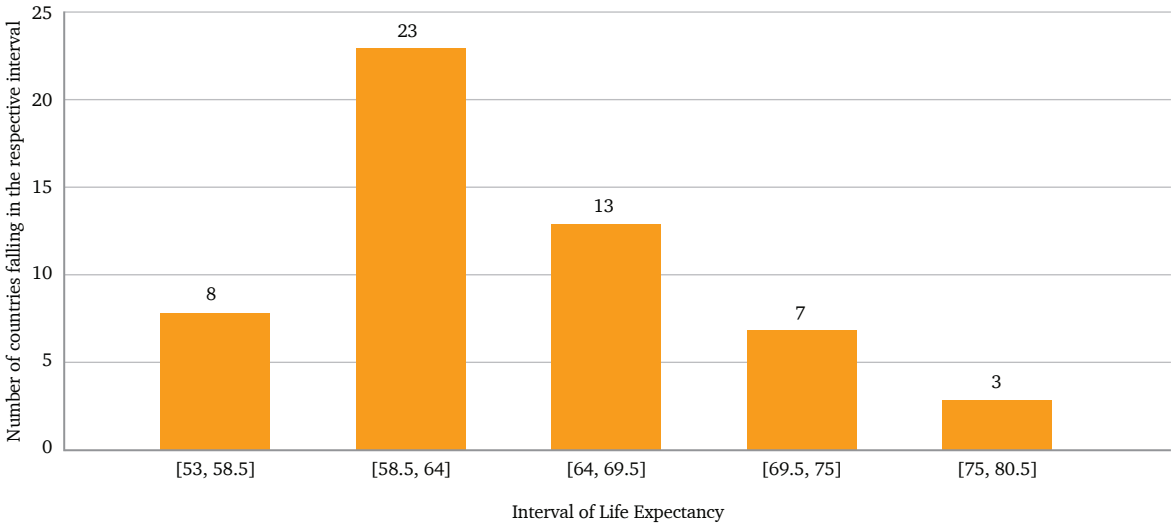
The average life expectancy calculated for all 54 countries is 64 years (see Figure 5). Thirty-one countries—eight in the range [53, 58.5], and 23 in the range (58.5, 64]—lie below the average life expectancy. That is nearly 50 percent of the continent lying in the life expectancy range of [53, 64], an indicator that there's a long way to go for the continent in terms of health outcomes. Premature deaths can occur because of unhealthy lifestyles, co-morbidities, or excess smoking or drinking. Medical innovations, as well as behavioural change and public health interventions, are crucial to build a healthier and more resilient population.

Figure 4: Mortality from CVD, cancer, diabetes or CRD
(between exact ages 30 and 70 in %)



Data Source: The World Bank

Figure 5: Life expectancy at birth, total (years)



Data Source: The World Bank

Access to Clean Water

Access to clean water is directly related to a population's overall good health. This factor is of particular importance when it comes to the prevention of COVID-19, as regular hand washing has proven to be an effective way of keeping the virus at bay. However, less than two-thirds of the population from 27 African countries has access to basic clean drinking water services--a formidable health risk for the continent (see Figure 6).

Food and Nutritional Security

According to the United Nations System Standing Committee on Nutrition, "Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life."[7] Many countries are facing a food security crisis amid the COVID-19 pandemic. This is particularly dangerous as nutritious food is key to good health and boosting immunity.

To illustrate the significance of nutritional security as a risk factor, the prevalence of overweight persons (% of adults) has been used as an indicator (see Figure 7). The World Bank defines the prevalence of overweight adults as the 'percentage of adults aged 18 and over whose Body Mass Index (BMI) is more than 25 kg/ m2'.[8]

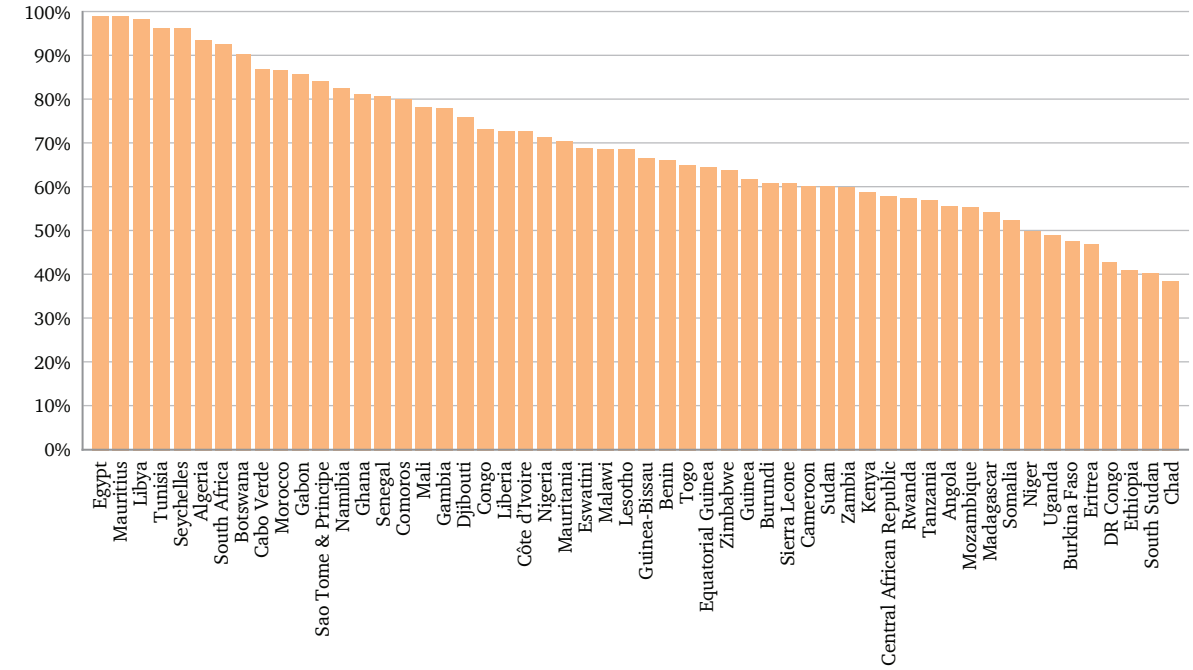
32 of the number of African countries surveyed have between 21-31.9 percent adults in the overweight category, while 13 nations have between 32-42.9% over-weight adults. A high BMI increases the chances of NCDs like cancer, cardiovascular diseases and musculoskeletal disorders,[9] and consequently also adds to the risk of adverse outcomes if the individual gets COVID-19.

Sustainable Development Index

Health is determined by development indicators such as poverty and destitution, sanitation and healthy living conditions. The best possible cumulative index for these parameters is the Sustainable Development Index, calculated based on 17 development goals prescribed by the United Nations Development Programme. High SDG rankings are a reasonable proxy for good performance on the social determinants of health. Countries are scored out of 100 on each indicator, and a final average of all 17 values generates an index for each country, based on which the countries are ranked.

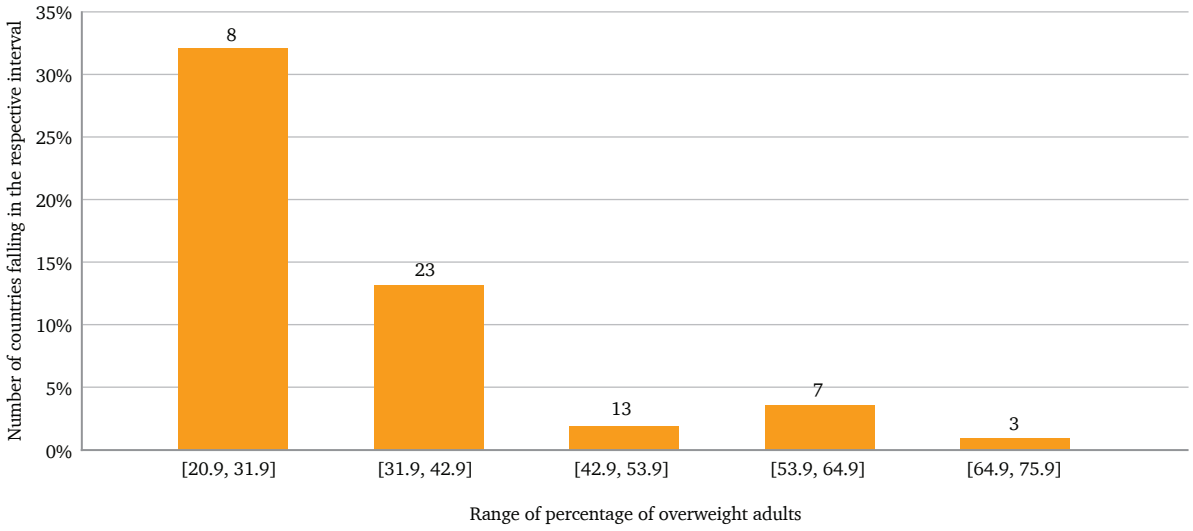
Only Algeria, Tunisia and Morocco perform relatively well on the index, ranking 53, 63 and 72, respectively (See Figure 8). This shows that there is tremendous scope for improvement across Africa to progress towards achieving the Sustainable Development Goals.

Figure 6: Access to water: People using at least basic drinking water services (%)



Data Source: The United Nations Children's Fund

Figure 7: Prevalence of overweight persons
(% of adults)



Data Source: The World Bank

Health Capacity

The Global Health Security (GHS) Index is the best available indicator of health capacity and capabilities across 195 countries.[10] The 2014-16 Ebola virus outbreak in West Africa was considered to be one of the most complex and serious epidemics, with a fatality rate of around 50 percent.[11] Epidemics and pandemics appear increasingly likely tto occur around the globe, necessitating the recognition of risks and the need for preparation.

The GHS Index encompasses six categories—prevention, detection and reporting, rapid response, health system, compliance with international norms and risk environment.

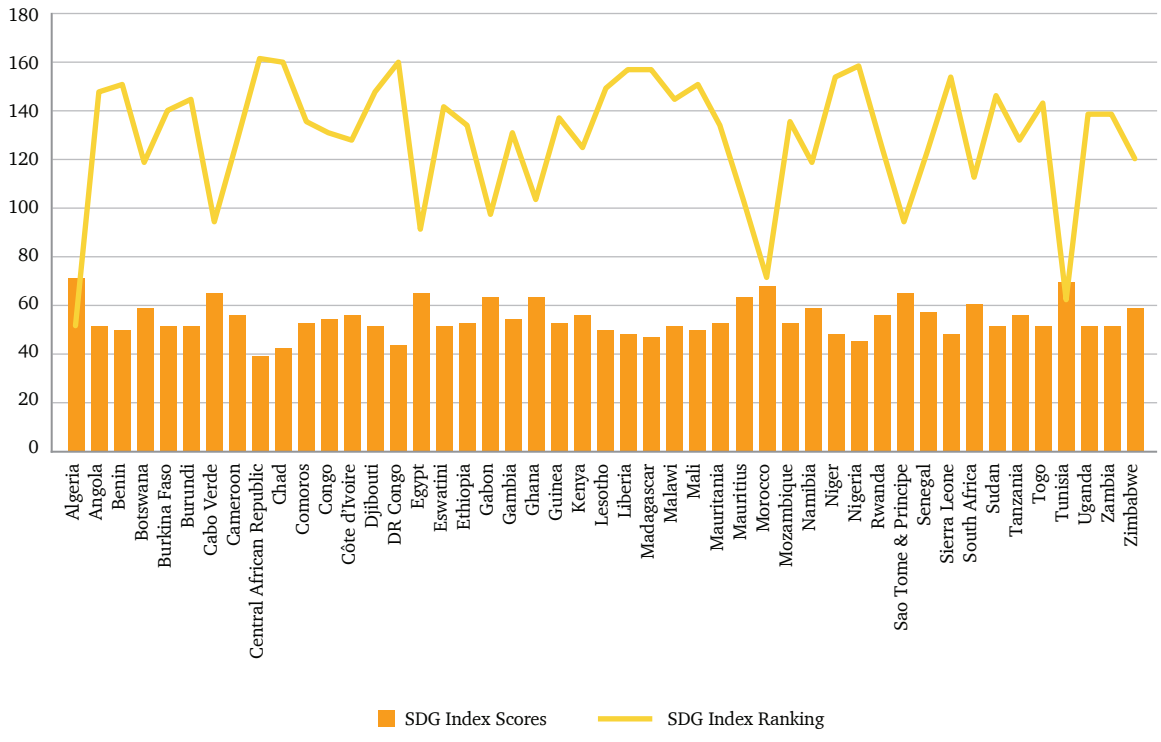
The GHS Index scores for the 54 African countries are showcased using a heat map (see Figure 9). South Africa has a score of 54.8 and ranks at 34th, and no other African country ranks anywhere close. This clearly highlights the gaps in healthcare capacity and pandemic preparedness that the African continent must fill. Health sector resilience needs to be a priority for governments to protect their economies.

For greater nuance, health resources like hospital beds, nursing and midwifery personnel, medical doctors, number of ICU beds and ventilators in the African continent have also been analysed.

Medical doctors appear to be in especially short supply in each of the countries compared (see Figure 10). Libya, Mauritius and Seychelles perform far better than the other countries on every metric.

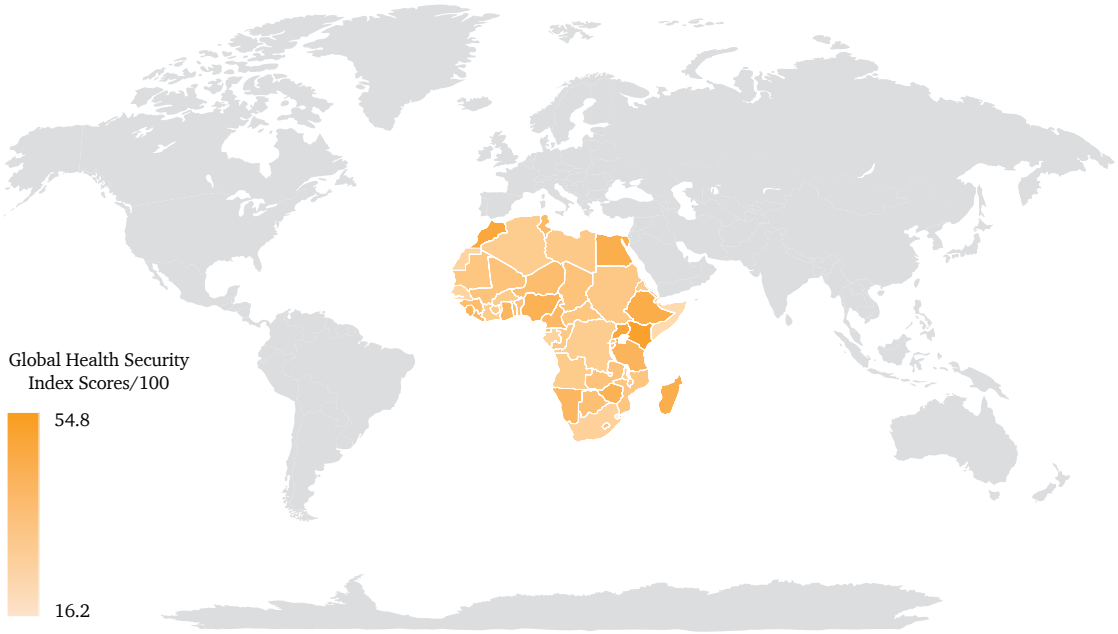
In terms of the numbers of ICU beds and ventilators, only Egypt and South Africa are doing relatively well (see Figure 11). This appears to be a gaping hole in Africa's healthcare capacity requirements, and the continent will need all the help it can get to amass this critical healthcare infrastructure, especially for pandemic preparedness.

Figure 8: SDG Index



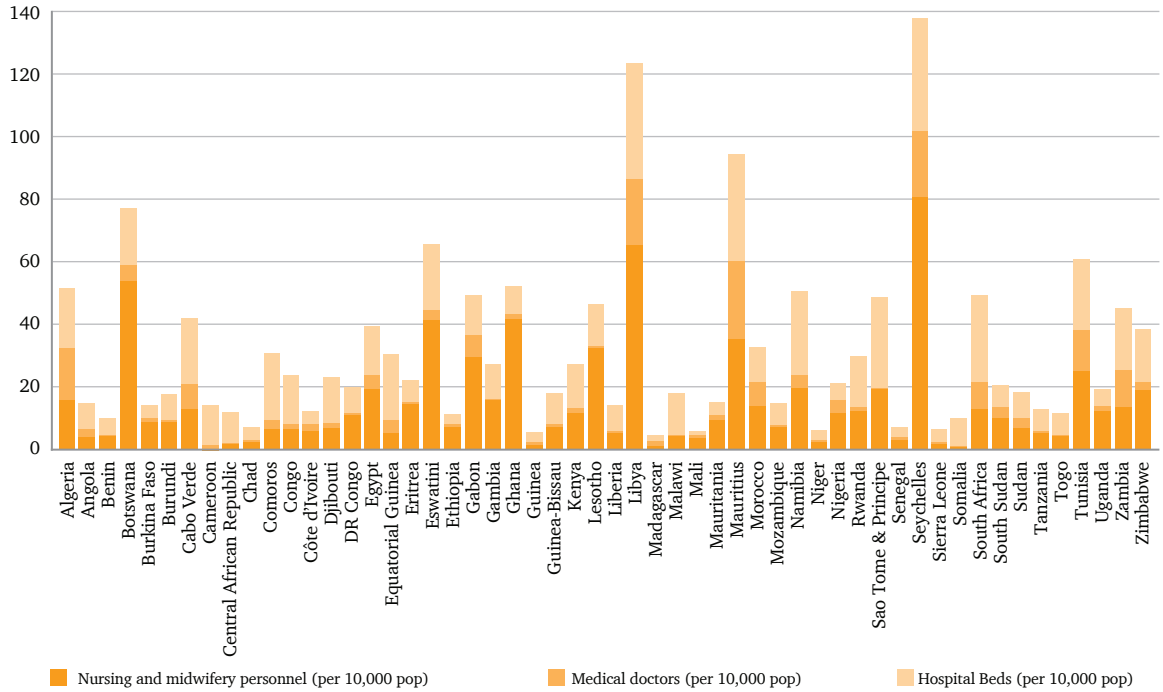
Data Source: The World Bank

Figure 9: Global Health Security Index



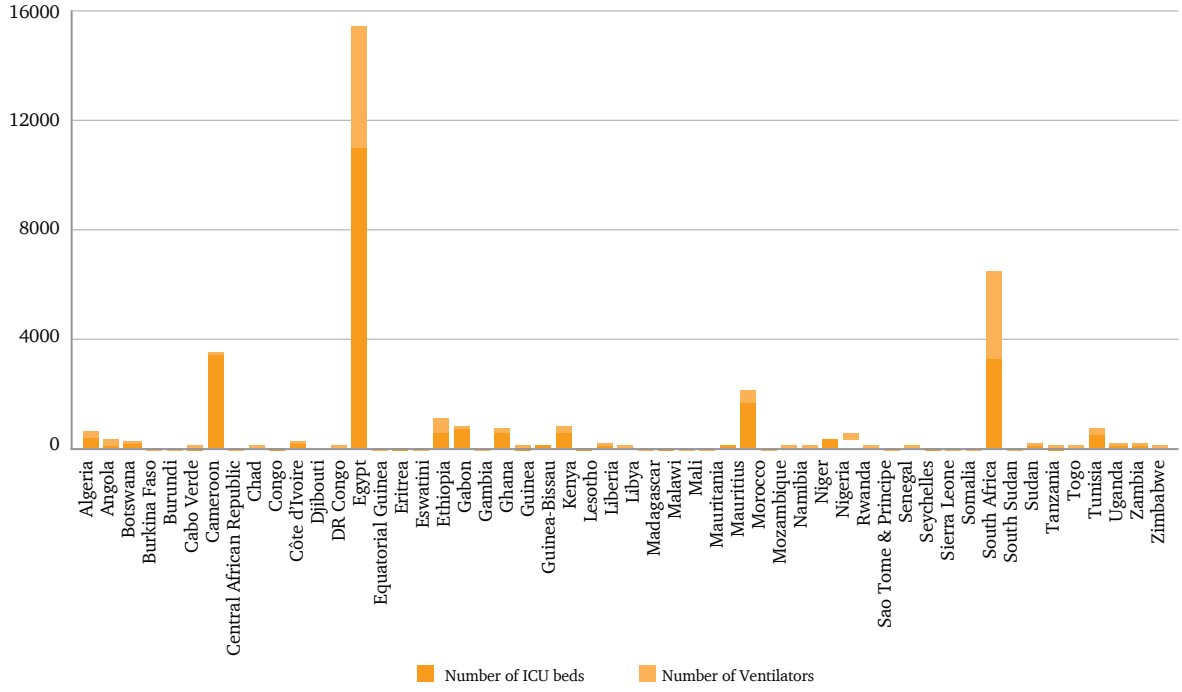
Data Source: Global Health Security Index

Figure 10: Medical Resources
(per 10,000 population)



Data Source: World Health Organization

Figure 11: Number of ICU Beds and Ventilators



Data Source: National Estimates of Critical Care Capacity in 54 African Countries

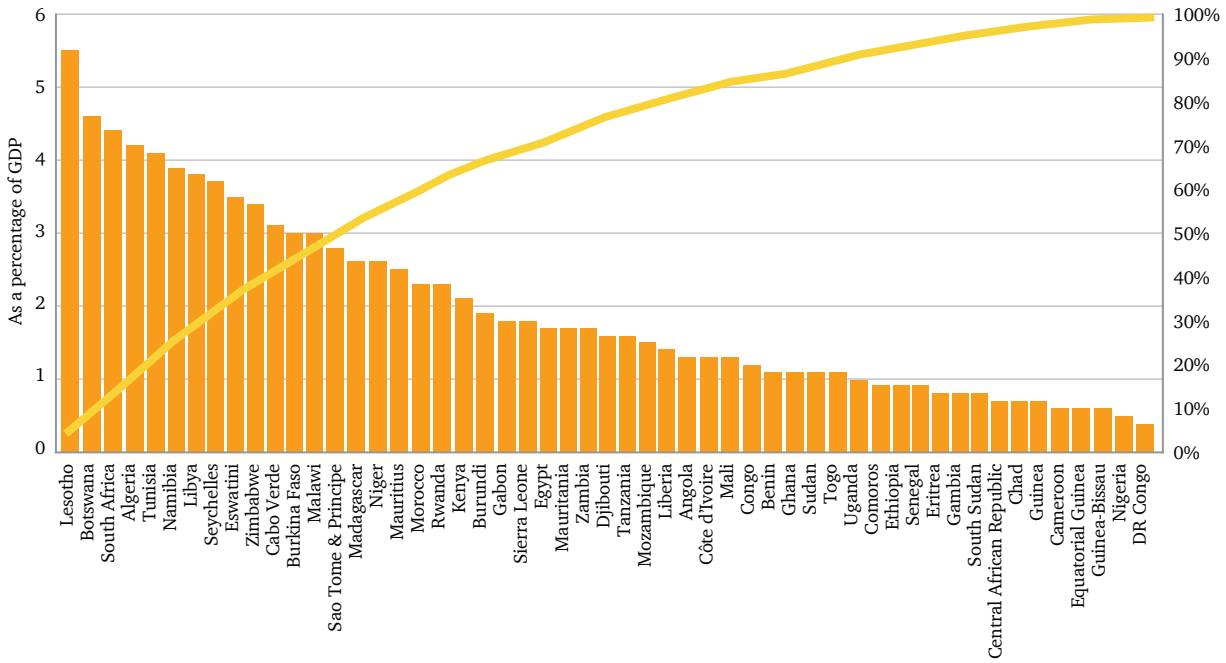
Any analysis would be incomplete without assessing the financial resources expended on health capacity in the African continent, namely government expenditure on health. For a quick snapshot, data for domestic general government health expenditure as a percentage of gross domestic product for the 54 African countries has been presented (see Figure 12).

Barring a handful of countries, most African nations perform far below the global average of 3.5 percent, suggesting that there is scope to step up their domestic expenditure towards healthcare.

Another crucial factor that must be accounted for is the importance of the provision of timely access to medicines. Currently, top medical research institutes and colleges in Africa are struggling to secure drugs to stem the COVID-19 mortality rate. The shortage of drugs is a serious issue that has only been exacerbated by restrictions on travel and movement, which has given way to smuggling and undue profiteering off these scarce essential resources. As a result, people are struggling to access and afford essential medicines. Of the 54 African countries, only 37 countries have some level of domestic pharmaceutical production.[12] Africa's share in global medicine production is just about 3 percent, and 95 percent of its medicine requirements are met through imports.[13] This presents a grave risk and has been explored further in the health resilience section of this report.

Due to the factors discussed above, the degree of vulnerability of the African population to COVID-19 appears relatively high, despite the continent having a largely young population with a relatively low burden of NCDs. The data highlights lower healthcare delivery capacity, low levels of health sector resilience and weak performance across various social determinants of health as causes for the greater vulnerability to COVID-19. As the novel coronavirus takes root in the continent, health system capacities must be ramped up as a matter of priority and citizens must be vigilant and ensure they readily comply to the mandated physical distancing measures.

Figure 12: Domestic General Government Health Expenditure



Data Source: World Health Organization

Endnotes

(1) "Ebola Virus Disease," *Situation Report, World Health Organization,* June 10, 2016, https://apps.who.int/iris/bitstream/handle/10665/208883/ebolasitrep_10Jun2016_eng.pdf;jsessionid=5C9700ED8C2775671998D962B3826157?sequence=1.

(2) "10th Ebola outbreak in the Democratic Republic of the Congo declared over; vigilance against flare-ups and support for survivors must continue," *World Health Organization*, June 25, 2020, https://www.who.int/news-room/detail/25-06-2020-10th-ebola-outbreak-in-the-democratic-republic-of-the-congo-declared-over-vigilance-against-flare-ups-and-support-for-survivors-must-continue.

(3) Pauline Bax, Michael Kavanagh and Ougna Camara, "How Ebola Helped Africa Prepare for Coronavirus," *Bloomberg Quint,* May 9, 2020. https://www.bloombergquint.com/global-economics/coronavirus-how-ebola-helped-africa-prepare-for-pandemic

(4) Joacim Rocklöv and Henrik Sjödin, "High Population Densities Catalyse the Spread of COVID-19," *Journal of Travel Medicine,* 27(3), taaa038, April 2020. https://academic.oup.com/jtm/article/27/3/taaa038/5807719.

(5) "Population Density (People Per Sq. Km Of Land Area)," *Data Catalog, The World Bank,* last modified May 28, 2020, https://datacatalog.worldbank.org/population-density-people-sq-km-land-area-2.

(6) "Cause of death, by non-communicable diseases (% of total)," *Metadata Glossary, DataBank, The World Bank,* https://databank.worldbank.org/metadataglossary/world-development-indicators/series/SH.DTH.NCOM.ZS.

(7) Marzella Wüstefeld, "Food and Nutrition Security," *Meeting of the Minds on Nutrition Impact of Food Systems, United Nations System Standing Committee on Nutrition,* March 25-28, 2013, https://www.unscn.org/files/Annual_Sessions/UNSCN_Meetings_2013/Wustefeld_Final_MoM_FNS_concept.pdf.

(8) "Prevalence Of Overweight (% Of Adults)," *Data Catalog, The World Bank,* last modified July 1, 2020, https://datacatalog.worldbank.org/prevalence-overweight-adults.

(9) "Obesity and overweight," Fact Sheets, World Health Organization, https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight.

(10) "About," Global Health Security Index, https://www.ghsindex.org/about/

(11) "Ebola Virus Disease," *World Health Organization,* https://www.who.int/health-topics/ebola/#tab=tab_1.

(12) Robin Cartwright and Ana Baric, "The Rise of Counterfeit Pharmaceuticals in Africa," *ENACT Africa,* Policy Brief 06, November 2018. https://enact-africa.s3.amazonaws.com/site/uploads/2018-11-12-counterfeit-medicines-policy-brief.pdf

(13) Oommen C. Kurian, "Expanding pharmaceutical local production in Africa: An idea whose time has come?," *Observer Research Foundation,* April 10, 2019. https://www.orfonline.org/expert-speak/expanding-pharmaceutical-local-production-in-africa-an-idea-whose-time-has-come-49805/

Some matter more than others: Africa's economic vulnerabilities

Annapurna Mitra and Alisha George

While the health risks of the COVID-19 pandemic have been contained relatively well in the African continent, the economic impact on these countries has been severe. The latest projections suggest that the Sub-Saharan African (SSA) economies will contract by 2.8 percent in 2020,[1] the worst downturn experienced by the region in decades. The contraction per capita is expected to be even more severe at 5.3 percent, with GDP per capita falling seven percentage points (pp) below the level projected before the COVID-19 outbreak, falling almost back to 2010 levels.[2] The World Bank estimates that about 26 million people across the African continent will be pushed into extreme poverty this year, which could rise further to 39 million if downside risks to growth materialise.[3]

To be sure, the situation in the different African countries vary widely. Middle-income countries like South Africa and Nigeria are among the worst affected, and countries with strong external linkages, especially in trade—for instance, Seychelles and Botswana—have also suffered as supply chains were disrupted. Figures 1 and 2 show the differential impact of the pandemic amongst the major country groups in Africa.

This chapter examines economic indicators across various dimensions, macroeconomic fundamentals, production structure, external links, and the labour force. The aim is to identify which characteristics make countries vulnerable to the pandemic. The difference in growth and poverty forecasts pre- and post-COVID-19, has been used to estimate the impact of the virus. For growth, the difference between the World Bank's GDP growth forecasts in January 2020, and June 2020 is utilised. The change is substantial: in January, the World Bank expected the SSA region to grow by three percent in 2020. This has since been revised downward by 5.8 pp, to (negative) 2.8 percent. The magnitude of the downward revision is a measure of the severity of economic impact. There are substantial variations across countries: growth in South Sudan is expected to be 14.6 pp lower than forecast in January this year, in comparison to a 1 pp dip for Burundi.

The growth impacts are observed to be most acute in relatively well-off countries, while poverty impacts are more severe in poorer ones. Countries that had high levels of unemployment before the crisis are among the worst impacted, in terms of both growth and poverty. High levels of debt, especially external debt, make countries vulnerable, as these countries lack the fiscal space to support their citizens. Similarly, high levels of dependence on the rest of the world is a major source of risk. The highest impact so far appears to be from trade dependence, especially import dependence, as supply chains have been disrupted. However, the impact of remittance and commodity dependence could see an increase as the crisis continues. Finally, the lack of social safety nets has rendered the continent vulnerable to large increases in the proportion of people living in poverty as jobs are lost.

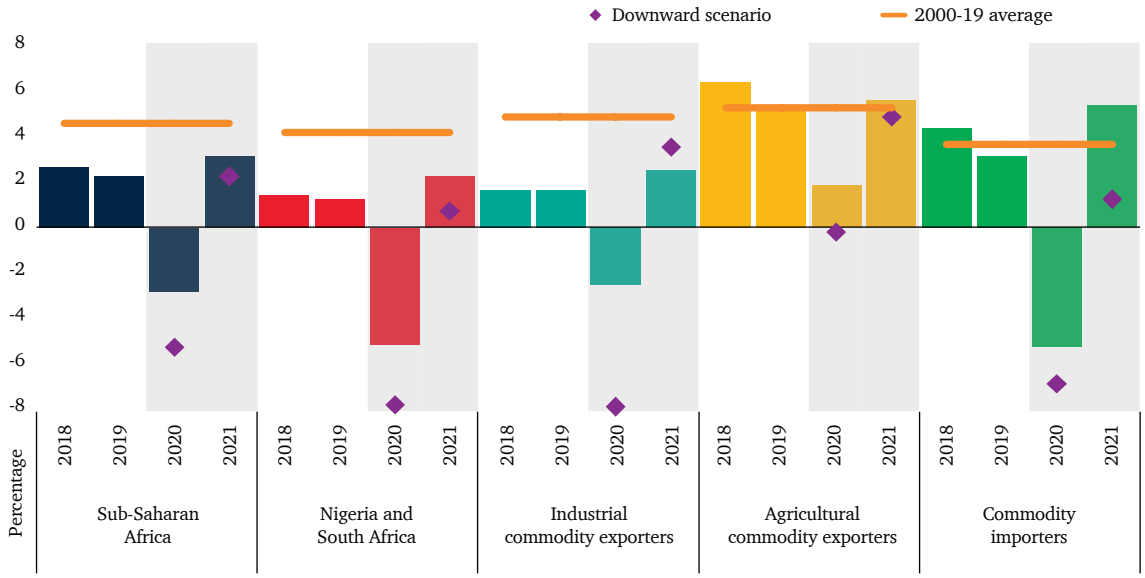
MACROECONOMIC RISKS

Table 1 shows the pp change in the GDP growth forecast between January and June 2020 in the first column. Countries are arranged by the magnitude of downward revision, from largest to smallest. This is examined against macroeconomic indicators like fiscal position, poverty, growth rates, as well the performance of the major economic sectors. Indicators are coded red, amber, and green (RAG). A full list of indicators, and the RAG thresholds are provided in the methodological note. The analysis will focus on the worst hit countries – those with growth downgrades in excess of seven pp.

The well-off are worst hit

So far, Africa's poorer countries appear to have suffered the least economic fallout from COVID-19, possibly because the first impacts of the pandemic were felt in the areas of international travel - tourism and business - both of which increase with an increase in income levels. Looking at both poverty rates and GDP per capita, relatively well-off countries have experienced the most severe impacts. Among the 10 countries with the biggest cut in forecasts, most are middle and upper-middle income countries based on

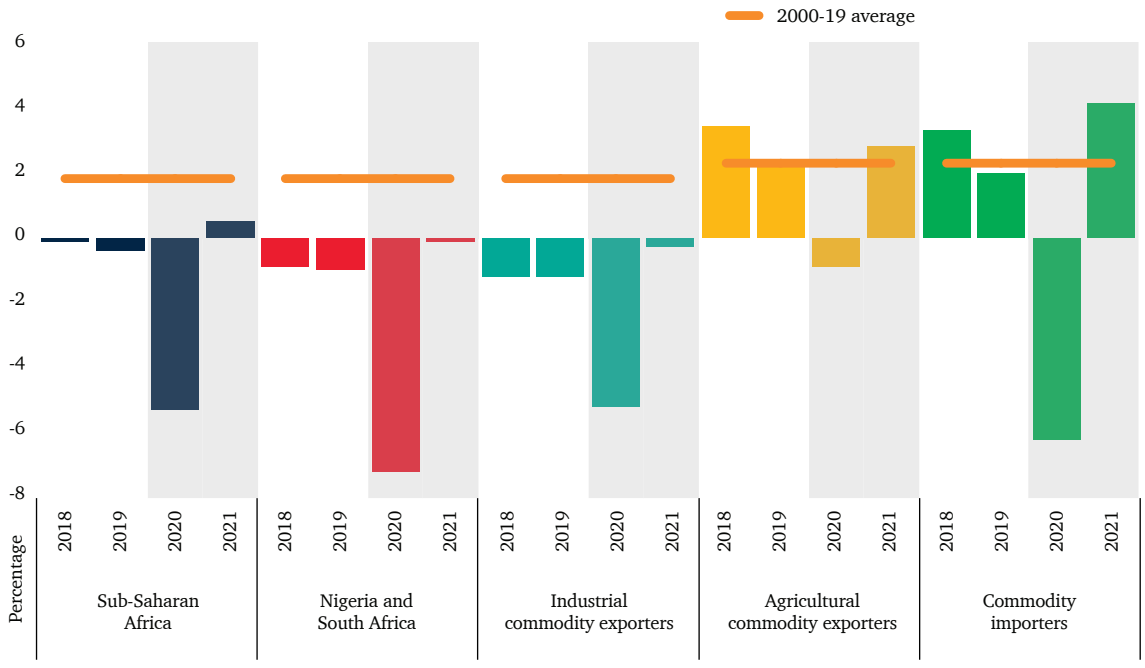
Figure 1: GDP Growth
(%, 2018-2021)



Source: World Bank Global Economic Prospects June 2020

Note: "Industrial-commodity exporters" represent oil and metal exporting countries. Aggregate growth rates have been calculated using GDP weights at 2010 prices and market exchange rates. "Industrial-commodity exporters" exclude Nigeria and South Africa.

Figure 2: GDP growth per capita
(%, 2018-2021)



Source: World BankGlobal Economic Prospects June 2020

Note: "Industrial-commodity exporters" represent oil and metal exporting countries. Aggregate growth rates have been calculated using GDP weights at 2010 prices and market exchange rates. "Industrial-commodity exporters" exclude Nigeria and South Africa.

Table 1: Macroeconomic Indicators

Country Name	PP change in growth forecast	Poverty Rate ($1.9 in 2011 PPP)	Unemployment Rate	Overall Fiscal Balance (% of GDP)	General Government Debt (% of GDP)	Inflation, consumer prices (annual %, period average)	GDP growth (annual %)	GDP per capita (US$, nominal)
	(Jan 2020 - June 2020)	(2019)	(2019)	(2019)	(2019)	(2019)	(2019)	(2019)
South Sudan	-14.6							
Seychelles	-14.4	0.8		0.0	56.4	2.0	3.8	16974.7
Botswana	-13.2	13.6	18.2	-4.4	13.1	2.8	3.5	7701.8
Zimbabwe	-12.7	38.5	4.9	-2.9	53.8	255.1	-8.1	749.0
São Tomé and Príncipe	-12.5	34.4	13.4	-6.0	113.7	7.8	2.4	2030.7
Congo, Rep.	-10.8	39.3	10.4	6.0	77.5	2.2	-0.3	2181.8
Mauritius	-10.7	0.2	6.9	-3.2	64.5	1.4	3.6	11347.5
Cabo Verde	-10.5	2.8	12.3	-1.9	123.0	1.1	5.5	3759.7
South Africa	-8.0	19.8	27.3	-7.1	64.1	4.1	0.2	6078.3
Mauritania	-7.7	5.9	10.3	2.7	93.6	2.2	6.3	1313.7
Sierra Leone	-7.2	38.9	4.3	-2.9	66.5	14.8	5.4	485.9
Guinea-Bissau	-6.5	61.4	4.1	-5.1	63.3	0.5	4.7	794.3
Madagascar	-6.5	74.5	1.6	-1.4	40.6	5.6	4.8	543.2
Comoros	-6.2	17.0	3.7	-1.9	17.6	1.7	1.9	1354.3
Gabon	-6.2	3.4	19.6	1.8	58.0	3.7	3.3	8796.7
Congo, Dem. Rep.	-6.1	71.9	4.3	-2.0	10.2	4.6	4.4	564.1
Equatorial Guinea	-6.1		9.2	1.6	48.2	1.2	-6.2	8356.0
Rwanda	-6.1	47.1	1.0	-8.0	58.5	2.4	9.4	789.4
Lesotho	-5.8	26.8	23.5	-4.5	49.7	5.3	1.4	1207.8
Chad	-5.7	40.2	2.3	-0.6	44.4	-1.0	3.2	715.5
Namibia	-5.7	17.2	23.2	-6.4	53.3	2.9	-1.1	4680.7
Angola	-5.5	48.7	7.2	1.0	110.9	17.1	-1.1	2866.3
Senegal	-5.5	32.9	6.5	-3.9	64.2	1.0	5.3	1407.3
Eswatini	-5.4	28.3	22.9	-5.4	35.0	2.6	1.3	3197.8
Ghana	-5.3	13.4	6.8	-7.0	63.1	7.9	6.1	2372.2
Nigeria	-5.3	50.1	6.1	-5.1	24.1	11.4	2.2	2216.2
Niger	-5.0	41.5	0.3	-3.9	55.2	-1.8	6.3	408.8
Kenya	-4.5	33.4	9.3	-7.9	62.7	5.2	5.6	1942.6
Togo	-4.5	45.8	1.7	-1.2	70.9	0.7	5.3	671.0
Cameroon	-4.4	22.4	3.3	-2.2	40.8	2.5	3.9	1530.4
Côte d'Ivoire	-4.3							
Eritrea	-4.2		6.5	2.7	231.6	-15.8	3.7	393.4
Central African Republic	-4.1	70.8	6.5	1.2	48.0	2.5	3.9	442.3
Mali	-4.1	41.2	9.8	-2.9	38.0	-0.4	5.1	863.3
Burkina Faso	-4.0	36.7	6.1	-2.7	40.0	-3.2	5.7	746.4
Liberia	-4.0	44.5	2.0	-6.1	52.5	27.0	-2.3	611.0
Guinea	-3.9	24.3	3.6	-0.9	34.3	9.5	5.6	998.9
Gambia, The	-3.8	8.4	8.9	-2.6	82.5	7.1	6.0	723.1
Benin	-3.5	45.4	2	-0.5	41.6	-0.9	6.4	1187.3
Zambia	-3.4	57.1	7.1	-6.9	88.6	9.1	1.7	1388.9
Tanzania	-3.3	49.1	1.9	-2.3	36.2	3.8	5.8	1030.3
Uganda	-3.2	38.2	1.8	-4.9	37.6	3.1	6.5	732.3
Ethiopia	-3.1	26.6	1.8	-2.5	57.2	12.5	9.0	785.9
Malawi	-2.8	68.3	5.4	-6.5	59.4	9.3	4.4	411.6
Sudan	-2.6	14.2	13.0	-10.5	213.1	51.3	-2.6	444.4
Mozambique	-2.4	61.8	3.2	0.5	118.7	2.8	2.2	506.5
Burundi	-1.0	82.6	1.5	-4.9	59.1	-0.8	1.8	260.2
Somalia								

Source: World Bank

Table 1: Macroeconomic Indicators (continued on next page)

Table 1: Macroeconomic Indicators (continued)

Country Name	PP change in growth forecast	Agriculture, forestry, and fishing, value added (% of GDP)	Industry (including construction), value added (% of GDP)	Services, value added (% of GDP)	Medium and high-tech Industry (including construction) (% manufacturing value added)	Employment in agriculture (% of total employment) (modelled ILO estimate)	Employment in industry (% of total employment) (modelled ILO estimate)	Employment in services (% of total employment) (modelled ILO estimate)
	(Jan 2020 - June 2020)	(2017)	(2017)	(2017)	(2017)	(2019)	(2019)	(2019)
South Sudan	-14.6	10.02	42.17	46.76	3.37	50.38	8.12	41.50
Seychelles	-14.4	28.49	15.11	48.40		38.58	18.99	42.43
Botswana	-13.2	1.99	29.84	59.12	5.79	20.69	18.12	61.20
Zimbabwe	-12.7	28.33	20.70	42.11		25.23	33.70	41.07
São Tomé and Príncipe	-12.5	28.55	10.99	49.33	2.57	92.02	1.47	6.51
Congo, Rep.	-10.8	6.74	18.19	61.24	27.10	11.46	21.99	66.55
Mauritius	-10.7	14.37	25.29	52.15	7.61	43.44	14.95	41.61
Cabo Verde	-10.5	32.79	20.74	41.88	9.25	77.32	5.40	17.27
South Africa	-8.0	48.61	14.63	33.51		76.56	2.10	21.34
Mauritania	-7.7	31.90	9.14	54.20		50.38	13.03	36.59
Sierra Leone	-7.2	6.40	53.52	40.08	2.42	34.13	21.86	44.01
Guinea-Bissau	-6.5	19.70	42.19	33.75		65.43	9.75	24.82
Madagascar	-6.5	21.58	24.69	44.87	14.99	40.05	13.17	46.78
Comoros	-6.2	2.32	56.86	40.90		42.36	19.07	38.58
Gabon	-6.2	8.34	33.54	53.54	2.23	12.46	23.79	63.75
Congo, Dem. Rep.	-6.1				4.31	61.21	8.45	30.34
Equatorial Guinea	-6.1	33.78	23.58	36.64	16.07	66.13	10.19	23.68
Rwanda	-6.1	5.27	45.47	42.65	5.39	32.83	10.75	56.42
Lesotho	-5.8	21.00	17.89	53.43	3.90	27.12	15.68	57.19
Chad	-5.7	19.70	30.78	42.35	0.80	29.26	21.78	48.96
Namibia	-5.7	20.53	31.65	37.94		61.74	6.16	32.10
Angola	-5.5	49.16	12.60	32.52		68.14	7.00	24.86
Senegal	-5.5	34.83	16.84	41.98	14.98	54.44	7.31	38.25
Eswatini	-5.4	6.12	35.85	52.53		8.54	42.22	49.24
Ghana	-5.3	37.09	10.20	48.24		43.27	10.22	46.51
Nigeria	-5.3	38.34	18.11	37.58		62.59	7.58	29.83
Niger	-5.0	24.55	20.11	51.05	3.56	64.22	8.99	26.79
Kenya	-4.5	26.10	14.35	52.43	11.34	43.65	13.81	42.54
Togo	-4.5	3.10	17.64	67.41	5.24	6.07	25.29	68.64
Cameroon	-4.4	23.88	29.11	39.44		51.27	12.94	35.78
Côte d'Ivoire	-4.3	25.04	24.02	40.95	10.89	70.33	8.45	21.22
Eritrea	-4.2	6.95	28.55	58.15	7.35	22.13	16.27	61.59
Central African Republic	-4.1	20.85	22.32	55.80	33.44	35.10	12.23	52.67
Mali	-4.1	39.65	15.86	38.31	16.86	75.06	7.19	17.74
Burkina Faso	-4.0	30.95	15.80	46.36	6.66	62.41	8.89	28.70
Liberia	-4.0	12.08	15.12	70.87		19.09	18.43	62.47
Guinea	-3.9	16.04	25.75	50.97	21.65	30.05	13.50	56.45
Gambia, The	-3.8	1.91	11.28	69.37				
Benin	-3.5	60.28	5.16	32.38		54.93	6.46	38.61
Zambia	-3.4					83.11	3.58	13.31
Tanzania	-3.3	2.36	26.29	61.03	24.43	5.09	22.91	72.01
Uganda	-3.2					56.88	13.89	29.24
Ethiopia	-3.1	30.45	2.31	46.79		39.94	16.22	43.84
Malawi	-2.8	28.74	25.10	37.92	6.47	65.31	6.75	27.94
Sudan	-2.6	23.62	15.33	27.82		37.70	12.88	49.42
Mozambique	-2.4	24.58	20.34	47.11	11.07	72.67	6.60	20.73
Burundi	-1.0	4.02	37.30	52.09	9.73	48.84	10.83	40.33
Somalia		9.66	25.79	55.08	21.82	66.54	6.58	26.87

Source: World Bank

the World Bank's classification,[4] with the exception of Zimbabwe and Sierra Leone. All the countries have poverty rates below 40 percent. Seychelles, Botswana, Cabo Verde and Mauritius—where tourism accounts for more than 10 percent of GDP—have seen large downward revisions in their growth forecasts.[5]

The cost of high debt levels

Easy access to financial markets has led to an increase in African debt, both domestic and foreign currency denominated, in Africa. Countries with high levels of indebtedness are vulnerable, especially as revenues are expected to collapse due to COVID-induced disruption. Meanwhile, debt service costs have increased as government bond yields are rising sharply. Ratings agency Fitch has predicted sharply rising debt levels in the 19 countries it rates, and has downgraded seven of these since March, warning of possible defaults.[6]

Stressed labour markets are a major risk

Labour markets play an important role. Most of the worst affected countries have relatively high levels of unemployment: higher than 10 percent in Botswana, Sao Tome and Principe, Congo, Cabo Verde, South Africa and Mauritania – a third of the countries for which data is available. The situation is only likely to worsen. Recent analysis from McKinsey and Company[7] suggests that between nine million and 18 million formal jobs in Africa could be lost or made redundant due to the COVID-19 crisis. They also find that a further 30-35 million formal jobs are at risk of wage reductions and working hours as a result of reduced demand and enforced lockdowns.

Industrial activity impacted by lockdowns and travel restrictions

Countries with relatively large manufacturing sectors, in terms of both value added and employment, are amongst the worst affected (see Figure 3). This is partially explained by the nature of manufacturing in the continent. The high levels of natural resources have led to most of Africa's industry being driven by resource-based manufacturing, which accounts for approximately half of total manufacturing value added.[8] When only high-tech manufacturing is taken into account, the impact changes. Countries that manufacture goods higher up in the value chain have been less affected, possibly due to their ability to undertake some of the work remotely.

Agriculture remains relatively insulated

Of the 10 countries which have the smallest growth impact due to COVID-19, eight have agricultural employment around or above 40 percent of total employment. This is partially due to Africa's dependence on food imports, which have been cut off due to the disruption in supply chains. However, countries that are food and agricultural producers have been spared this shock. Those that rely on agricultural exports are the only group expected to have positive GDP growth in 2020.[9]

EXTERNAL SECTOR

Africa's dependence on the global economy for trade, finance and tourism is a major vulnerability. While dependence on natural resources and remittances could turn into problems as the crisis continues, their impact on growth projections has so far been insignificant. Table 2 maps growth indicators against measures of external dependence.

Import Dependence

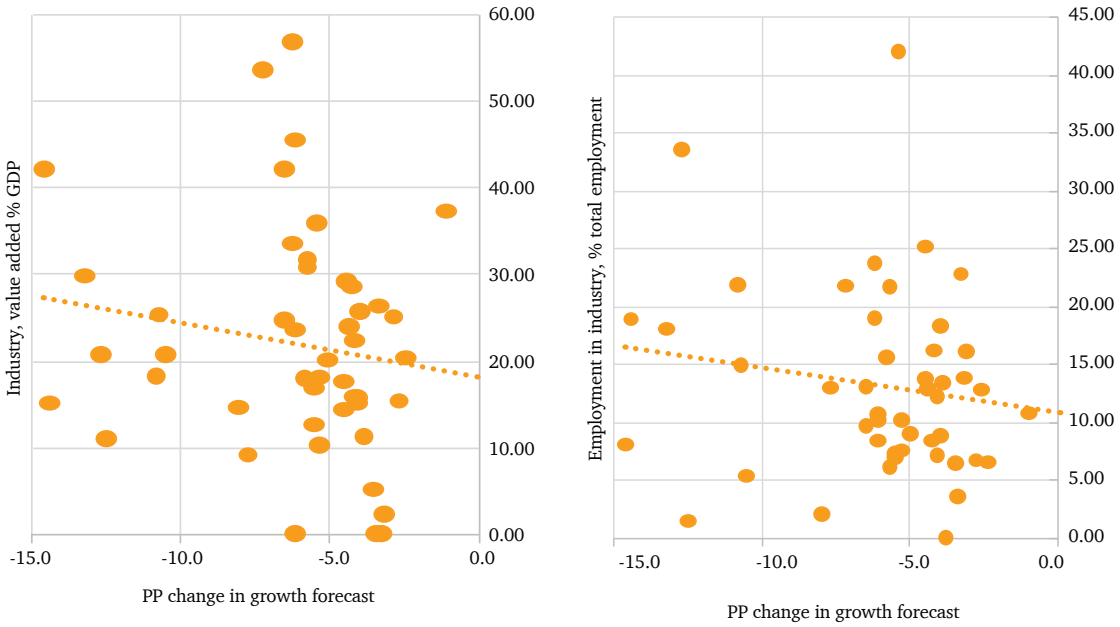
African countries rely on imports for a number of essentials, most importantly food and pharmaceuticals. Most countries with large cuts in the growth forecasts are highly dependent on imports, especially of food (see Figure 4). Botswana, for instance, relies on imports for almost 60 percent of its food requirement. Border closures have disrupted this supply, potentially leading to a food crisis, with 17 million people projected to be in a critical food security situation by August.[12]

Export Dependence

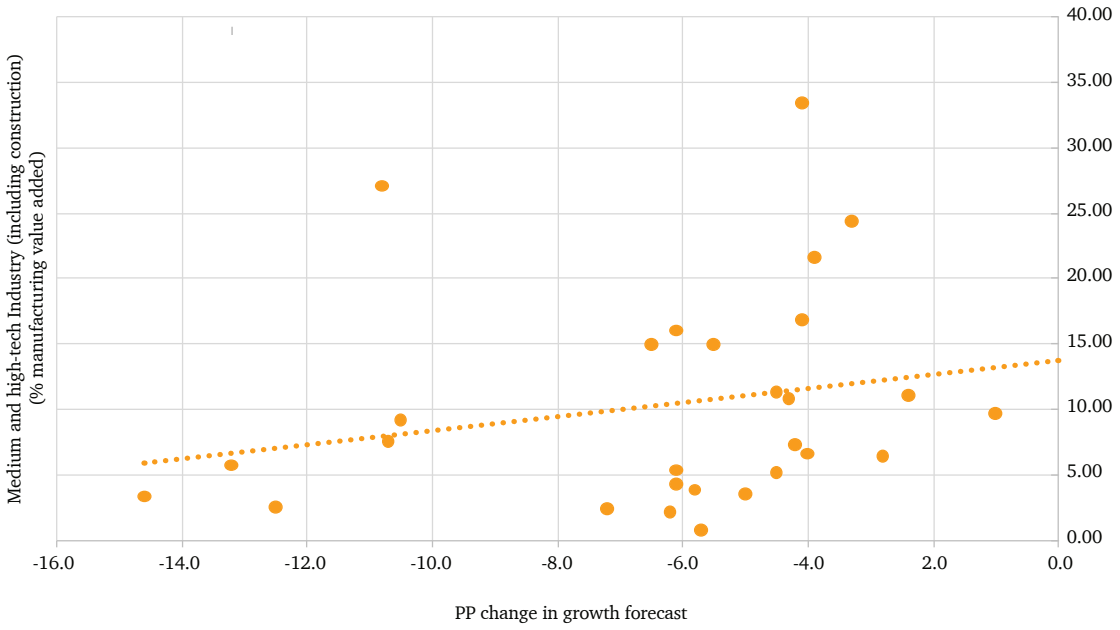
Between 2015-2017, 80-90 percent of African exports were to countries outside Africa, while intra-African exports were just 16 percent, far lower than in comparable regions like Europe and Asia.[13] Countries that rely heavily on exports have been impacted by the coronavirus crisis, particularly as China and Europe, their two biggest trading partners shut down their economies. Export dependence remains, however, less of a risk than import dependence. The impact on commodity exporters has been limited so far, with exporters of agricultural goods set to witness positive GDP growth.

Figure 3: Impact of industrial employment and output on growth

Countries with large industrial sectors have seen bigger cuts in the growth forecast…



But this is reversed when high-tech industry and construction is taken into account



Source: World Bank

Table 2: External linkages of African countries

Country Name	PP change in growth forecast	Merchandise exports (% of GDP)	Merchandise imports (% of GDP)	Food imports (% of merchandise imports)	Commodity exports (as a share of total merchandise exports)	Agricultural commodities (as a share of total merchandise exports)	Fuels (as a share of total merchandise exports)	Ores, metals, precious stones and non-monetary gold (as a share of total merchandise exports)	Services, net Exports (% of GDP)	Current account balance (% of GDP)	Foreign Direct Investment, net inflows (% of GDP)	External debt, total (% of GDP)	Personal Remittances (% of GDP)
	(Jan 2020 - June 2020)	(2019)	(2019)	(2017)	(2017)	(2017)	(2017)	(2017)	(2019)	(2019)	(2018)	(2018)	(2018)
South Sudan	-14.6												
Seychelles	-14.4	35.0	78.9		88.0	65.0	23.0		33.0	-18.6	17.2		1.4
Botswana	-13.2	30.2	35.8	54.9	94.0	2.0		92.0	0.4	-1.4	0.6	9.4	0.2
Zimbabwe	-12.7	35.2	42.0	14.9	86.0	50.0	1.0	35.0	-2.4	0.6	2.4	39.6	5.6
São Tomé and Príncipe	-12.5	4.0	30.9	32.6	86.0	71.0	12.0	3.0	5.0	-11.7	7.3	59.1	4.2
Congo, Rep.	-10.8	43.0	34.3	30.1	75.0	5.0	52.0	18.0	23.2	4.0	38.3	45.7	
Mauritius	-10.7	15.8	37.5	13.5	47.0	40.0	2.0	5.0	6.6	-6.5		78.8	1.7
Cabo Verde	-10.5	15.6	48.5	21.1	68.0	64.0	1.0	2.0	15.7	-3.0	4.0	87.8	11.8
South Africa	-8.0	28.2	27.9	24.7	57.0	13.0	12.0	32.0	-0.6	-3.9	-0.3	48.7	0.3
Mauritania	-7.7	38.7	47.3	11.9	98.0	44.0	4.0	50.0	-5.8	-13.5	14.7	95.2	1.2
Sierra Leone	-7.2	23.1	33.4	29.7	90.0	19.0		71.0	-8.5	-11.5	14.7	41.9	1.5
Guinea-Bissau	-6.5	21.2	23.1		98.0	94.0	4.0		-1.7	-4.6	1.2	28.9	8.8
Madagascar	-6.5	21.1	24.9	13.1	75.0	48.0	1.0	26.0	-1.7	-2.4	4.4	50.6	3.1
Comoros	-6.2	4.2	23.2	13.5	70.0	66.0		4.0	-1.3	-3.9	0.7	16.2	13.8
Gabon	-6.2	23.8	10.7	28.0	91.0	13.0	70.0	9.0	-7.8	-0.9	5.0	40.1	0.1
Congo, Dem. Rep.	-6.1	24.6	24.1		86.0	2.0	7.0	77.0	-10.7	-4.2	2.7	10.5	3.9
Equatorial Guinea	-6.1	58.7	39.3		90.0	5.0	83.0	1.0	-15.3	-7.4	2.9		
Rwanda	-6.1	11.6	22.2	24.0	89.0	31.0	8.0	51.0	-0.8	-9.6	2.9	57.7	2.7
Lesotho	-5.8	44.9	77.4	20.1	33.0	11.0		22.0	0.5	-7.6	1.6	33.4	23.0
Chad	-5.7	29.6	22.9		99.0	11.0	78.0	10.0	-16.5	-4.9	5.9	28.8	
Namibia	-5.7	31.5	43.0	16.3	83.0	27.0	1.0	55.0	-0.4	-3.0	0.4		0.4
Angola	-5.5	39.8	17.2	17.7	100.0		97.0	2.0	-10.4	3.3	-6.1	51.6	0.0
Senegal	-5.5	20.4	30.4		69.0	33.0	15.0	20.0	-1.3	-9.1	2.6	51.7	10.1
Eswatini	-5.4	42.8	42.9	18.3	34.0	30.0	2.0	2.0	-2.4	4.3	0.5	10.8	2.7
Ghana	-5.3	21.5	18.5		94.0	28.0	24.0	42.0	-0.9	-3.1	4.6	35.6	5.4
Nigeria	-5.3	14.6	13.9		98.0	5.0	92.0	2.0	-7.9	-3.8	0.5	11.6	6.1
Niger	-5.0	13.2	27.0		66.0	20.0	14.0	31.0	-10.6	-19.4	4.6	35.1	3.2
Kenya	-4.5	6.8	18.9	18.3	72.0	61.0	5.0	6.0	3.1	-4.6	1.7	35.8	3.1
Togo	-4.5	20.2	27.8	14.9	72.0	23.0	26.0	23.0	-1.6	-4.0	1.9	32.9	8.4
Cameroon	-4.4	10.8	17.2	20.9	92.0	46.0	38.0	7.0	0.7	-3.6	1.8	29.7	0.9
Côte d'Ivoire	-4.3				85	62	17	6					0.772075152
Eritrea	-4.2	28.5	24.9		95.0	31.0		64.0	0.0	12.2	0.0		
Central African Republic	-4.1	6.8	23.0	22.8	74.0	64.0		10.0	-6.4	-7.3	0.8	35.1	
Mali	-4.1	20.8	23.4	24.2	89.0	26.0	1.0	62.0	-8.9	-4.9	2.7	28.5	6.0
Burkina Faso	-4.0	24.4	22.6	12.2	96.0	28.0	2.0	65.0	-6.4	-4.4	3.4	23.3	3.2
Liberia	-4.0	18.5	33.9	16.9	50.0	18.0	6.0	25.0	-2.3	-22.1	3.7	38.5	14.1
Guinea	-3.9	29.5	34.2	18.8	86.0	9.0	6.0	72.0	-4.5	-13.9	12.9	15.6	0.3
Gambia, The	-3.8	8.5	35.1		88.0	80.0	3.0	6.0	4.3	-5.4	1.8	41.7	12.5
Benin	-3.5	28.7	35.5	18.9	87.0	56.0	7.0	23.0	-0.9	-5.1	1.2	35.6	1.4
Zambia	-3.4	29.9	27.1	5.6	88.0	12.0	1.0	75.0	-2.6	-1.5	1.4	71.5	0.4
Tanzania	-3.3	9.6	17.3	10.3	86.0	45.0	2.0	39.0	4.2	-3.0	1.8	32.0	0.7
Uganda	-3.2	11.8	20.3	7.9	82.0	63.0	4.0	15.0	-1.8	-9.8	3.0	44.9	4.9
Ethiopia	-3.1	2.9	17.5		85.0	72.0	4.0	10.0	-0.5	-4.5	3.9	33.2	0.5
Malawi	-2.8	12.1	36.3	13.8	79.0	79.0		1.0	0.8	-17.8	1.4	32.1	2.6
Sudan	-2.6	21.9	49.2	17.7	97.0	28.0	44.0	25.0	24.0	-8.1	1.9	52.9	1.0
Mozambique	-2.4	31.6	45.5		95.0	18.0	46.0	31.0	-16.6	-20.6	18.3	103.4	2.0
Burundi	-1.0	5.9	23.9	12.5	91.0	48.0		42.0	-5.6	-11.9	0.0	19.4	1.6
Somalia				18.4546727	85	84		1					

Sources: Macro Poverty Outlook Report April 2020, World Bank[10] *and State of Commodity Dependence, UNCTAD*[11]

Dependence on external finance

External debt has been rising in the region, with the median amount of public debt denominated in a foreign currency reaching 29 percent of GDP in 2018, from 22 percent in 2013.[14] While the G20 has announced a bilateral debt moratorium,[15] and the IMF has increased support, an increasing proportion of external debt, by some accounts 20 percent,[16] is now owed to China through the Belt and Road Initiative (BRI). The Chinese government has not announced comprehensive debt relief so far, putting the fiscal stability of borrower nations at risk.

Countries receiving large **FDI flows** are also likely to be affected, as recessions in high-income countries reduce the funds available for investment. UNCTAD forecasts that FDI flows to the continent will contract between 25 percent and 40 percent this year, with service industries like tourism and hospitality projected to suffer severe impact.[17] Manufacturing industries that are linked to global value chains are also affected, likely setting back industrial development.

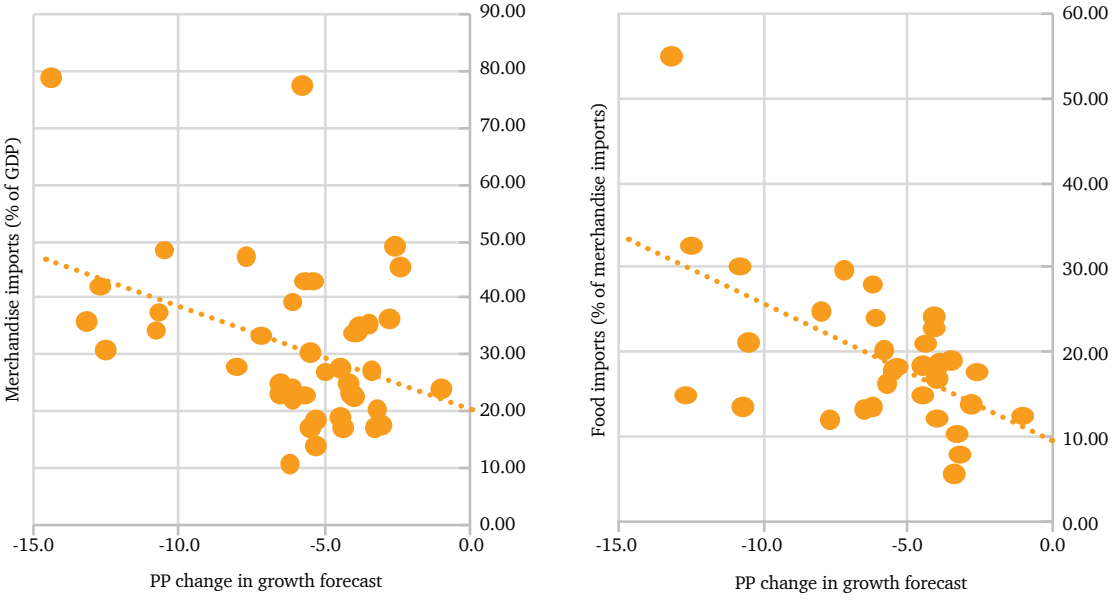
Remittances are the biggest source of external financial flows to Africa, amounting to US$82.8 billion in 2018. Lockdowns in destination countries could, however, reduce inflows in the coming months by up to 23 percent, according to World Bank estimates.[18]

The COVID-19 crisis has delayed the ratification of the African Continental Free Trade Agreement (AfCFTA) which was meant to be operationalised in June 2020. The AfCFTA, by supporting intra-regional trade, could have reduced African dependence on the global economy. The creation of a regional trading bloc, which could support African supply chains and produce for African markets will be essential in reducing vulnerability to external shocks.[19]

IMPACT ON POVERTY

The COVID-19 crisis has had a disproportionately severe impact on the already economically vulnerable segments of the population around the world. The African continent, which is home to 27 of the world's 28 poorest countries,[20] is expected to bear the biggest brunt. Estimates from the World Bank suggest that global poverty levels are expected to rise from 8.23 percent in 2019 to 8.82 percent in 2020, and potentially even higher to 9.18 percent.[21] This is the first increase in global extreme poverty since 1998, and one- third of it will be in Africa.[22]

Figure 4: High dependence on food imports has impacted growth prospects



The X-axis shows percentage point change in growth forecasts between January and June 2020. Negative values indicate lower growth forecasts.

Source: World Bank

Table 3: Poverty and labour market indicators

Country Name	Percentage point change in poverty rate ($1.9 in 2011 PPP)	Unemployment Rate	GDP growth (annual %)	GDP per capita (US$, nominal)	Gross Investment (% of nominal GDP)	Personal Remittances as a % of GDP	*Urban Population (% of total Population)	*Wage employees, aged 15-64	*No Education	*Primary Education	*Secondary Education	*Post Secondary Education
	(between 2019 and 2020f)	(2019)	(2019)	(2019)	(2019)	(2018)	(latest available for each country from JOIN database)					
Namibia	-2.7	23.2	-1.1	4680.7	16.2	0.4	46.64%	86.01%	12.02%	16.91%	55.71%	15.36%
Madagascar	-2.0	1.6	4.8	543.2	20.2	3.1	16.95%	14.81%	25.47%	32.13%	38.15%	4.24%
Nigeria	-1.9	6.1	2.2	2216.2	13.8	6.1	36.31%	47.32%	41.38%	6.45%	32.55%	19.62%
Zimbabwe	-1.9	4.9	-8.1	749.0	6.9	5.6	31.38%	26.24%	3.79%	14.63%	79.32%	2.26%
Congo, Rep.	-1.8	10.4	-0.3	2181.8	18.5		67.01%	29.24%	17.10%	9.05%	63.99%	9.86%
South Africa	-1.8	27.3	0.2	6078.3	17.9	0.3	63.71%	84.86%	3.36%	9.04%	55.97%	31.63%
Rwanda	-1.6	1.0	9.4	789.4	27.5	2.7	17.26%	28.08%	16.11%	43.02%	36.41%	4.46%
Sudan	-1.6	13.0	-2.6	444.4	18.7	1.0	35.60%	46.00%	51.61%	17.06%	30.94%	0.39%
Congo, Dem. Rep.	-1.6	4.3	4.4	564.1	16.7	3.9	38.85%	16.55%	29.48%	26.65%	22.89%	20.98%
Angola	-1.4	7.2	-1.1	2866.3	13.5	0.0	52.54%	29.87%	22.91%	65.95%	9.20%	1.93%
Burundi	-1.1	1.5	1.8	260.2	12.3	1.6	10.08%	12.48%	46.02%	34.83%	18.54%	0.60%
Chad	-1.1	2.3	3.2	715.5	21.4		18.42%	8.94%	64.75%	19.08%	13.54%	2.63%
Eswatini	-1.0	22.9	1.3	3197.8	13.6	2.7	24.20%	72.96%	11.13%	21.97%	66.69%	0.22%
Botswana	-0.9	18.2	3.5	7701.8	37.2	0.2	56.74%	72.49%	13.98%	43.62%	25.65%	16.75%
Liberia	-0.9	2.0	-2.3	611.0	22.8	14.1	59.44%	20.95%	58.91%	8.60%	19.18%	13.31%
São Tomé and Príncipe	-0.8	13.4	2.4	2030.7		4.2	55.56%	44.84%	9.72%	90.21%	0.02%	0.05%
Mozambique	-0.6	3.2	2.2	506.5	24.7	2.0	33.01%	16.57%	29.41%	31.92%	31.65%	7.02%
Lesotho	-0.5	23.5	1.4	1207.8	29.6	23.0	18.69%	56.78%				
Zambia	-0.5	7.1	1.7	1388.9	37.7	0.4	41.83%	22.66%	18.26%	22.22%	46.79%	12.73%
Mauritania	-0.4	10.3	6.3	1313.7	42.9	1.2	48.35%	35.72%	27.35%	48.31%	17.26%	7.09%
Comoros	-0.4	3.7	1.9	1354.3	16.7	13.8	39.40%	38.84%	35.63%	20.61%	40.17%	3.59%
Cabo Verde	-0.1	12.3	5.5	3759.7	39.3	11.8	56.83%	59.07%	13.50%	31.31%	46.73%	8.46%
Seychelles	-0.1		3.8	16974.7	27.6	1.4						
Mali	-0.1	9.8	5.1	863.3	20.4	6.0	21.86%	21.40%	68.12%	4.49%	26.00%	1.38%
Côte d'Ivoire	0.0					0.8	44.39%	42.69%	62.95%	10.71%	23.08%	3.26%
Gabon	0.0	19.6	3.3	8796.7	22.6	0.1	80.14%	57.17%	9.79%	12.90%	71.20%	6.11%
Gambia, The	0.0	8.9	6.0	723.1	16.6	12.5	54.99%	26.53%	51.97%	7.10%	29.28%	11.66%
Ghana	0.0	6.8	6.1	2372.2	16.1	5.4	50.12%	23.02%	20.81%	11.79%	54.70%	12.69%
Mauritius	0.0	6.9	3.6	11347.5	19.6	1.7						
Sierra Leone	0.0	4.3	5.4	485.9	14.3	1.5	32.85%	10.80%	0.31%	20.94%	78.75%	0.00%
Somalia												
South Sudan	0.0						15.62%	25.92%	74.26%	16.35%	9.18%	0.21%
Tanzania	0.0	1.9	5.8	1030.3	36.1	0.7	35.55%	14.83%	0.10%	14.50%	73.60%	11.80%
Cameroon	0.1	3.3	3.9	1530.4	24.2	0.9	48.69%	21.29%	20.66%	17.97%	57.20%	4.17%
Niger	0.1	0.3	6.3	408.8	37.7	3.2	16.21%	5.37%	75.02%	12.98%	11.49%	0.51%
Guinea	0.2	3.6	5.6	998.9	30.6	0.3	32.29%	9.73%	0.27%	30.76%	61.36%	7.61%
Malawi	0.2	5.4	4.4	411.6	12.4	2.6	18.96%	13.56%	13.22%	54.33%	32.45%	0.00%
Central African Republic	0.3	6.5	3.9	442.3	16.9		37.18%	9.96%	39.24%	27.23%	31.12%	2.41%
Kenya	0.3	9.3	5.6	1942.6	17.4	3.1	19.94%	27.73%	13.73%	39.00%	29.59%	17.68%
Burkina Faso	0.5	6.1	5.7	746.4	23.8	3.2	22.87%	10.24%	72.09%	22.91%	4.27%	0.73%
Senegal	0.5	6.5	5.3	1407.3	27.3	10.1	41.57%	23.42%	59.16%	15.04%	23.41%	2.39%
Togo	0.5	1.7	5.3	671.0	31.1	8.4	53.57%	19.95%	29.86%	36.06%	30.13%	3.95%
Benin	0.7	2	6.4	1187.3	27.6	1.4	41.92%	10.58%	53.42%	15.88%	30.34%	0.36%
Ethiopia	0.8	1.8	9.0	785.9	39.7	0.5	19.07%	12.97%	1.76%	65.05%	29.16%	4.03%
Uganda	1.0	1.8	6.5	732.3	26.5	4.9	24.90%	23.59%	12.00%	43.55%	41.46%	2.98%
Guinea-Bissau	1.4	4.1	4.7	794.3	16.2	8.8	39.32%	9.97%	47.11%	22.87%	22.36%	7.66%
Equatorial Guinea		9.2	-6.2	8356.0	11.4							
Eritrea		6.5	3.7	393.4	4.9							

Sources: Macro Poverty Outlook Report April 2020, World Bank
State of Commodity Dependence, UNCTAD
World Bank JOIN Database

To examine poverty impacts, this analysis utilised forecasts for 2020 from the World Bank's Macro Poverty Indicators database. These are compared with the incidence of poverty in 2019 (see Table 3). In the chosen subset of countries, poverty is expected to rise by more than one pp for 12 out of the 48 for which data is available. Namibia and Madagascar are the worst hit, with poverty rising 2.7 and 2 pp, respectively. On the other side of the spectrum, Uganda and Guinea-Bisseau appear to be doing relatively well, with the incidence of poverty expected to fall more than 1 pp in each case.

The poor are worst hit

While the growth impact is greatest in rich countries, the poverty impact is worst on those which were already poor, pre-pandemic. Out of the 12 countries that are expected to see a substantial increase in poverty, nine have poverty rates higher than 35 percent, and seven are low-income countries. GDP growth rates matter, too: out of the eight countries which were in recession in 2019, six can expect to see poverty rise by more than 1 pp. They are largely characterised by low levels of investment.

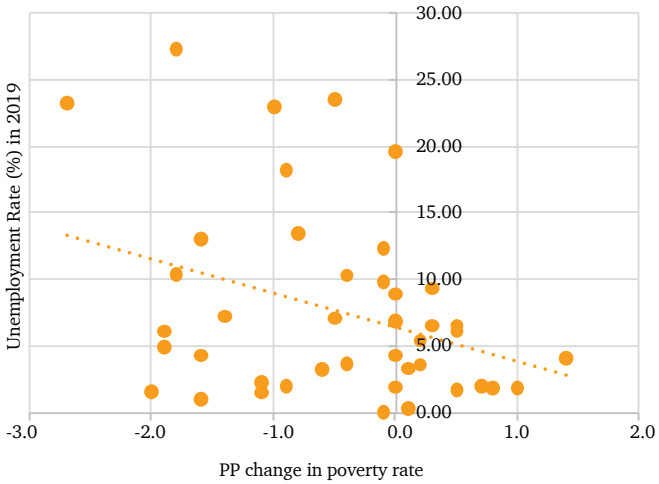
Stressed labour markets affect poverty outcomes

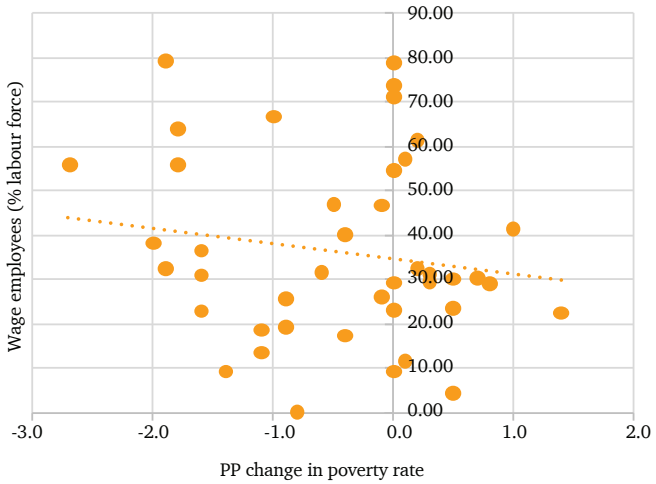
The status of employment is another relevant risk, with unemployment rates greater than 10 percent leading uniformly to increased poverty. Figure 5 shows the relationship between unemployment rates in 2019 and the projected increase in poverty in 2020. Projected increase in poverty is calculated as the pp point difference between the poverty forecast for 2020 and poverty rates in 2019. A negative value indicates a projected increase in poverty.

Educated workers in formal employment may slip into poverty

Surprisingly, however, greater proportions of wage employment (which is used in this analysis as indicative of formal employment) seem to lead to worse poverty outcomes (see Figure 6). This could be partially explained by the lack of social safety nets. A similar trend is seen when looking at the distribution of the workforce by education levels

Figures 5 and 6: Impact of labour market conditions on poverty



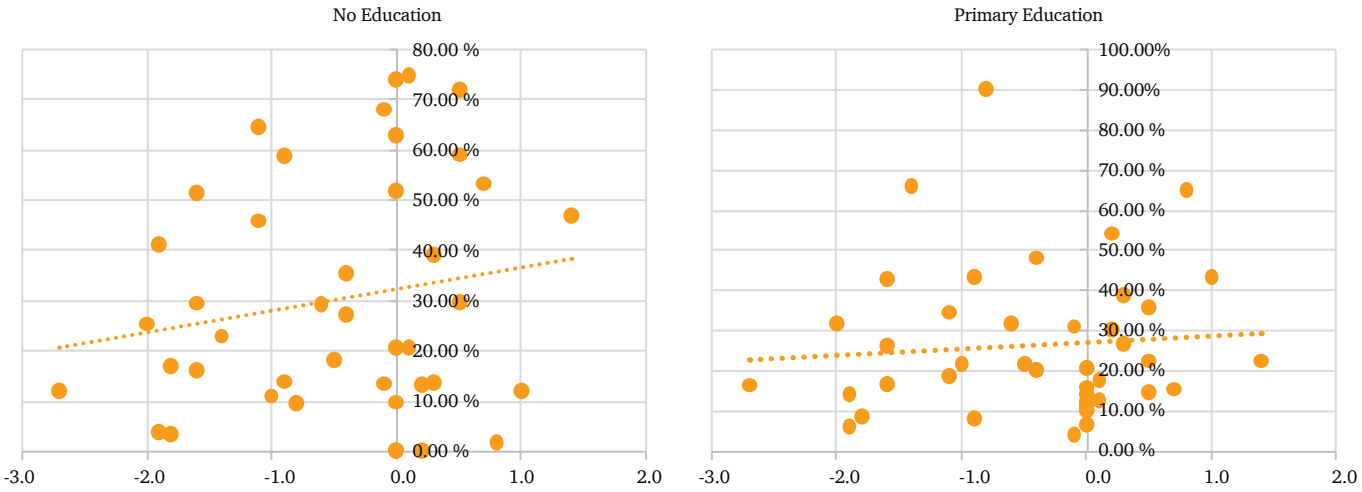


The X-axis shows percentage point change in poverty levels between 2019 and 2020, measured using the international poverty line. Negative values indicate an increase in poverty.

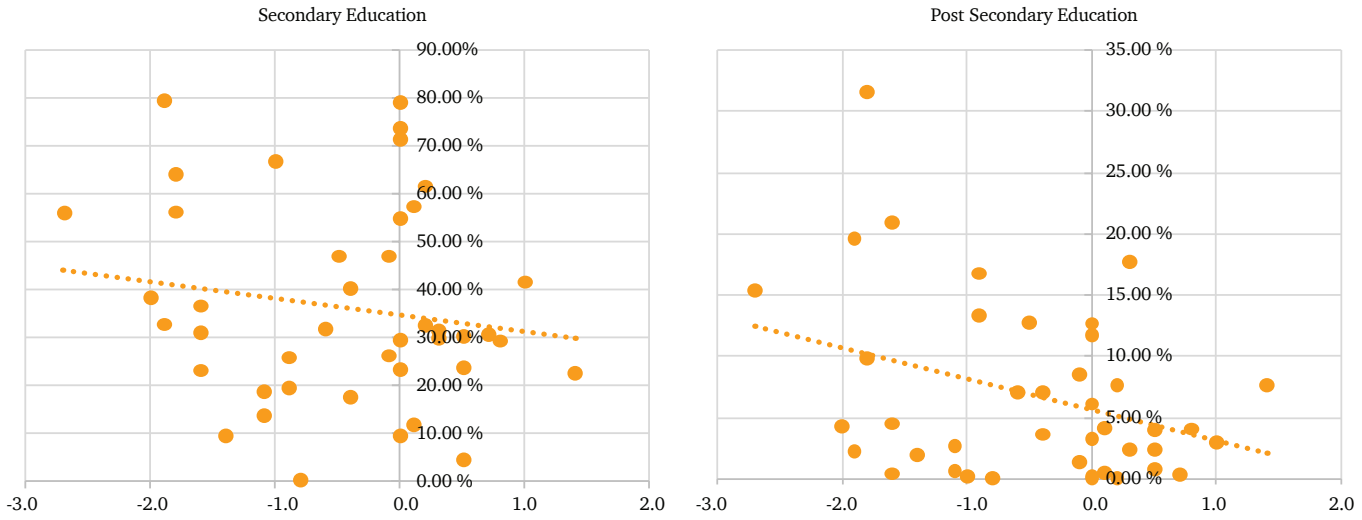
Source: World Bank Macro Poverty Indicators and JOIN database

Figure 7: Impact of education status on poverty

Lower levels of education among the workforce have led to smaller poverty impacts…



while countries with better educated workforces have seen relatively large increases in poverty.



Note: The Y-axis shows percentage of the workforce whose highest level of education corresponds to each category. The X-axis shows percentage point change in poverty levels between 2019 and 2020, measured using the international poverty line. Negative values indicate an increase in poverty.

Source: World Bank JOIN Database and Macro Poverty Indicators

(see Figure 7). The poverty impact worsens as the education level of the work force increases, and is particularly acute for countries with a high proportion of workers who have post-secondary education. This suggests a large proportion of vulnerable workers, who remain slightly above the poverty line as long as they are employed, but will slip into poverty as a result of job losses.

Conclusion

In summary, the risk factors relevant to growth and poverty outcomes in Africa include external dependence, high levels of unemployment and a lack of social safety nets, and unsustainable debt levels. In particular, economic integration within the region, with a focus on high-tech manufacturing, and regional value chains on the production side, and a focus on African markets for demand, will be essential for increasing resilience to external shocks. While the AfCFTA has been delayed due to the COVID-19 pandemic, it will be important to move forward with the trade negotiations to create the conditions for such industry to flourish. Improving financial markets and institutions will be an important step towards raising funds domestically. Stronger social safety nets will be needed to protect workers who are able to make ends meet when employed but have no insurance against economic shocks.

Methodological notes

This analysis used the difference in growth and poverty forecasts, pre- and post-COVID-19 to estimate the impact of the virus. For growth, the difference between the World Bank's GDP growth forecasts in January 2020 and June 2020 is used. For poverty, the difference between 2019 poverty rates (as a percentage of population), and projections made by the World Bank for 2020 in April is used. In the tables provided in the chapter, data points for various indicators have been classified as red, amber and green. Classification thresholds are listed below.

Indicator	Thresholds		
Percentage Point Change in GDP Forecast for 2020 between January 2020 and June 2020	≥-5	≥-7 and <-5	<-7
International poverty rate ($1.9 in 2011 PPP)	≤20	>20 and <40	≥40
Unemployment Rate	≤5	>5 and <10	≥10
Overall Fiscal Balance (% of GDP)	≥0	>-3 and <0	≤-3
General Government Debt (% of GDP)	≤40	>40 and <60	≥60
Inflation, consumer prices (annual %, period average)	≤4	>4 and <8	≥8
GDP growth (annual %)	≥4	>0 and <4	≤0
GDP per capita (US$, nominal)	≥3996	1025> and <3996	≤1025
Agriculture, forestry, and fishing, value added (% of GDP)	≥40	>20 and <40	≤20
Industry (including construction), value added (% of GDP)	≥20	>10 and <20	≤10
Services, value added (% of GDP)	≥50	>40 and <50	≤40
Employment in agriculture (% of total employment) (modelled ILO estimate)	≥40	>30 and <40	≤30
Employment in industry (% of total employment) (modelled ILO estimate)	≥20	>10 and <20	≤10
Employment in services (% of total employment) (modelled ILO estimate)	≥40	>30 and <40	≤30
Medium and high-tech Industry (including construction) (% manufacturing value added)	≥20	>10 and <20	≤10
Merchandise exports (% of GDP)	≤20	>20 and <30	≥30
Merchandise imports (% of GDP)	≤20	>20 and <30	≥30
Food imports (% of merchandise imports)	≤10	>10 and <20	≥20
Commodity exports (as a share of total merchandise exports)	≤50	>50 and ≤80	>80
Agricultural exports (as a share of total merchandise exports)	≤50	>50 and ≤80	>80
Fuel exports (as a share of total merchandise exports)	≤50	>50 and ≤80	>80
Ores, metals, precious stones, and non-monetary gold (as a share of total merchandise exports)	≤50	>50 and ≤80	>80
Services, net Exports (% of GDP)	≤-5	>-5 and <0	>0
Current account balance (% of GDP) (2019)	≥0	>-3 and <0	≤-3
Foreign Direct Investment, net inflows (% of GDP)	≥10	>5 and <10	≤5
External debt, total (% of GDP)	≤30	>30 and <40	≥40
Personal Remittances (% of GDP)	≤3	>3 and <5	>5
Percentage point change in International poverty rate ($1.9 in 2011 PPP) between 2019 and 2020f	≥1	≥-1 and <1	<-1
Unemployment Rate	≤5	>5 and <10	≥10
GDP growth (annual %)	≥4	>0 and <4	≤0
GDP per capita (US$, nominal)	≥3996	>1025 and <3996	≤1025
Gross Investment (% of nominal GDP)	≥30	>20 and <30	≤20
Personal Remittances as a % of GDP	≤3	>3 and <5	≥5
Urban Population (% of total Population)	≥50	>30 and <50	≤30
Wage employees, aged 15-64	≥50	>30 and <50	≤30
No Education	≤30	>30 and <50	≥50
Primary Education	≥40	>20 and <40	≤20
Secondary Education	≥40	>20 and <40	≤20
Post-Secondary Education	≥10	>5 and <10	≤5

Endnotes

(1) *World Bank, Global Economic Prospects, June 2020,* Global Economic Prospects (The World Bank, 2020), https://doi.org/10.1596/978-1-4648-1553-9.

(2) Ibid.

(3) Ibid.

(4) "New Country Classifications by Income Level: 2019-2020," accessed July 2, 2020, https://blogs.worldbank.org/opendata/new-country-classifications-income-level-2019-2020.

(5) "COVID-19 and Africa: Socio-Economic Implications and Policy Responses," *OECD*, accessed July 2, 2020, http://www.oecd.org/coronavirus/policy-responses/covid-19-and-africa-socio-economic-implications-and-policy-responses-96e1b282/.

(6) "Fitch: Sub-Sahara African Debt Burdens Rising Faster than Elsewhere," *Reuters,* June 30, 2020, https://af.reuters.com/article/investingNews/idAFKBN24120C-OZABS.

(7) "COVID-19 in Africa: Save Lives and Livelihoods | McKinsey," accessed July 2, 2020, https://www.mckinsey.com/featured-insights/middle-east-and-africa/finding-africas-path-shaping-bold-solutions-to-save-lives-and-livelihoods-in-the-covid-19-crisis.

(8) Landry Signé, "The Potential of Manufacturing and Industrialization in Africa," n.d., 36.

(9) World Bank, *Global Economic Prospects*, June 2020.

(10) *The Macro Poverty Outlook Report for Sub-Saharan Africa, Spring Meeting April 2020* (Washington: World Bank, 2020), https://www.worldbank.org/en/publication/macro-poverty-outlook/mpo_ssa

(11) *State of Commodity Dependence Report 2019*, (New York: United Nations Conference on Trade and Development, 2019) https://unctad.org/en/PublicationsLibrary/ditccom2019d1_en.pdf

(12) "COVID-19 and Africa."

(13) "How Will COVID-19 Impact Africa's Trade and Market Opportunities?," accessed July 3, 2020, https://blogs.worldbank.org/africacan/how-will-covid-19-impact-africas-trade-and-market-opportunities.

(14) "COVID-19 and Africa."

(15) "G20_FMCBG_Communiqué_EN (2).Pdf," accessed July 3, 2020, https://g20.org/en/media/Documents/G20_FMCBG_Communiqu%C3%A9_EN%20(2).pdf.

(16) "Research: Chinese Loans to Africa," *China Africa Research Initiative,* accessed July 3, 2020, http://www.sais-cari.org/research-chinese-loans-to-africa.

(17) "Investment Flows in Africa Set to Fall Sharply Following Decline in 2019, Says UN Report," accessed July 3, 2020, https://unctad.org/en/pages/PressRelease.aspx?OriginalVersionID=560.

(18) "Migration and Development Brief 32: COVID-19 Crisis through a Migration Lens," *World Bank,* accessed July 3, 2020, https://www.worldbank.org/en/topic/socialprotection/publication/covid-19-crisis-through-a-migration-lens.

(19) Landry Signé and Colette van der Ven, "How the AfCFTA Will Improve Access to 'Essential Products' and Bolster Africa's Resilience to Respond to Future Pandemics," *Brookings* (blog), April 30, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/04/30/how-the-afcfta-will-improve-access-to-essential-products-and-bolster-africas-resilience-to-respond-to-future-pandemics/.

(20) "Year in Review: 2018 in 14 Charts," *World Bank,* accessed July 4, 2020, https://www.worldbank.org/en/news/feature/2018/12/21/year-in-review-2018-in-14-charts.

(21) "Projected Poverty Impacts of COVID-19 (Coronavirus)," *World Bank,* accessed July 4, 2020, https://www.worldbank.org/en/topic/poverty/brief/projected-poverty-impacts-of-COVID-19.

(22) Ibid.

Fragile States, Corruption and Conflict: Assessing Political Risks in Africa

Leo Kipkogei Kemboi and Jackline Kagume

Soon after the World Health Organization (WHO) declared COVID-19 a pandemic in March, African finance ministers jointly released a communiqué requesting for help for selected fragile states and vulnerable populations.[1] The ministers recognised that the most devastating effects of the COVID-19 crisis would be disproportionately borne by these fragile states. The political risks that they imagined included the possibility of instability arising from economic, social or political events occurring independently or in conjunction with each other, triggered by the pandemic.

As the COVID-19 pandemic struck, African governments responded in a variety of ways, some more vigorous than others. Some governments prioritised the provision of economic safety nets for citizens, workers and businesses in distress. An estimated 33 African countries have been sending cash transfers to households directly, with an estimated 117 million citizens benefiting from this policy action.[2] Evidence shows that the government of South Africa has initiated the most comprehensive cash relief program, having designed a US$26 billion expenditure proposal in response to COVID-19. This robust response is equivalent to 7.1 percent of the country's Gross Domestic Product (GDP). In west Africa, the government of Togo created a digital mobile cash transfer mechanism from scratch as the pandemic struck.[3] With few African countries having robust health systems that could withstand the rising infections, most had to mobilise medical, institutional and human resources to address the health emergency. Others had to mobilise psychosocial support resources to strengthen physical and mental wellbeing during the lockdown. These responses have highlighted the structural and functional political risks that African states reckon with, and which have determined their responses to the pandemic.

The fear of instability is evident in the fact that South Africa, Kenya, Uganda, Rwanda, Nigeria, Ghana and many other Sub-Saharan states restricted people's movement and imposed curfews to prevent physical interactions that could escalate the health crisis. As a result, a large part of the urban and semi-urban populations could not work in informal enterprises, which is the main source of employment for these countries' urban populations. South Africa imposed a three-week long 'hard' lockdown and curfews restricting people's movement. The other countries instituted 'soft lockdowns,' which allowed people to move within designated geographical areas. These different approaches reflect the reality of The South African state that had the capacity to implement a 'hard lockdown' and soften its effects with elaborate state support, while others like Kenya and Uganda has to opt for a modified form of restriction that allowed some share of the urban population to work within the specified time periods.

Even before the COVID-19 pandemic, many African countries were grappling with various political challenges, including corruption, internal conflicts, inadequate and under-developed state capacity and government instability. A ranking of 53 African countries shows that Burundi, Central African Republic, Comoros, Democratic Republic of Congo, Djibouti, Equatorial Guinea, Eritrea, Gambia, Guinea, Guinea Bissau, Liberia, Libya and Malawi are the top 13 countries facing high political risks underpinned by weak economic performance, which add to state fragility.[4] Algeria, South Africa, Mauritius, Morocco and Botswana have the lowest political risks in Africa, backed by their stable political institutions and have sound economic management.

Political risks contribute to state fragility by directly affecting its functioning. The state has three core functions—authority, capacity and legitimacy.

Risks Due to Weak State Capacity

COVID-19 has exposed the inadequacy of state capacity in managing the provision of public services during crisis, in many countries across the globe. State capacity is best illustrated by the state's ability to implement its decisions in a manner that conforms to its laws and the global norms of governance.

State capacity is also demonstrated by the overall administrative effectiveness in the provision of essential public services, of which the prevention and control of pandemics is a core factor.

This can be best understood by examining the rapid and decisive responses by South Africa and Botswana to the COVID-19 pandemic. South Africa had a pre-existing social welfare infrastructure that was supporting about 30 percent of its population with monthly cash transfers before the pandemic, providing a base on which a response could be built promptly.[5] Few African states have a comparable capacity. Botswana's COVID-19 relief package comprised of food distribution schemes, wage subsidies for firms and price freezes on essential items. Only countries with a minimum state capability set-up could afford to design and effectively implement such a comprehensive social protection policy. Botswana has a relatively small population and a stable government, and the Botswana design is expected to have the most far-reaching impact compared to other models across the continent.

Alternatively, the paucity and fragility of the state in Burundi was tragically demonstrated when outgoing President Pierre Nkurunziza was allegedly infected with and succumbed to COVID-19 in June.[6] This incident illustrated the weakness of health systems in responding to the risks faced by their general populations, and even their leaders.

Risks Due to Government Instability

The World Bank estimates that by 2030 nearly two-thirds of the world's poor will reside in fragile and unstable countries. For a country to demonstrate stability, it must serve as a responsible steward of state resources. Its government officials must be held accountable through established political and legal processes, which must be entirely independent.

The COVID-19 emergency has tested the stability and strength of civil society in many states in Sub-Saharan Africa, as an effective response requires governments, media and non-state actors to marshal efforts cohesively and coherently. Stability in government is a precondition for the basic human needs of the population to be met, respect for the rights of minorities and vulnerable population to be assured, conflicts to be managed peacefully through inclusive political processes, and competition for state power to be non-violent and based in constitutionally grounded due process. National and local government institutions need to work with a range of non-state partners to provide government functions.

State fragility or the lack of state legitimacy is a development challenge across the continent, with the most fragile countries being Somalia, South Sudan, the Democratic Republic of Congo, the Central African Republic, Chad and Sudan. Other countries that have faced fast declines in stability include Libya, Mali and Mozambique, with geographical expansiveness correlating highly with fragility as a crucial risk factor. These states would face enormous challenges in responding to a pandemic when a community surge in infections becomes evident.

Table 1: Fragility Index Rank of Select African Countries

Country	Global Rank
Somalia	2nd
Congo Democratic Republic	5th
Central African Republic	6th
Burundi	11th
Nigeria	14th
Mali	16th
Libya	20th
Uganda	24th
Kenya	29th
Angola	34th
Rwanda	35th
Burkina Faso	37th
Malawi	43rd
South Africa	85th
Botswana	121st

Source: Fragile States Index 2020[8]

Table 2: Fragile State Index and Daily COVID-19 tests of Select African Countries

Country	Global FSI Rank	Daily Tests per One Thousand People	Daily Tests per Million People
Burundi	11th	Data not available	Data not available
Nigeria	14th	0.01	10
Kenya	29th	0.06	60
Uganda	24th	0.07	70
Rwanda	35th	0.3	300
South Africa	85th	0.58	580

Data Sources: Fragile States Index 2020[9]; Our World In Data[10]

COVID-19 testing, tracing, quarantine and treatment are primary and essential services. It is highly unlikely that unstable governments, encumbered by weak systems, will be able to respond effectively to a surge in COVID-19 cases. At the same time, the governments must design extensive community safety nets and provide these without discrimination. Testing capacity and state fragility are highly correlated and confirm that the citizens of fragile states are likely to suffer disproportionately (see Table 2).

Risks Due to Conflicts

Several African countries are currently besieged by civil strife. The Sahel region is of particular concern with an upsurge of violence in Mali and Burkina Faso. Violence has also dragged around the Lake Chad Basin for an extended period. Other countries experiencing internal conflicts include Mozambique, South Sudan, the Democratic Republic of the Congo, Somalia, South Sudan, Nigeria, the Central African Republic and Libya.[11] The Armed Conflict Location and Event Data Project, which assesses and reports on conflicts around the world, recorded 21,600 incidents of armed conflicts in Africa in 2019.[12] During the same period in 2018, only 15,874 incidents were recorded, representing a 36-percent increase and confirming that the frequency of conflicts on the continent is rising.

Predictably, conflicts hamper preparedness for any emergency, such as COVID-19, because conflicts weaken the state's ability to provide public services and are a tremendous drain on financial resources. Emergency preparedness is required to improve the capability, planning, and training needed to respond to a crisis that affects people's health and, consequently, the economy.[13] Thus, the preparedness for any pandemic requires the requisite knowledge and capabilities by governments and non-state actors to respond and recover from the effects of these hazards.[14] Apart from the usual economic effects, conflicts lead to reductions in health and schooling levels and a general worsening of humanitarian crises.[15]

Because of the need for physical distancing and sanitation measures, the emergence of COVID-19 has placed African countries in a bind. These create a significant challenge in regions experiencing weaker state capacity challenges and countries already experiencing conflict, because of the infrastructure deficits common among state embroiled in internecine conflict. The Global Analysis and Assessment of Sanitation and Drinking-Water surveyed 115 countries and territories with a population of 4.5 billion people and found out that water, sanitation, and hygiene (WASH) sectors often lack the funds and staffing to fully implement their plans, with most of the countries reporting funding gaps of up to 60 percent.

COVID-19 has created both a demand and supply side shock to economies, which has triggered reductions in economic activity in Africa and globally. The World Economic Outlook issued by the International Monetary Fund (IMF) on 24 June 2020 forecasts global GDP contraction of 4.9 percent, with Sub-Saharan Africa expected to contract by 3.2 percent.[16] This not only suggests that economic growth will suffer along with employment prospects, but also that many countries will suffer from acute shortages and reduction in public revenues that are required to bolster state capacity to respond to concurrent pressures. This weakened state capacity is likely to hit

fragile and conflict-affected countries hardest, with beleaguered citizens growing even more impatient with their lot. Under these conditions, we can expect existing conflicts in the most fragile and unstable countries to exacerbate, causing greater suffering and delay any prospects for peace or economic recovery, unless remedial action is taken and the international community extends support.

Risks Due to Neopatrimonialism

It is widely accepted that neopatrimonialism drives politics in many countries in Africa, as it does in a vast chunk of the developing world. Neopatrimonialism emerges through the vertical distribution of resources, which give rise to robust and highly connected individuals around a leader in a government position or the party.[17] Power is consolidated around a political party or its main leaders who can dispense largesse using government resources. Neopatrimonial states are more likely to have weak public and private boundaries.[18] The definitive outcome of neopatrimonialism is grand corruption driven through the public sector in the form of procurement fraud, appropriation of state assets for private use and bribery.

This appropriation of the state becomes particularly dangerous during times of crises. It erodes the accountability mechanism established by law, and trust. Mechanisms for accountability that are outlined in law and the constitution—such as the recall of elected leaders, voting, impeachment, parliamentary oversight and the effectiveness of judiciary—are severely hampered.

Neopatrimonialism is likely to affect the African countries' response to COVID-19 and future health crises in two ways—allocation of resources and accountability of funds. Distribution of support in such times requires prioritising the urgent needs of the population. However, in neopatrimonial states the allocation of resources is decided based on the wishes of the political class and not on data, evidence and need.

Corruption Risks

Neopatrimonialism gives rise to corruption. Corruption has been a systemic and structural problem for governments in Africa. Seychelles, Botswana, Cape Verde, Rwanda and Mauritius are considered to be the least corrupt countries in Africa, while Somalia, South Sudan, Sudan and Equatorial Guinea are the most corrupt.[19]

As COVID-19 struck, there were fears that the resources allocated to dealing with the pandemic could be greatly misused.[20] As the health sectors in Africa prepared to ramp up capacity in preparedness for COVID-19, it was clear that countries would face shortages and have to allocate goods very efficiently in order to prevent large-scale panic. Given that COVID-19 is a respiratory disease, new and urgent investments had to be made on improving critical care, hiring more personnel, procuring specialised equipment and increasing bed capacity. The issue was complicated by supply chain risks, created by lockdowns in China and other manufacturing hubs.

Corruption is heavily embedded in the resource-allocation and appropriation that takes place across the continent. Decision-makers usually predetermine what needs to be bought and from whom. This makes a mockery out of public procurement procedures. Ninety-seven civil society organisations from around the world wrote to the managing director of the IMF to request that anti-corruption measures be instated for emergency funding that have been disbursed to governments whose economies have been severely affected by the supply and demand shocks caused by COVID-19.[21] The civil society organisations noted that the primary instruments for disbursing emergency funding (Rapid Credit Facility and Rapid Financing Instrument) constrain the IMF's ability to implement robust anti-corruption measures.

Despite countries like South Africa and Botswana having some of the most robust institutional mechanisms in Africa for the delivery of public services, there is still concern about the possibility of the misuse of funds and corruption in the response to the COVID-19 emergency. Nine citizens organisations wrote a joint (undated) letter to the Southern Africa Development Community, highlighting the risks of misuse of funds and urging for the creation of a transparent monitoring mechanism for the use of funds towards the containment of the public health emergency.[22] The organisations also called for open and transparent public procurement process, encouraging whistleblowing, protecting the freedom of the press and freedom of expression, encouraging civic participation, and providing resources for oversight and accounting of development aid. Governments must promote openness and transparency in the procurement process by publishing details of contracts, including beneficial ownership.

The government of Gabon has committed to some new anti-corruption measures such as receiving all emergency funds in a single account and creating a new budget line for COVID-19 related spending to track funds and ensure that these are utilised efficiently. Publishing a procurement plan that includes the names and beneficial ownership information of companies awarded contracts is crucial. The government of Gabon also agreed to an independent audit within six months of receiving the funds.[23]

In Kenya, media reports show that a private donation of equipment and supplies worth about US$2 million by China's Jack Ma could not be accounted for.[24] This even as public health facilities have endured shortages of critical supplies such as testing kits and personal protective equipment. This demonstrates the depth of public sector inefficiency and corruption because the discovery was made several weeks after the equipment arrived in Kenya. This episode illustrates perfectly how state capability and its weaknesses are starkly exposed by an emergency such as COVID-19 and the prevalence of corruption in state transactions in Kenya.

Conclusion

COVID-19's insidious health effects have only been made worse by the political risks that plague state systems. The pandemic has demonstrated stark weaknesses in state capacity across the world, and has shown that most countries in Africa have particularly fragile governance systems. The current pandemic emergency requires quick and strong institutional policy responses. The greater the resources that are mobilised, the greater the risks of corruption and diversion of funds earmarked for COVID-19 expenditures. The states, in partnership with civil society and the international community, must recognise and take strict measures to ameliorate the impact of these political risks, which otherwise have the potential to subvert and derail even the most effective of health responses.

Endnotes

(1) "Communiqué - African Ministers of Finance - Immediate call for $100 Billion support and agreement the crisis is deep and recovery will take much longer," *United Nations Economic Commission for Africa Media Centre,* March 31, 2020, https://www.uneca.org/stories/communiqu%C3%A9-african-ministers-finance-immediate-call-100-billion-support-and-agreement-crisis.

(2) Yomi Kazeem, "African Governments Are Being Forced to Develop Social Welfare Programs in an Economic Crisis," *Quartz*, June 23, 2020, https://qz.com/africa/1872046/african-countries-offer-cash-relief-covid-19-welfare-programs/.

(3) Ibid

(4) "Fragile State Index in Africa", *The Global Economy Data,* accessed June 28,2020, https://www.theglobaleconomy.com/rankings/fragile_state_index/Africa/.

(5) Kazeem, "African Governments Are Being Forced".

(6) Jason Burke, "Burundi President Dies of Illness Suspected to Be Coronavirus," *The Guardian,* June 9, 2020, https://www.theguardian.com/world/2020/jun/09/burundi-president-dies-illness-suspected-coronavirus-pierre-nkurunziz

(7) "Helping Countries Navigate a Volatile Environment," *Fragility, Conflict & Violence, World Bank,* last modified June 22, 2020, https://www.worldbank.org/en/topic/fragilityconflictviolence/overview

(8) "Fragile State Index in Africa".

(9) Ibid.

(10) "Total Tests per Thousand", *Our World in Data,* accessed on June 28, 2020, https://ourworldindata.org/grapher/full-list-cumulative-total-tests-per-thousand-bar-chart?tab=table.

(11) "The 2020 Fragile 15: Behind the FSI Rankings, Lives Upended," *The New Humanitarian,* May 12, 2020. https://www.thenewhumanitarian.org/2020-fragile-states-index-rankings-lives-upended.

(12) The Armed Conflict Location & Event Data Project, accessed on June 29, 2020, https://acleddata.com/#/dashboard.

(13) Leo Kipkogei Kemboi, "Review of Assessment of Kenya's Preparedness for the COVID-19 Emergency," *Social Science Research Network* (May, 2020): 1-7, http://dx.doi.org/10.2139/ssrn.3609153.

(14) *Hospital preparedness checklist for pandemic influenza,* (Europe: World Health Organization, 2009), https://www.euro.who.int/__data/assets/pdf_file/0004/78988/E93006.pdf.

(15) Patricia Justino, *How Does Violent Conflict Impact on Individual Educational Outcomes? The Evidence so Far,* Education for All Global Monitoring Report, (Paris: UNESCO, 2011), https://www.eccnetwork.net/resources/how-does-violent-conflict-impact-individual-educational-outcomes-evidence-so-far.

(16) “A Crisis Like No Other, An Uncertain Recovery”, *World Economic Outlook Update*, June 2020, https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020.

(17) Ana Huertas Francisco, “Neopatrimonialism in Contemporary African Politics,” *E-International Relations,* January 24, 2010, https://www.e-ir.info/2010/01/24/to-what-extent-can-neopatrimonialism-be-considered-significant-in-contemporary-african-politics/.

(18) Tam O’ Neil, “Neopatrimonialism and Public Sector Performance and Reform,” *Overseas Development Institute Publications*, September 2007, https://www.odi.org/sites/odi.org.uk/files/odi-assets/publications-opinion-files/4393.pdf.

(19) “CPI 2019: Sub-Saharan Africa,” *Transparency International,* January 23, 2020, https://www.transparency.org/en/news/cpi-2019-sub-saharan-africa.

(20) “Letter to IMF Managing Director Re: Anti-Corruption and the Role of Civil Society in Monitoring IMF Emergency Funding,” *Human Rights Watch,* May 4, 2020, https://www.hrw.org/news/2020/05/04/letter-imf-managing-director-re-anti-corruption-and-role-civil-society-monitoring.

(21) Ibdi.

(22) “Open Letter to the SADC Secretariat, National Governments, Donors, the Private Sector the Public and Other Relevant Stakeholders,” *Transparency International,* April 29, 2020, https://images.transparencycdn.org/images/Open-Letter-to-the-SADC-on-COVID-19.pdf.

(23) “Gabon: Request for a Purchase Under the Rapid Financing Instrument-Press Release; Staff Report; and Statement by the Executive Director for Gabon,” *International Monetary Fund. African Dept.*, April, 2020, https://www.imf.org/en/Publications/CR/Issues/2020/04/16/Gabon-Request-for-a-Purchase-Under-the-Rapid-Financing-Instrument-Press-Release-Staff-Report-49336.

(24) Brian Wasuna and Angela Oketch, “Scanty Information on Theft of Donated Covid-19 Equipment,” *Daily Nation*, June 20, 2020, https://www.nation.co.ke/kenya/news/scanty-information-on-theft-of-donated-covid-19-equipment-733440.

Moored in the Digital Doldrums: Mapping Africa's Technological Challenges

Arjun Jayakumar

The drastic social distancing norms imposed across the world in the wake of the COVID-19 pandemic have forced countries to find ways to keep economies afloat while public life remains indefinitely suspended. In the process, it has become clear that technology can be a powerful tool in tackling large-scale crises, as it helps to a large extent to offset many of the associated economic disruptions. More digitalised economies face fewer risks of economic collapse as they are more prepared to absorb the impacts of crises, for instance by replacing human capital with machines or moving to remote working/learning. In addition, digital technologies are key drivers of development in healthcare, as they help create new drugs, diagnostic methods, drug delivery systems and medical equipment that make treatments less disruptive and more accessible.

As the world continues to explore technology solutions to mitigate the impact of COVID-19, it is important to identify the shortcomings in Africa's technology ecosystem that may prevent it from developing and implementing effective solutions to the current as well as future crises. This chapter will discuss three broad categories of technological risks faced by African countries: (1) low R&D capacity; (2) prevalence of a significant digital divide, including a digital gender divide; and (3) poor technological capabilities.

Low R&D Capacity

New and emerging technologies like Artificial Intelligence (AI) and robotics will be at the forefront of the Fourth Industrial Revolution, Revolution, blurring the lines between the physical and the digital worlds as they push digital economies to whole new levels of productivity. Emerging technologies are also expected to spearhead paradigm shifts in healthcare, having already produced several promising applications such as AI-based diagnostic algorithms and drone-delivered medicines.[1] Sustained R&D investments are necessary to ensure that the transformative potential of digital technologies is channelled into developing improved systems and processes that increase efficiency and reduce costs.

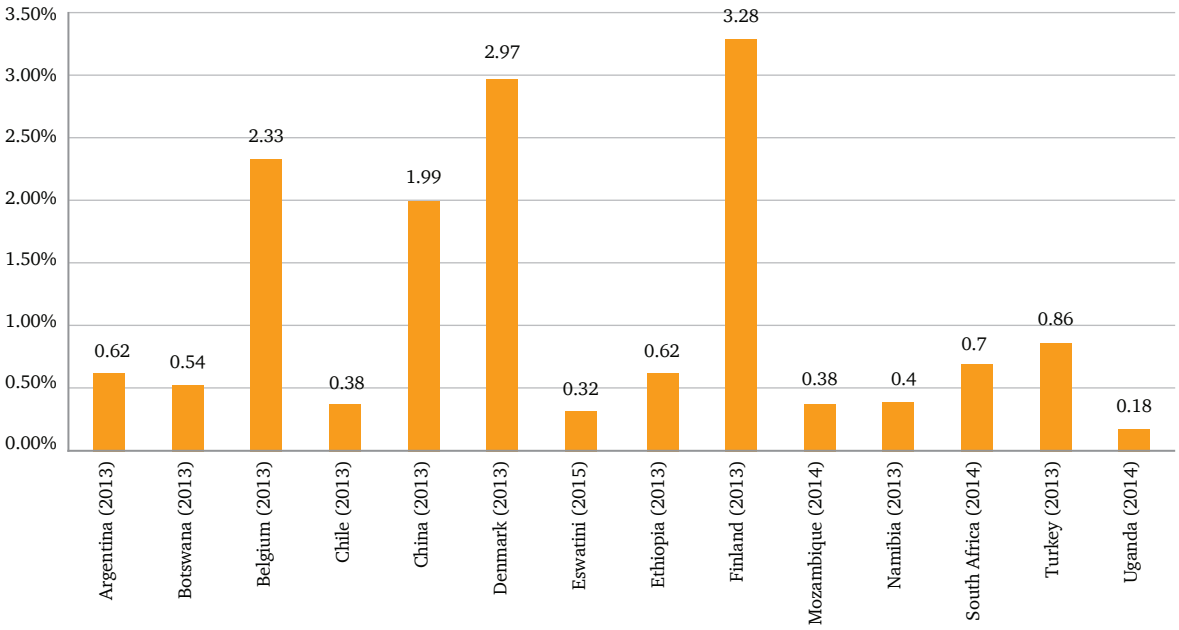
However, R&D in Africa has lagged substantially both in terms of investments and implementation. Only one percent of the world's R&D investments are made in Africa, and its ownership of the global patent pool sits at a mere 0.1 percent.[2] Though the African continent is home to 15 percent of the world's population and 25 percent of the global burden of disease, it produces just two percent of the global research output.[3]

These numbers show that Africa suffers from a chronic lack of R&D capacity, and African countries are not significant sources of technological innovation. According to the UNDP's Technology Achievement Index developed in 2001, South Africa was the continent's largest innovation hub, ranking 39th among the 72 countries examined.[4] Tunisia, Egypt, Algeria and Zimbabwe also featured in the list of "dynamic adopters" at ranks 51, 57, 58 and 59, respectively, while most African countries fell in the "marginalised" bracket.

While African governments have committed to working towards investing around one percent of their GDP in R&D, there is wide variance in how this translates to actual R&D investments per country (for instance, one percent of GDP may be as little as US$100 million in Guinea-Bissau but as high as US$6 billion in South Africa).[5] Such discrepancies may have big impacts in driving R&D activities depending on the economic status of the countries concerned. It is still worth noting that no African country has managed to attain one percent GDP expenditure on R&D, according to the African Union Development Agency's Africa Innovation Outlook 2019 report, and only three countries – South Africa, Ethiopia and Botswana – have reported R&D expenditures greater than 0.5 percent of GDP (see Figure 1).[6]

Africa's low R&D capacity is driven to a large extent by its weak infrastructure, with estimates suggesting that US$90 billion will be required annually between 2016 and 2026 to close the infrastructural gap, as compared to what is obtainable in developed countries.[7] Many Africans do not have access to energy, affordable housing, efficient transport and reliable communication systems, and this significantly impacts the development

Figure 1: Gross Domestic Expenditure on R&D as percentage of GDP



Source: Africa Innovation Outlook III

of innovation and tech entrepreneurship.[8] Limited Information and Communications Technology (ICT) infrastructure implies that entrepreneurs will not be able to maximise the value of critical services like cloud computing, which generally help start-ups reduce costs and stay agile.[9] Even though the ICT sector has driven the most improvements in the Africa Infrastructure Development Index (AIDI) ratings over the past decade, the overall AIDI scores have not shown significant improvements in many African countries.[10]

Digital Divide

During the COVID-19 pandemic, ICTs have been crucial in ensuring that the socio-economic disruptions caused by public health responses like country-wide lockdowns and social distancing are kept to a minimum. However, the pandemic has also called attention to the disadvantages caused by inadequate access to ICTs, as this leaves people truly isolated and without ways to continue working, learning and communicating. Though the "digital divide" is a global problem, it is much more pronounced in Africa, where Internet penetration, quality, and affordability are much lower compared to the rest of the world.

In 2019, the average Internet penetration in Africa was 39.6 percent compared to 62.7 percent in the rest of the world, and these figures see substantial variation among countries, ranging from 89.8 percent in Kenya to 5.3 percent in Burundi.[11] Africa used only one percent of the world's total international Internet bandwidth in 2017, with a median mobile broadband download speed of 2.7 Mbps – roughly half the global median of 5.2 Mbps.[12] The biggest barrier to access is affordability, as Internet data remains prohibitively expensive in most African countries. The cost of mobile Internet data in Malawi, Sierra Leone, and Zimbabwe stood at 17.85 percent, 20.8 percent and 32.97 percent of average monthly income in 2017, with only Mauritius, Tunisia, Egypt and Nigeria having data plans of less than two percent of average monthly income.[13] In 2019, the average cost of 1 GB of data stood at seven percent of the average monthly salary in Africa and even went up to 20 percent of the monthly salary in some countries.[14]

The digital divide also has a gender dimension, as research shows that women are less likely than men to use the Internet generally (and mobile Internet, specifically).[15] Even when online, women are 50 percent less likely than men to use the Internet to increase their income or participate in public life.[16] The digital gender divide is particularly stark in Africa as it has widened considerably in the continent since 2013, with the proportion of women using the Internet being a quarter less than the proportion of

men doing the same.[17] According to the International Telecommunication Union (ITU), the global gender gap between Internet users in 2016 was the highest in Africa at 23 percent, representing a 3 percent increase from 2013 (see Figure 2). [18]

Further, there is also a global digital divide between developed and less-developed countries, as well as between developing and least-developed countries. In 2016, the average Internet penetration rate in sub-Saharan African countries was 10 percentage points lower than that in South Asia, and Africa also lags in its use of the Internet for cloud-computing applications, e-commerce, and deployment of smart machines such as robots and 3D printers.[19] Factors contributing to this digital divide include high cost of capital in African countries both in absolute value and relative to labour, and low digital readiness in terms of having poorer customs, trade facilitation, logistics, absorptive capacity and skills.[20] A widening of this global digital divide can have severe consequences for developing countries in terms of loss of jobs, growing income inequality and concentration of power and wealth in the global North.[21]

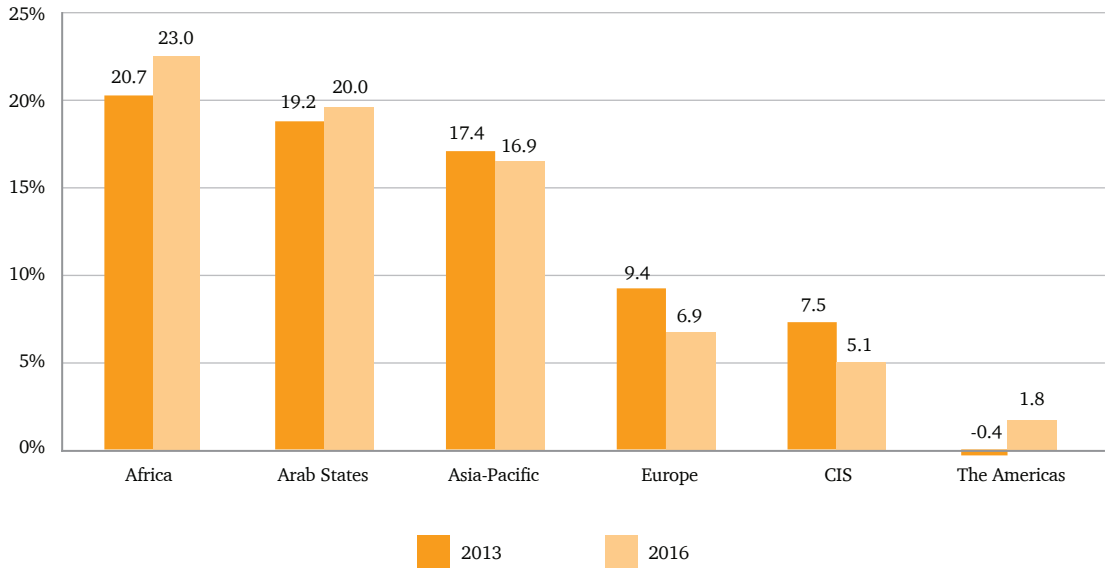
Low Technological Capabilities

In addition to low R&D capacities and prevalent digital divides, African countries also suffer from slow diffusion of digital technologies, owing to a number of constraints like inadequate access to energy and reliable power supply, poor logistics and infrastructure, and low ability to adapt and maintain hardware and software.[22] Further, sub-Saharan Africa performs poorly in terms of industrial competitiveness, and sees hardly any sophisticated technology exports, even as other developing countries have established themselves as dynamic competitors.[23]

The World Economic Forum in its Global Competitiveness Reports 2006-07 and 2008-09 introduced the Technological Readiness Index to measure and assess countries' technological status and performance. Factors such as firm-level technology absorption, ICT laws, foreign direct investment (FDI) and technology transfer, and the number of personal computer users, Internet users and mobile phone subscribers were used to determine technological readiness and rank countries' competitiveness. In the 2008-09 report, African countries were ranked very low with South Africa at rank 39 and Kenya at rank 93, out of 134 countries studied.[24]

Aside from the above, the African region lacks many of the basic prerequisites for technology development. Due to a weak skill base, an educational system that is ill-equipped to meet the skill needs of industrial competitiveness, and low technology inflows

Figure 2: Internet user gender gap (%), 2013 and 2016



Source: International Telecommunication Union

(contractual transfers, FDI and equipment imports), there is often insufficient mastery of even simple technologies, and indeed insufficient capacity to absorb some of the more sophisticated ones.[25] While a number of African countries have formulated standards and regulation for the digital economy, and have set up institutions to regulate FDI, technology procurement and licensing, the quality of these institutions varies from country to country.[26] Most metrology, quality and standards institutes in Africa are under-resourced and rely on revenue from sale of services.

Yet another concern with Africa's technological capabilities is the wide prevalence of cybercrime in the region, with research suggesting that cybercrime is increasing more rapidly in Africa than anywhere in the world.[27] Nigeria is Africa's biggest source as well as target of cybercrimes, and instances of malicious cyber activity almost doubled between 2011 and 2014 in major African cities such as Cairo, Johannesburg, Lagos and Nairobi.[28] Some key cybersecurity challenges faced by the region include lack of know-how, inability to monitor and defend national networks, inability to develop effective legal frameworks against cybercrime, absence of significant cybersecurity initiatives at the government level and limited awareness of cyber risks amongst stakeholders like regulators, law enforcement agencies, judiciary, information technology professionals and users.[29]

To summarise, this chapter has sought to highlight some of the African continent's major barriers to technological transformation - ranging from low technological capabilities and the slow diffusion of ICTs, to high rates of cybercrime, accompanied by a lack of infrastructure and capacity to effectively address these issues. These substantially limit the continent's capacity to rely on technology solutions to handle crises like the COVID-19 pandemic, as the effectiveness of such solutions is invariably impacted by the strength of the continent's digital ecosystems.

Endnotes

(1) "12 Innovations that will Change Health Care and Medicine in the 2020s", *Time*, October 25, 2019, https://time.com/5710295/top-health-innovations/

(2) "2016 Global R&D Funding Forecast", *R&D Magazine,* Winter 2016, p. 28, https://www.iriweb.org/sites/default/files/2016GlobalR&DFundingForecast_2.pdf

(3) Tom Kariuki and Simon Kay, "There are not enough scientists in Africa. How can we turn this around?", *World Economic Forum,* May 3, 2017, https://www.weforum.org/agenda/2017/05/scientists-are-the-key-to-africas-future/

(4) "Human Development Report 2001: Making New Technologies Work for Human Development", *United Nations Development Project,* 2001, p. 48, http://hdr.undp.org/sites/default/files/reports/262/hdr_2001_en.pdf

(5) "African Science, Technology and Innovation Review 2013", *United Nations Economic Commission for Africa,* 2013, p. 8, https://www.uneca.org/sites/default/files/PublicationFiles/st_innovation_report.pdf

(6) "Africa Innovation Outlook III", *African Union Development Agency,* 2019, p. 10, https://www.nepad.org/publication/african-innovation-outlook-iii

(7) Olanrewaju Odunowo, "Africa's Infrastructure Deficit and its Impact on Innovation", *Techcabal*, 19 July 2018, https://techcabal.com/2018/07/19/africas-infrastructure-deficit-its-impact-on-innovation/

(8) Ibid.

(9) Ibid.

(10) "Africa Infrastructure Development Index 2018", *African Development Bank,* July 2018, https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/Economic_Brief_-_The_Africa_Infrastructure_Development_Index.pdf

(11) Hafez Ghanem, "Shooting for the moon: An agenda to bridge Africa's digital divide", *Brookings*, February 7, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/02/07/shooting-for-the-moon-an-agenda-to-bridge-africas-digital-divide/

(12) Ibid.

(13) "Mobile Broadband Data Costs", *Alliance for Affordable Internet,* 2017, https://a4ai.org/mobile-broadband-pricing-data/

(14) "Affordability Report 2019", *Alliance for Affordable Internet,* 2019, p. 5, https://1e8q3q16vyc81g8l3h3md6q5f5e-wpengine.netdna-ssl.com/wp-content/uploads/2019/10/A4AI_2019_AR_Screen_AW.pdf

(15) Dhanraj Thakur and Lauran Potter, "Universal Service and Access Funds: An Untapped Resource to Close the Digital Gender Divide", *Web Foundation,* 2018, http://webfoundation.org/docs/2018/03/Using-USAFs-to-Close-the-Gender-Digital-Divide-in-Africa.pdf

(16) "Women's Rights Online: Translating Access into Empowerment", *Web Foundation,* October 20, 2015, https://webfoundation.org/research/womens-rights-online-2015/

(17) “ITU’s approach to bridging the digital gender divide”, *International Telecommunications Union,* October 22, 2018, https://news.itu.int/itus-approach-bridge-gender-divide/

(18) “ICT Facts and Figures 2016”, *International Telecommunications Union,* 2016, https://www.itu.int/en/ITU-D/Statistics/Documents/facts/ICTFactsFigures2016.pdf

(19) Karishma Banga and Dirk Willem te Velde, “Digitalization and the Future of Manufacturing in Africa”, *Supporting Economic Transformation,* March 2018, p. 13-16, https://set.odi.org/wp-content/uploads/2018/03/SET_Digitalisation-and-future-of-African-manufacturing_Final.pdf

(20) Ibid.

(21) Ibid.

(22) Ibid.

(23) “Africa’s Technology Gap”, *United Nations Conference on Trade and Development,* July 2003, p. 15, https://unctad.org/en/docs/iteipcmisc13_en.pdf

(24) “Global Competitiveness Report 2008-2009”, *World Economic Forum,* 2009, http://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2008-09.pdf

(25) “Human Resources in R&D”, *UNESCO Institute for Statistics,* June 2019, p. 3, http://uis.unesco.org/sites/default/files/documents/fs53-human-resources-rd-2019-en.pdf

(26) John O Mugabe, “Science, Technology and Innovation in Africa’s Regional Integration”, *Acode*, 2011, p. 14 https://www.acode-u.org/uploadedFiles/PRS44.pdf

(27) “ Internet Security Threat Report”, *Symantec Corporation,* April 2013, https://www.insight.com/content/dam/insight/en_US/pdfs/symantec/symantec-corp-internet-security-threat-report-volume-18.pdf

(28) “Tackling the challenges of cybersecurity in Africa”, *United Nations Economic Commission for Africa,* 2014, p.2, https://www.uneca.org/sites/default/files/PublicationFiles/ntis_policy_brief_1.pdf

(29) Ibid.

II. RESPONSE

Africa's Health Response to Covid-19: The continent fights back

Meghna Chadha and Ananya Pushpa Gandhi

The dual challenges of managing a pre-existing disease burden, and fragile and underprepared healthcare systems across nations, make the African continent particularly vulnerable to the havoc that the COVID-19 crisis is wreaking. Notably, Africa was hit by the crisis much later than the rest of the world. The four months since the World Health Organization (WHO) declared COVID-19 a pandemic,[1] however, have seen the first wave of the infection rapidly sweep across the continent and move towards reaching its peak.[2] The pandemic has had a devastating effect on the lives and livelihoods of people across the continent, and the response to the crisis, particularly that of the health sector, is of absolute importance.

This chapter outlines how African leaders have drawn on lessons from prior epidemics to fortify health systems and implement effective measures to combat the COVID-19 crisis. It will provide an analysis of testing rates and the progression of the number of cases and deaths to shed light on how countries are managing the pandemic, and this data provides insights for epidemiologists, researchers and governments to formulate an effective response. It will assess the importance of multi-lateral collaboration in formulating an effective and just response, focusing on the unified approach taken by communities, governments, the private sector, and international organisations. A consideration has been made about the impact of the pandemic on society's most vulnerable and at-risk groups and the targeted responses to ensure their safety and well-being, addressing the stigma surrounding the disease, and its effects on mental health. Lastly, the chapter will look into investments made in medi-tech, infrastructure and R&D, and examine Africa's progress towards developing a vaccine.

Lessons learned from the Ebola and HIV/AIDS epidemics

The African continent has dealt with various outbreaks of infectious diseases. The deadly Ebola virus – first identified in 1976 when it broke out in Sudan and the Democratic Republic of Congo – caused many deaths in the late 1900s, but the numbers at the time now appear small compared to those witnessed during the epidemic's resugence the epidemic's resurgence in 2014.[3] Healthcare sectors in the countries hit by the Ebola epidemic were not equipped to withstand its impact due to undertrained and ill-prepared medical personnel; the lack of protective equipment, medicines, technical know-how; poor infrastructure; and limited funding. Consequently, there was a delayed response in identifying the disease, leading to its rapid spread and poor case management.[4]

Nigeria, with its previous experience of dealing with Lassa fever, was quick to respond to the Ebola outbreak.[5] The government led awareness campaigns about the dangers, signs and symptoms of Ebola. Steps were taken for contact tracing almost immediately, and funds that were allocated for different health purposes were redirected towards the Ebola epidemic, including for the setting up of isolation centres. Senegal was ready before its first case was even detected; it even had educational campaigns in place.[6] The Senegalese government also set up toll-free numbers for people to call if they suspected that someone had the virus. The Ghanaian government set up treatment centres and launched an insurance scheme for frontline workers. The government spread awareness via the media, churches, schools and other channels, and encouraged preventive measures such as washing hands, avoiding physical contact, and increased screening at ports.[7]

HIV/AIDS is also rampant in African countries. In 2018, approximately 25 million people had HIV/AIDS, which accounts for two-thirds of the total cases worldwide.[8] The response to the HIV/AIDS outbreak in African countries saw the emergence of community-based initiatives such as the creation of social support and self-help groups. With a significant part of the population relying on traditional medicine and healers, people across the continent – for instance those in Tanzania – took advantage of this knowledge and paired biomedical health workers with traditional healers to support allopathic medicine with homeopathic methods.[9]

In spite of their efforts to make their healthcare systems more robust over the past several decades, many African countries recognise that they are not fully prepared to withstand and combat a pandemic like COVID-19. With this cognisance, when the COVID-19 pandemic struck, the prevention of the disease was treated as first priority, and response strategies continent-wide drew heavily on learnings from the past. While healthcare systems across Africa are not quite as advanced as those in the Western world, the continent's leaders have a good understanding of fighting off diseases with limited resources due to extensive prior experience. Nigeria was quick to adapt to the situation after having dealt with Ebola: illustratively, they made adjustments to tuberculosis testing machines to test for COVID-19.[10] Sierra Leone, for its part, learning from the Ebola outbreak, had a preparedness plan ready three weeks before it had a confirmed case.[11] African nations realised that disease surveillance was an important factor at the time of the Ebola outbreak. The World Bank, therefore, raised money for the Regional Disease Surveillance Systems Enhancement (REDISSE) project for 16 Western and Central African countries, enabling them to strengthen their surveillance capacity for COVID-19.[12]

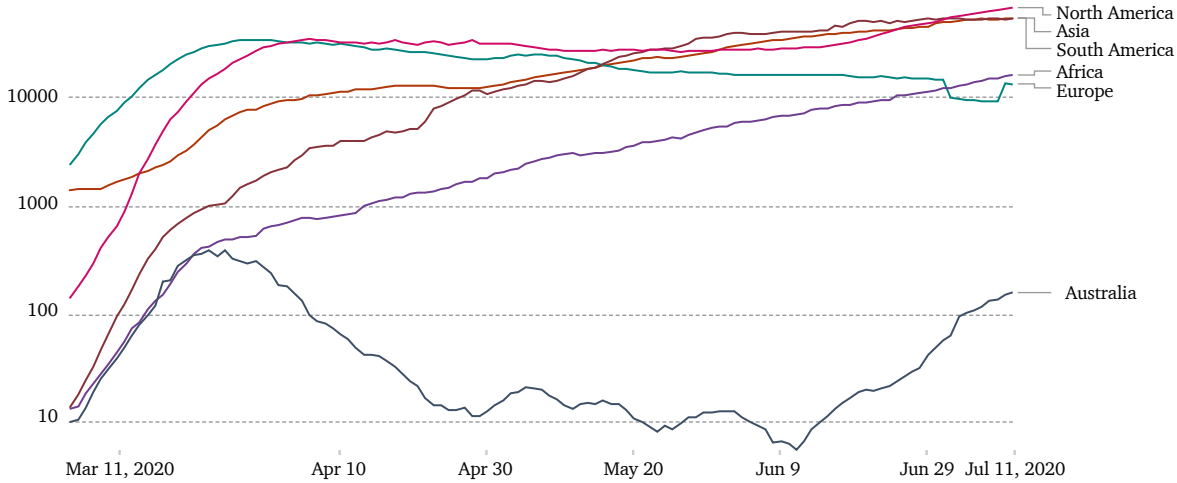
The many lessons learned from previous epidemics that the African continent has faced has allowed its nations to fortify themselves to take on the COVID-19 pandemic. A pan-African assessment of the healthcare sectors' response is discussed in the following section.

Testing, equipment and infrastructure

The necessity for testing stems from the need to identify, isolate and treat infected persons as early as possible. Widespread, easily accessible and affordable, reliable and consistent testing is also crucial from a public health perspective, for healthcare professionals and decision-makers to work in tandem to assess the prevalence, spread and virulence of a disease. Reliable data is needed to effectively allocate resources and formulate targeted response measures. Currently, polymerise chain reaction (PCR) testing, used directly to detect the presence of an antigen in the body, and antibody testing are the two primary ways global healthcare systems have been testing individuals for COVID-19.[13]

In an assessment of daily new confirmed cases from March 11 to July 11, 2020 by continent, as depicted in Figure 1, the most consistent increase over time can be seen for Africa. The rising African curve, indicative of a growing number of cases, is on account of testing that is only now being amplified, which is helping identify a large number of people across the continent who may already be infected. There is a high likelihood

Figure 1: Daily new confirmed COVID-19 cases
(Worldwide, March 11 – July 11, 2020)



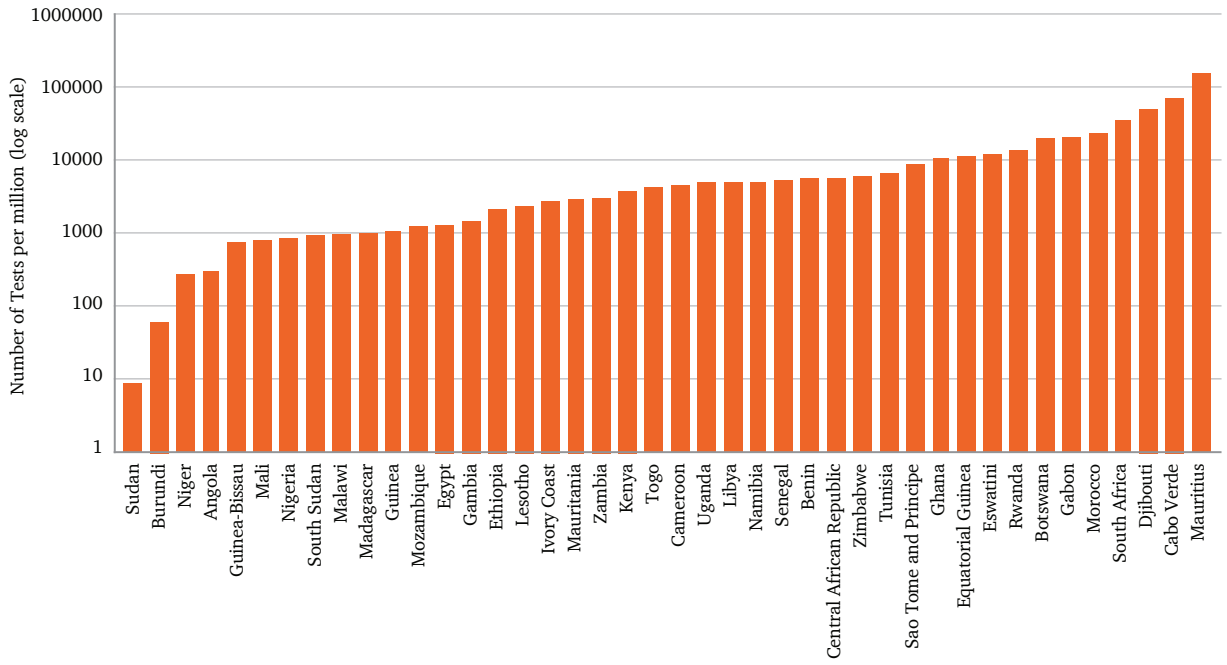
Data Source: Our World in Data

that the rate of increase in testing will accelerate before the pandemic is brought under control. This has been the experience in some other parts of the world (several European and select Asian countries, and Australia before it was hit with the second wave of the pandemic), where COVID-19 case curves have seen comparative flattening over time.

Figure 1 presents two important points for consideration: First, in spite of Africa's case curve steadily rising, it still lies below most of the rest of the world. While Africa's reported number of infections due to the novel coronavirus is lower than the rest of the world, making it seem like the continent is outperforming many countries in its fight against the virus, this apparent victory is misleading: The most highly plausible reason for the lack of case numbers is the paucity of testing.[14] Second, while the African curve is rising steadily, there is potential for the continent to do better and report more accurate numbers. Even as tests are being conducted, the rate of testing is far below where it should be.[15] Figure 2 shows the dismal number of tests conducted per million people across the continent in the first four months of the pandemic reaching Africa. Testing rates are not proportionate to the population size,[16] with even the countries with the highest populations – Nigeria, Ethiopia, Egypt – not conducting nearly enough tests for their people, as can be seen in Figure 3. Log scales have been used in both figures to better present the data and make it easier to visualise.

WHO's Regional Office for Africa reports that the lack of testing in African countries stems from the lack of the four essential elements required to conduct a test: infrastructure, equipment, trained human resources, and the reagents to test for the novel coronavirus.[17] WHO is working to provide all countries with PCR capacity with enough reagents to conduct the tests, providing laboratory technicians with the required training, and ensuring the provision of other essential supplies.[18] The Africa CDC launched the Partnership to Accelerate COVID-19 Testing (PACT) in April 2020, through which accelerated testing, tracing and treatment of the disease will curtail its rapid spread and minimise its impact.[19] The Africa CDC also reports

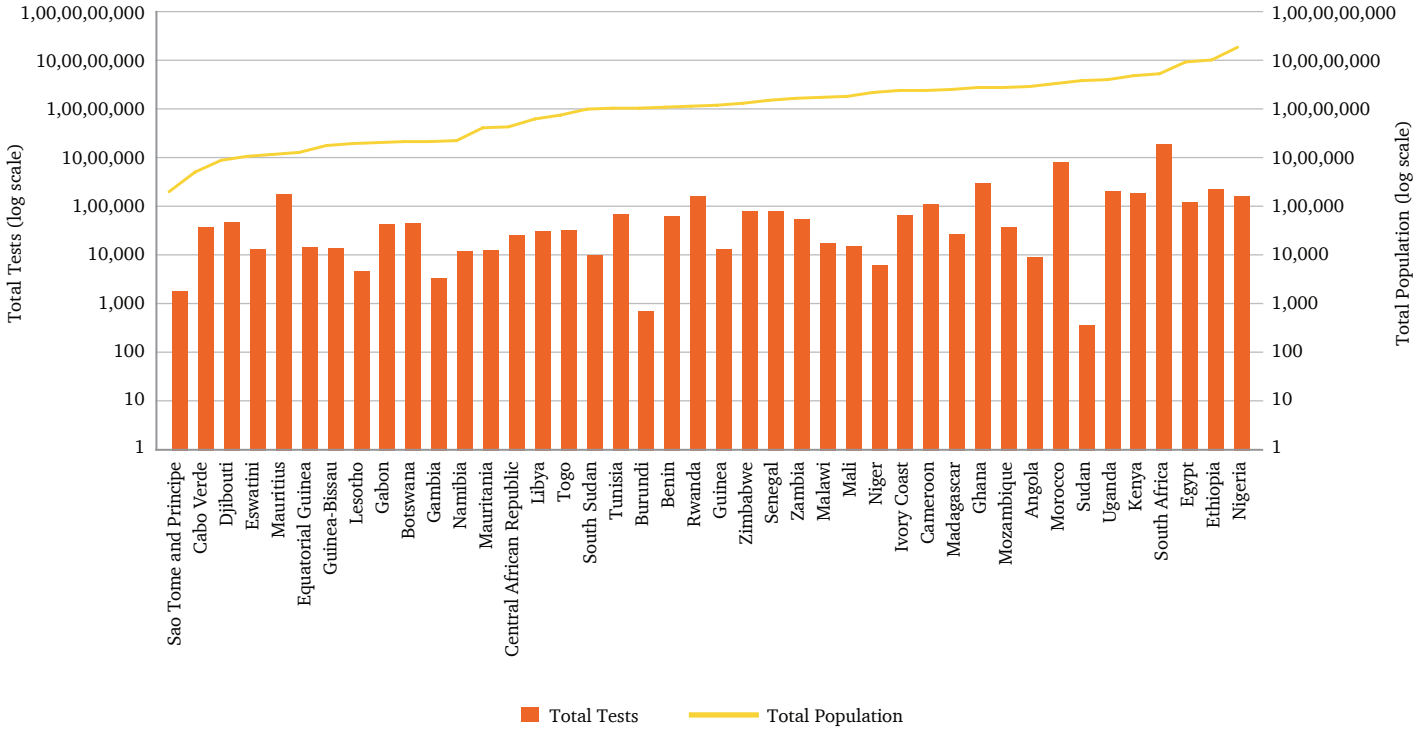
Figure 2: Total COVID-19 tests per million people
(Africa, as of July 11, 2020)



Data Source: Worldometers

Note: Twelve countries – namely Algeria, Democratic Republic of Congo, Somalia, Congo, Sierra Leone, Burkina Faso, Liberia, Chad, Tanzania, Comoros, Eritrea and Seychelles – are not included due to the unavailability of testing data.

Figure 3: Total tests conducted vs. total population
(Africa, as of July 11, 2020)



Data Source: Worldometers

Note: Twelve countries – namely Algeria, Democratic Republic of Congo, Somalia, Congo, Sierra Leone, Burkina Faso, Liberia, Chad, Tanzania, Comoros, Eritrea and Seychelles – are not included due to the unavailability of testing data.

that as of July 7, 2020, 5.6 million PCR tests for COVID-19 have been conducted, which show an 8.67 percent positivity rate overall.[20]

Testing is expensive, and countries across the continent are looking for ways to reduce its cost. Senegal, for instance, is in the process of developing a COVID-19 testing kit that would cost US$1 per patient, and in less than ten minutes, detect both current and/or previous infections via antigens in saliva or antibodies.[21] Several countries, including Rwanda[22] and Ghana,[23] are opting for pool testing – a method of testing for a disease by combining samples from several people together and testing that batch at once. Pool testing uses fewer supplies, thereby cutting costs and ensuring faster results.[24]

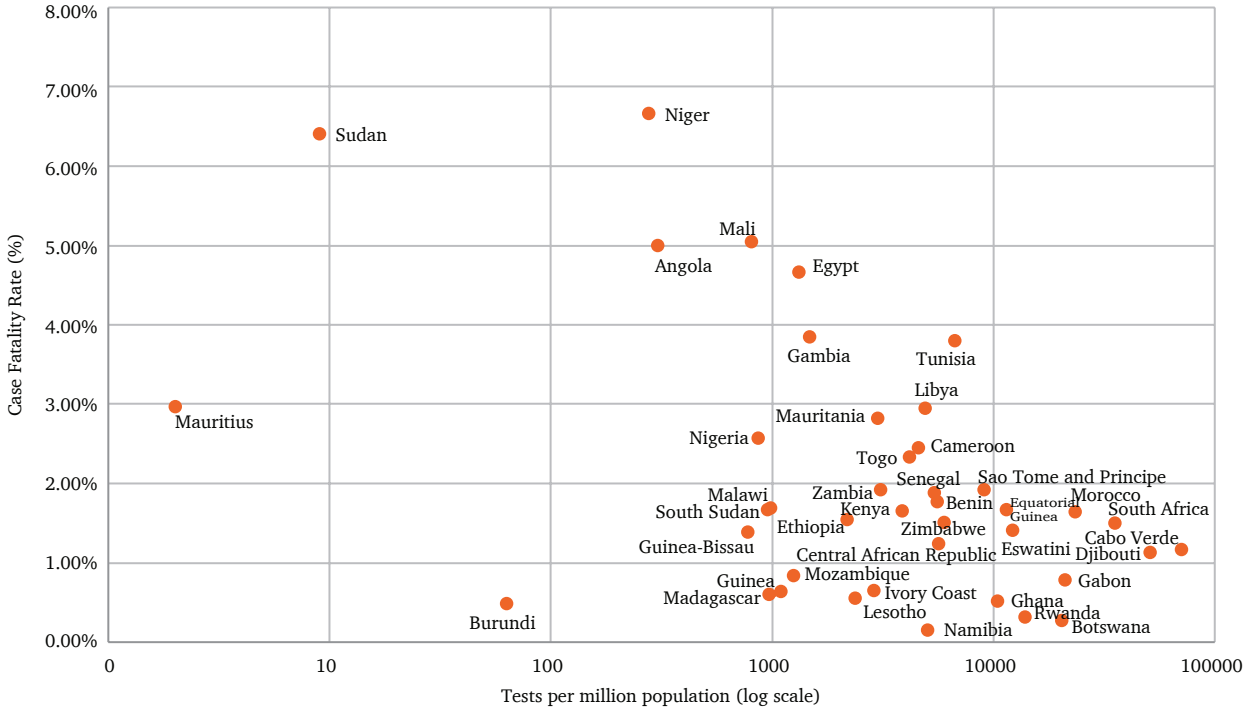
Along with testing kits, the procurement and production of personal protective equipment (PPE) kits, medication and other medical equipment[25] has been also been ramped up. Many African countries have expanded their hospital capacities and increased the number of beds to accommodate more COVID-19 patients,[26] bolstered healthcare infrastructure,[27] and boosted e-health services[28] as well.

Clinical Management

Testing, as discussed earlier, is the backbone of clinical management. Using the limited data available for testing in African countries as of July 11, an analysis of the case fatality rate and tests per million population is presented in Figure 4.

Case fatality rate is calculated as the number of deaths per million population divided by the number of cases per million population, in the time period of four months from March 11 to July 11, 2020. This is an important metric to gauge the physical resilience of a population when infected, and the severity with which a disease affects those who have contracted it. Comparing this with the number of tests per million population allows for an understanding of how well a country is faring in the face of a disease outbreak. The ratio of case fatalities to tests represents the number of fatalities viz-à-viz the number of tests conducted.

Figure 4: Case fatality rate vs. tests per million population
(Select African countries, as of July 11, 2020)



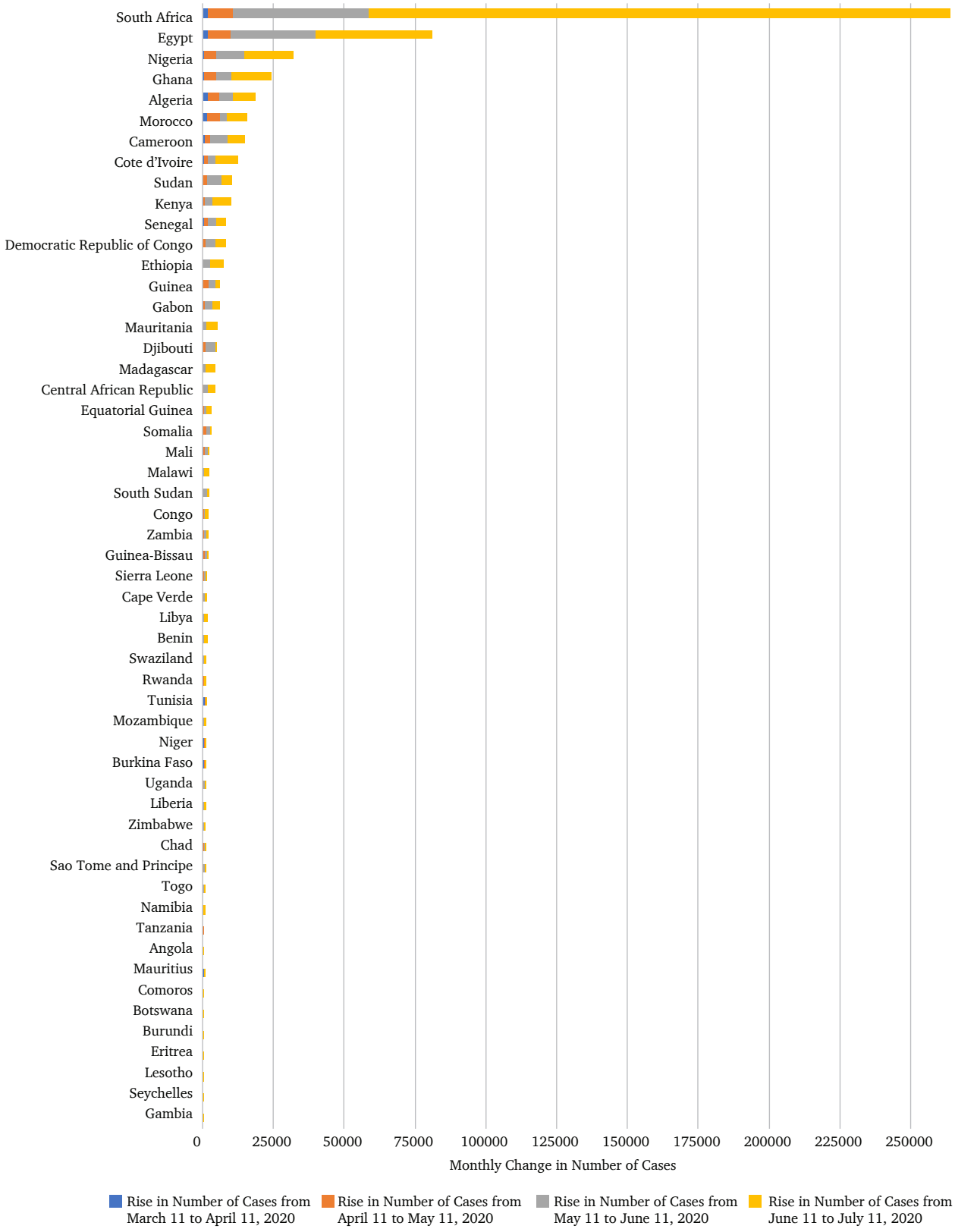
Data Source: Calculated based on data available from Worldometers

Sudan, with only nine tests conducted per million population and a case fatality rate of 6.41 percent, and Niger, with 274 tests and 6.67 percent case fatality rate, fall on the worst end of the spectrum as the fatalities there are very high even with extremely limited testing. Similarly, Mali (805, 5.04 percent), Angola (304, 5 percent), Egypt (1,319, 4.67 percent) and The Gambia (1,478, 3.85 percent) are amongst the worst performers. Performing better are Morocco (23,417, 1.66 percent), South Africa (35,542, 1.5 percent), and Djibouti (51,139, 1.13 percent) with lower case fatality rates with much higher testing numbers. Rwanda, having conducted 13,916 tests, has a case fatality rate of 0.30 percent, which indicates good management overall. This is also the case with Ghana (10,520, 0.51 percent) and Botswana (20,344, 0.30 percent). Mauritius, with maximum number of tests conducted in the continent – 152,191 – and a moderate case fatality rate of 2.97 percent, can be seen as an outlier on the graph. The country's extremely scarce population provides a base that is too low for an accurate assessment.

Figures 5 and 6 show the progression in the number of cases and of deaths, respectively, for all 54 African countries. Each chart presents data from the first four months of the pandemic, showing how the numbers changed as the pandemic spread across the continent. A trend analysis over time is vital to assess the pandemic's spread and correspondingly devise measures to curtail it.

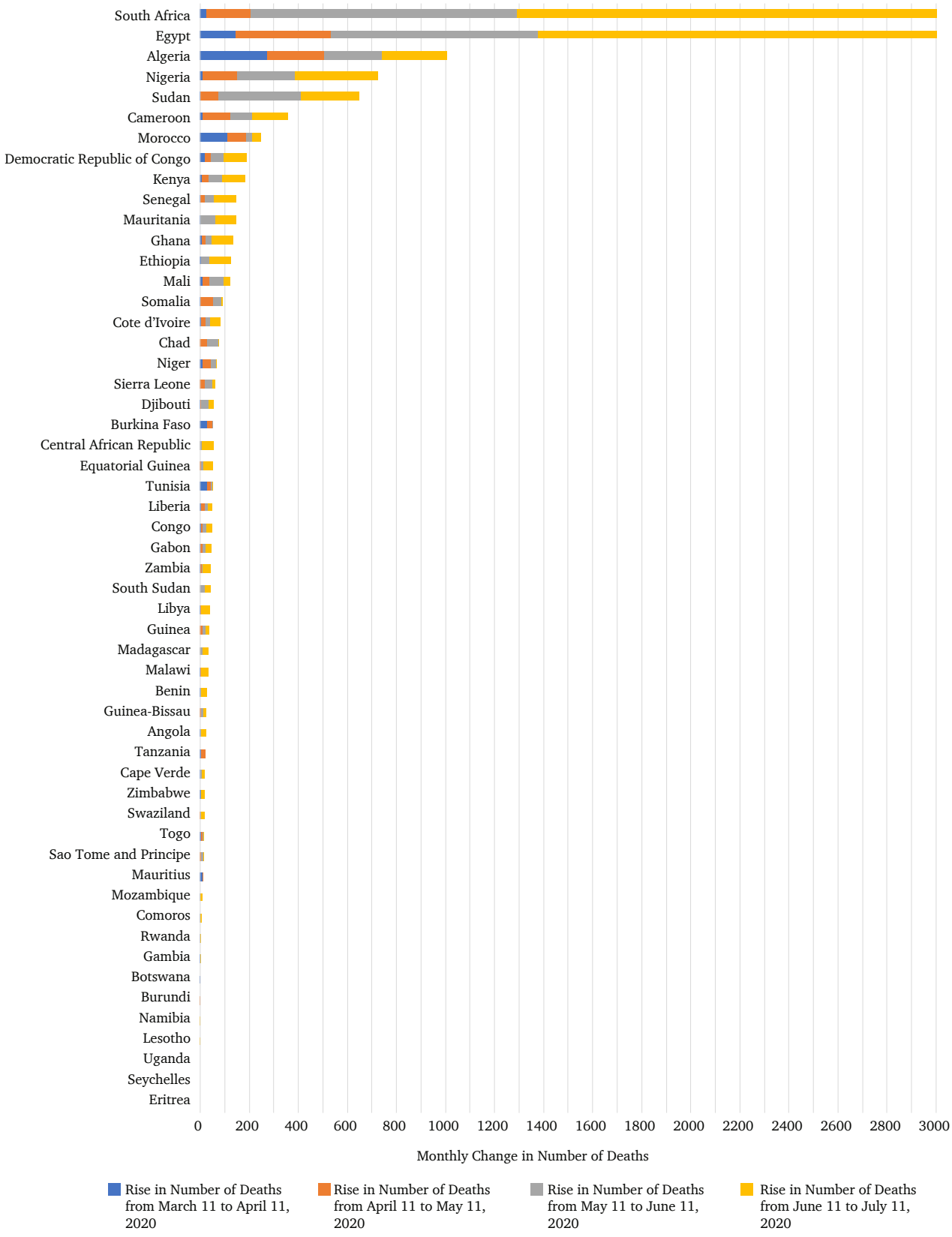
Figure 5 shows the month-on-month increase in the number of COVID-19 cases across Africa, revealing that the monthly jump in cases is increasing rapidly and evenly across all countries. It is interesting to note that 83 percent of African countries (45 of the 54) have less than 10,000 cases each. The remaining 17 percent, nine countries – namely, Sudan, Côte D'Ivoire, Cameroon, Morocco, Algeria, Ghana, Nigeria, Egypt and South Africa – all have over 10,000 cases, contributing to approximately 82 percent of the total reported cases in Africa. Egypt (with 81,158 reported cases as on July 11, 2020) and South Africa (with 264,184 reported cases as on July 11, 2020) are among the worst performers not just in the African continent, but globally too. These alarmingly high numbers point to the urgent need for the countries' governments to take immediate strategic action to combat the pandemic's first wave.

Figure 5: Progression in number of cases
(Africa, March 11 – July 11, 2020)



Data Source: Calculated based on data available from Our World In Data

Figure 6: Progression in number of deaths
(Africa, March 11 – July 11, 2020)



Data Source: Calculated based on data available from Our World In Data

Figure 6, depicting the number of deaths per month, paints a more reassuring picture. The trend shows that despite the number of deaths increasing, the overall number of deaths in the continent remain low. 94 percent of countries (51 of the 54) have a coronavirus-related death toll of less than 1,000 deaths in the first four months of the pandemic. The outliers are South Africa (with 3,860 confirmed deaths as of July 11, 2020), Egypt (with 3,720 deaths as of July 11, 2020) and Algeria (with 1,004 deaths as of July 11, 2020). These countries have also shown the biggest jump in the number of deaths continent-wide over a period of four months. The two countries' spiked death tolls could be attributed to a combination of several factors.[29,30] With restrictions on travel and movement slowly being lifted, the general public is adopting a more nonchalant attitude and ignoring the threat posed by the pandemic. This leads to the increased risk of contracting and further spreading the disease. From the healthcare perspective, general conditions in the two countries are not stellar, and those in hospitals and care facilities face the risks of catching other infections, neglect by healthcare providers, and poor overall case management.

Public health surveillance, i.e., the collection and analysis of health data, is crucial for epidemiologists to monitor the manner in which COVID-19 is spreading.[31] Contact tracing and accurate data reporting is required to gather the evolving information about the disease, study its mutations, and combine science and policy to design an efficacious response.[32]

Medical professionals

Political leaders, government officials, and doctors, nurses, and other healthcare workers recognise the acute need to train medical professionals and staff to be able to effectively treat people suffering from COVID-19.[33] Governments and international organisations, like the WHO[34] and the Africa CDC,[35] are providing training sessions – both in person and online via webinars – to prepare medics to treat the disease using the most suitable techniques and procedures, handle equipment, conduct tests, and remain safe in the process.

With medical professionals and healthcare workers taking on greater responsibility,[36] efforts are being undertaken to ensure that they are protected and have conditions conducive to working successfully and unhindered.[37] These include government incentives, pay raises, the arrangement of accommodation closer to the hospitals and health centres they work at, and provision of proper protective gear and equipment.[38]

Education and awareness

Countries the world over have realised[39,40] the effectiveness of awareness campaigns to inform people about the threats posed by a health crisis, sensitise them towards the need to protect themselves and guide them on how to do so, and rid them of fear and misinformation. Indeed, the continent is making strides in engaging the community and ensuring they do their part to stay safe and prevent virus transmission: artists and educators are joining hands with the African diaspora and the UNESCO to prepare a culturally relevant, accessible campaign to educate people on COVID-19;[41] the One by One Campaign was launched, now focused on fostering multi-lateral collaboration specifically geared towards combatting COVID-19;[42] and numerous organisations have set out to implement handwashing[43] and mass screening campaigns.[44]

While these measures are important and necessary for the general population, it is essential to acknowledge that there is no one-size-fits-all response to the crisis. It is vital to recognise that some groups may bear the disproportionate burden of the pandemic, and as such, should be the subject of specifically tailored responses. Some of these are discussed in the following section.

At-risk groups

Pandemics do not have a universal effect on a country's entire population, and certain people are more vulnerable than others. As discussed in the chapter on *Health Risks* in this report, higher-risk groups include people with non-communicable diseases (NCDs) and pre-existing conditions, older people, and those from poorer sections of the society.[45]

With a significant number of healthcare workers being reassigned to work on COVID-19-specific cases,[46] there is faltering attention on people who are suffering from other diseases such as NCDs and those who are immunocompromised. These groups, as such, are being neglected and are facing disruptions in access to medication and treatment. Further, with a heightened susceptibility to contracting the coronavirus, these groups need special care. WHO reports that nations worldwide, including low-income African countries, are instating alternative measures to ensure proper care is provided to those who need it.[47] Telemedicine is taking off, and triaging—to determine the order of priority for treatments—is being used extensively as well.[48] In South Africa, for instance, to spread awareness and information about how to tackle an NCD during a pandemic, the South African Non-

Communicable Diseases Alliance with the Cancer Association of South Africa prepared and disseminated guidelines and tips that people with NCDs should follow, such as continuing with their medication, keeping a constant supply of medicines, and having a balanced diet.[49] They also provide specific steps for those with cardiovascular diseases, respiratory diseases, diabetes, kidney disease, dementia and Alzheimer's, and have set up helplines for aid.[50]

The older population is extremely susceptible to contracting the novel coronavirus. Demographically, Africa houses the world's youngest population, with the median age being 20.[51] While this may result in fewer deaths in absolute terms – as younger people, with higher immunity and better health, are better off even if they contract the disease – the presence of such a young demographic could lead to a lack of facilities and means to take care of the more susceptible older population.[52] In Côte D'Ivoire, the UNFPA with the government's support led a sensitisation program on the pandemic and also helped identify vulnerable households with elders in charge to provide them with financial help.[53] In Egypt, the Ministry of Social Solidarity (MOSS) provided benefits to pensioners to enable them to avail their pensions in a safe and hassle-free manner.[54] Benin, Burkina Faso, Ghana, Guinea, Gambia, Mali, Mauritania, and Senegal have developed regional and national dashboards and situation reports to monitor the impact of the pandemic, with a focus on vulnerable groups, including older persons.[55]

Addressing Mental Health and Stigma

As seen with Ebola, HIV/AIDs, and now COVID-19, there is stigma and fear around contracting an infectious disease. During the Ebola epidemic, there were many accounts of people being ostracised from their communities for having contracted the disease.[56] This pattern appears to be repeating itself for COVID-19, with people becoming immediately wary of and discriminatory towards those who test positive.[57] There is anecdotal evidence of verbal and physical abuse towards those who have suffered from COVID-19.[58] There is a growing need to break the stigma that surrounds this disease, as it affects the mental health of the patients adversely. NGOs are working with community leaders to help dispel myths surrounding the disease. To counter the heavy lack of institutional trust, community involvement is key, and local leaders are stepping up to complement the measures taken by governments and encourage their people to abide by them.[59] Religious leaders, too, are involved in awareness campaigns for COVID-19.[60]

With healthcare facilities overburdened with the influx of patients suffering from the physical repercussions of COVID-19, little attention is being paid to mental health services. Disease outbreaks at such large scales leave a lasting impact on people's mental health, as was seen in the case of Ebola and SARS, both of which also required putting infected people in some degree of quarantine.[61] Mental health workers fear the same pattern will occur with COVID-19, noticing the increasing anxiety about issues like income loss, coupled with the stigma that surrounds the disease. Frontline workers are also under extreme stress due to heavy workloads, the death toll rising every day, and being at risk of contracting the virus from patients and spreading it to their own families.[62]

WHO[63] and Africa CDC[64] have provided guidance on key mental health issues and measures for psychosocial support for governments, healthcare workers, and people in isolation. Several governments have launched targeted action plans to address these crucial aspects of COVID-19, in accordance with their advice. These include promoting mental health services, destigmatising those who have contracted the disease, and providing support during quarantine, having trained operators on national helplines, and even segments on TV catering specifically to the elder population and people with disabilities to address and provide solutions for stress. Healthcare workers are also being provided with training to be able to notice red flags in terms of mental health disorders.

A large number of people in Africa go to traditional healers and several governments have issued certain guidelines for traditional healers to follow during the pandemic, which include educating the community about the disease, creating awareness, practicing social distancing, and postponing ceremonies and rituals.[65] While faith in these healers provides many Africans peace of mind and a sense of solidarity, WHO cautions people against believing that herbs and traditional medicines might cure the novel coronavirus.[66]

Start-ups, the private sector, and investments in healthcare

The global health crisis caused by COVID-19 has seen a remarkable response from the private and start-up sectors that are vigorously devising strategies and products to complement governmental efforts to combat the pandemic. Across Africa, there has been a surge in medi-tech start-ups, particularly those led by the youth, that are working on various aspects of pandemic response.[67] From tele-health platforms to disseminate reliable information provided by

healthcare workers,[68] bio-discovery research,[69] repurposing garment production factories to produce PPE kits and face masks,[70] to creating emergency task forces to support governments,[71] African innovators have covered many bases. The private sector[72] and various international bodies[73,74] are collaborating with African governments to guide them in making prudent decisions about healthcare investments, and also providing funding to the health sector.

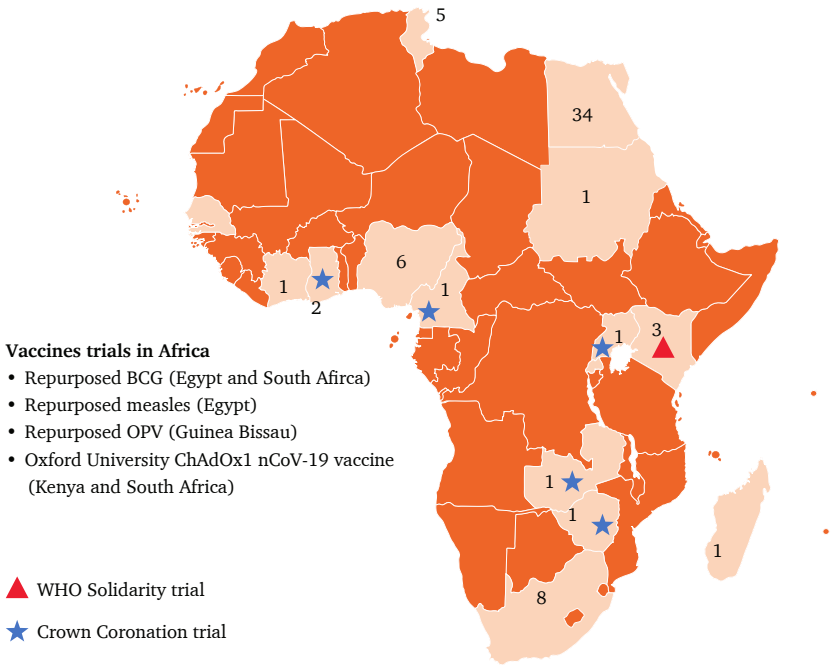
The search for a vaccine

Prevention and firefighting efforts are dominating the response to the COVID-19 pandemic. True success, however, will come with the development of a vaccine to finally rid the globe of this devastating health crisis. Scientists and researchers worldwide are in hot pursuit of a COVID-19 vaccination, and Africa is no exception.

The African Union Commission, on July 9, 2020, launched an initiative called the Africa CDC Consortium for COVID-19 Vaccine Clinical Trial (CONCVACT), which falls under the Africa Joint Continental Strategy for COVID-19 – a pan-African collaborative effort dedicated to strategic pandemic response.[75] The determined efforts of scientists and researchers in Africa to produce a vaccine for the novel coronavirus are supported by governments and the private sector, which are acting with urgency to secure several late-stage vaccine clinical trials.[76] The CONCVACT initiative is aimed at propelling African innovation by removing barriers to conducting clinical trials, encouraging and investing in medical technology, education and necessary infrastructure, and providing accurate, data-powered guidance to facilitate research to roll out the COVID-19 vaccination when approved.[77]

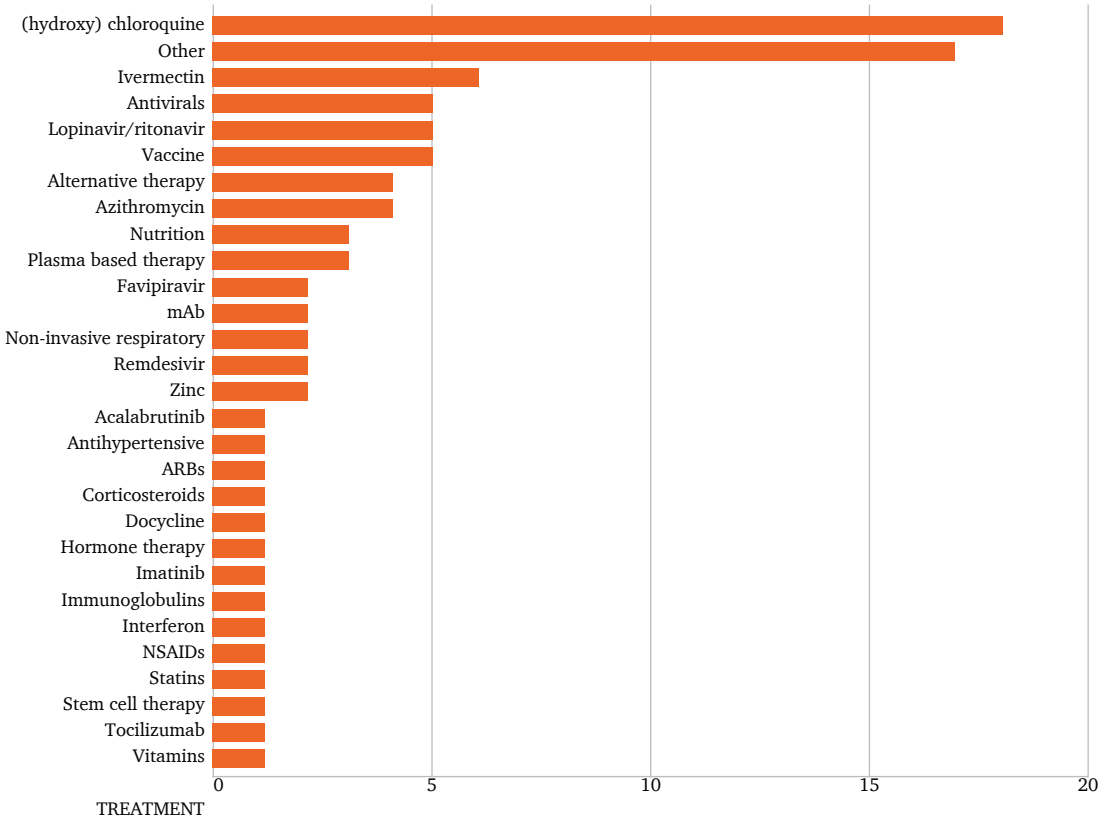
As of July 12, 2020, there were 64 registered clinical trials in Africa (see Figure 7) that were evaluating nearly 30 different kinds of interventions, ranging from stem cell therapy to hydroxychloroquine (see Figure 8).[78]

Figure 7: Vaccination trials in Africa



Data Source: Adapted from Africa Centres for Disease Control and Prevention

Figure 8: Interventions being evaluated in Africa



Data Source: Africa Centres for Disease Control and Prevention

African nations, armed with decades of knowledge on how to tackle various health epidemics, a strong sense of continental pride and unity, and new and adaptive innovations in medi-tech, are committed to combating the COVID-19 pandemic with all their might. The need to protect their people being the sole focus, bolstering the healthcare sector's response has become the continent's top-most priority. With a well-rounded yet extremely targeted response, the healthcare sectors across the continent have been doing their best, and must only grow stronger and better equip themselves in their fight against the pandemic in the many months to come.

Endnotes

(1) "Timeline of WHO's Response to COVID-19," *World Health Organization*, June 29, 2020, https://www.who.int/news-room/detail/29-06-2020-covidtimeline.

(2) "WHO Regional Office for Africa: It Is Difficult to Predict COVID-19 Peak," *CGTN*, June 20, 2020, https://news.cgtn.com/news/2020-06-20/WHO-Regional-Office-for-Africa-difficult-to-predict-COVID-19-peak-Rt420zCQvK/index.html.

(3) Obinna O Oleribe et al., "Ebola Virus Disease Epidemic in West Africa: Lessons Learned and Issues Arising from West African Countries," *Clinical Medicine* 15, no. 1 (2015): pp. 54-57, https://doi.org/10.7861/clinmedicine.15-1-54.

(4) Ibid.

(5) Ibid.

(6) Ibid.

(7) Ibid.

(8) "HIV/AIDS," *World Health Organization Regional Office for Africa*, 2020, https://www.afro.who.int/health-topics/hivaids.

(9) "Community Realities & Responses to HIV/AIDS in Sub-Saharan Africa," *United Nations Office of the Special Adviser on Africa (OSAA),* June 2003, https://www.un.org/esa/africa/hiv_aids.pdf.

(10) Neil Munshi, "Africa's Scientists Learn from Past Epidemics to Fight Covid-19," *Financial Times,* April 15, 2020, https://www.ft.com/content/1cbb1de4-7214-4546-aafe-f59d51a69d9a.

(11) "Learning from the Past: UN Draws Lessons from Ebola, Other Crises to Fight COVID-19," *United Nations*, May 13, 2020, https://www.un.org/en/coronavirus/learning-past-un-draws-lessons-ebola-other-crises-fight-covid-19.

(12) "In the Face of Coronavirus, African Countries Apply Lessons from Ebola Response," *World Bank*, April 3, 2020, https://www.worldbank.org/en/news/feature/2020/04/03/in-the-face-of-coronavirus-african-countries-apply-lessons-from-ebola-response.

(13) Chloe Kent, "What Are the Different Types of Covid-19 Test and How Do They Work?," *Verdict Medical Devices*, April 3, 2020, https://www.medicaldevice-network.com/features/types-of-covid-19-test-antibody-pcr-antigen/.

(14) Anne Soy, "Lack of Covid-19 Testing Undermines Africa's 'Success'," *BBC*, May 27, 2020, https://www.bbc.com/news/world-africa-52801190.

(15) "Daily COVID-19 Tests per Thousand People," *Our World in Data,* July 11, 2020, https://ourworldindata.org/grapher/daily-tests-per-thousand-people-smoothed-7-day?tab=map.

(16) "Why Africa Struggles to Test for Covid-19," *The Economist,* May 26, 2020, https://www.economist.com/graphic-detail/2020/05/26/why-africa-struggles-to-test-for-covid-19.

(17) "Testing for Coronavirus (COVID-19) in the African Region," *World Health Organization*, 2020, https://www.afro.who.int/node/12354.

(18) Ibid.

(19) "AU and Africa CDC Launch Partnership to Accelerate COVID-19 Testing: Trace, Test and Track," *Africa CDC*, April 26, 2020, https://africacdc.org/news-item/african-union-and-africa-centres-for-disease-control-and-prevention-launch-partnership-to-accelerate-covid-19-testing-trace-test-and-track/.

(20) "Outbreak Brief #25: Coronavirus Disease 2019 (COVID-19) Pandemic," *Africa Centres for Disease Control and Prevention,* July 7, 2020, https://africacdc.org/download/outbreak-brief-25-covid-19-pandemic-07-july-2020/.

(21) Peter Yeung, "Cheap and Easy $1 Coronavirus Test to Undergo Trials in Senegal," *New Scientist*, May 13, 2020, https://www.newscientist.com/article/mg24632823-700-cheap-and-easy-1-coronavirus-test-to-undergo-trials-in-senegal/.

(22) Jason Beaubien, "A COVID-19 Success Story In Rwanda: Free Testing, Robot Caregivers," *NPR*, July 15, 2020, https://www.npr.org/sections/goatsandsoda/2020/07/15/889802561/a-covid-19-success-story-in-rwanda-free-testing-robot-caregivers.

(23) "Ramping up Early Detection of COVID-19 with Limited Resources: The Role of Pool Testing," *IGC*, July 8, 2020, https://www.theigc.org/blog/ramping-up-early-detection-of-covid-19-with-limited-resources-the-role-of-pool-testing/.

(24) Rachel Weiner, "What Is Pool Testing and How Does It Work?," *The Washington Post*, June 27, 2020), https://www.washingtonpost.com/health/what-is-pool-testing-and-how-does-it-work/2020/06/26/33eee7ea-b7e4-11ea-a510-55bf26485c93_story.html.

(25) Giulia Paravicini, "African Nations to Get Ventilators from Jack Ma Foundation, Stress Need for WHO Help," *Thomson Reuters,* April 23, 2020, https://in.reuters.com/article/us-health-coronavirus-africa/african-nations-to-get-ventilators-from-jack-ma-foundation-stress-need-for-who-help-idINKCN22522D.

(26) "COVID-19: Morocco Expands Hospital Capacity," *First Independent Mena Newspaper*, April 8, 2020, https://northafricapost.com/39786-covid-19-morocco-expands-hospital-capacity.html.

(27) "Healthcare Infrastructure," *World Health Organization*, April 13, 2012, https://www.who.int/gho/health_technologies/medical_devices/healthcare_infrastructure/en/.

(28) Cornelius Kalenzi, "It's Time for a Great Reset of Africa's e-Health Systems," *World Economic Forum*, July 17, 2020, https://www.weforum.org/agenda/2020/07/great-reset-africas-e-health-systems/.

(29) "Egypt Records 97 COVID-19 Deaths as Numbers Continue to Rise," *Egyptian Streets*, June 16, 2020, https://egyptianstreets.com/2020/06/16/egypt-records-97-covid-19-deaths-as-numbers-continue-to-rise/.

(30) "South Africa Reports Record Number of Daily Coronavirus Deaths," *Al Jazeera*, July 23, 2020, https://www.aljazeera.com/news/2020/07/south-africa-reports-record-number-daily-coronavirus-deaths-200723055825339.html.

(31) "Monitoring and Tracking the Disease," *Centers for Disease Control and Prevention*, July 1, 2020, https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/about-epidemiology/monitoring-and-tracking.html.

(32) Ibid.

(33) "'More Effort, Training Still Needed to Fight COVID-19'," *United Nations Africa Renewal*, June 29, 2020, https://www.un.org/africarenewal/web-features/healthcare/coronavirus/more-effort-still-needed-fight-covid-19-0.

(34) “Online Training as a Weapon to Fight the New Coronavirus,” *World Health Organization*, February 7, 2020, https://www.who.int/news-room/detail/07-02-2020-online-training-as-a-weapon-to-fight-the-new-coronavirus.

(35) “COVID-19 Scientific and Public Health Policy Update1 – (14 July 2020),” *Africa CDC,* July 14, 2020, https://africacdc.org/download/covid-19-scientific-and-public-health-policy-update-14-july-2020/.

(36) “Covid-19 Significantly Impacts Health Services for Noncommunicable Diseases,” *World Health Organization,* June 1, 2020, https://www.who.int/news-room/detail/01-06-2020-covid-19-significantly-impacts-health-services-for-noncommunicable-diseases

(37) “COVID-19: Africa’s Health Workers at Risk,” *DW.com*, May 6, 2020, https://www.dw.com/en/covid-19-africas-health-workers-at-risk/a-53352778.

(38) Ibid.

(39) “Awareness Campaigns and Rumors’ Busting about COVID-19 Throughout All Governorates in Yemen - Yemen,” *ReliefWeb,* June 22, 2020, https://reliefweb.int/report/yemen/awareness-campaigns-and-rumors-busting-about-covid-19-throughout-all-governorates-yemen.

(40) “Awareness Campaigns Help Prevent Against COVID-19 in Afghanistan,” *World Bank,* June 28, 2020, https://www.worldbank.org/en/news/feature/2020/06/28/awareness-campaigns-help-prevent-against-covid-19-in-afghanistan.

(41) “African Artists Take Creative Approach to Fighting the COVID-19 Pandemic,” *United Nations,* May 7, 2020, https://news.un.org/en/story/2020/05/1063452.

(42) “One By One: Target COVID-19: Join Africa’s COVID-19 Response,” *OneByOne2030 LIVE,* 2020, https://www.onebyone2030.org/targetcovid19-africa.

(43) “Hand-Washing More Accessible to COVID-19 Vulnerable Homeless in Khartoum,” *United Nations Africa Renewal,* April 13, 2020, https://www.un.org/africarenewal/news/coronavirus/hand-washing-more-accessible-covid-19-vulnerable-homeless-khartoum.

(44) “Burundi Launches COVID-19 Mass Screening Campaign,” *Anadolu Ajansi,* July 7, 2020, https://www.aa.com.tr/en/africa/burundi-launches-covid-19-mass-screening-campaign/1902072.

(45) “People Who Are at Increased Risk for Severe Illness,” *Centers for Disease Control and Prevention*, June 25, 2020, https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/people-at-increased-risk.html.

(46) “Covid-19 Significantly Impacts Health Services for Noncommunicable Diseases,” *World Health Organization,* June 1, 2020, https://www.who.int/news-room/detail/01-06-2020-covid-19-significantly-impacts-health-services-for-noncommunicable-diseases

(47) Ibid.

(48) Ibid.

(49) “COVID-19 & NCDs,” *CANSA*, June 11, 2020, https://cansa.org.za/covid-19-level-3-ncds/.

(50) Ibid.

(51) Toshiko Kaneda and LORI S Ashford, “Sub-Saharan Africa’s Demographic and Health Characteristics Will Influence the Course of the COVID-19 Pandemic,” *Population Reference Bureau*, April 13, 2020, https://www.prb.org/sub-saharan-africas-demographic-and-health-characteristics-will-influence-the-course-of-the-covid-19-pandemic/.

(52) "Implications of COVID-19 for Older Persons: Responding to the Pandemic," *United Nations Population Fund*, April 24, 2020, https://www.unfpa.org/sites/default/files/resource-pdf/Older_Persons_and_COVID19_final.pdf.

(53) Ibid.

(54) Walaa Talaat Hvasani, "Social Protection And Older People In Egypt During The COVID-19 Pandemic," *Corona*, June 2, 2020, https://www.corona-older.com/post/social-protection-and-older-people-in-egypt-during-the-covid-19-pandemic.

(55) "Implications of COVID-19 for Older Persons: Responding to the Pandemic," *United Nations Population Fund*, April 24, 2020, https://www.unfpa.org/sites/default/files/resource-pdf/Older_Persons_and_COVID19_final.pdf.

(56) "Misinformation Leads to Increasing COVID-19 Stigma in Sub-Saharan Africa - Mali," *ReliefWeb,* June 1, 2020, https://reliefweb.int/report/mali/misinformation-leads-increasing-covid-19-stigma-sub-saharan-africa.

(57) "Social Stigma Threatens COVID-19 Response but Patients Heal Faster with Everyone's Support.," *World Health Organization,* June 12, 2020, https://www.afro.who.int/news/social-stigma-threatens-covid-19-response-patients-heal-faster-everyones-support.

(58) "Quick Guide to Avoiding Coronavirus-Related Stigma," *UNICEF West and Central Africa,* March 20, 2020, https://www.unicef.org/wca/guide-against-coronavirus-stigma.

(59) Angela Lusigi, "COVID-19: Smarter Response and Recovery Measures Can Help Preserve Human Rights in Africa," *United Nations Africa Renewal*, June 24, 2020, https://www.un.org/africarenewal/web-features/coronavirus/smarter-response-and-recovery-measures-can-help-preserve-human-rights-africa.

(60) Neema Kaseje, "Why Sub-Saharan Africa Needs a Unique Response to COVID-19," *World Economic Forum*, 2020, https://www.weforum.org/agenda/2020/03/why-sub-saharan-africa-needs-a-unique-response-to-covid-19/.

(61) Franco Puglisi, "South Africa's Mental Health Care Falls By Wayside During Pandemic," *Voice of America,* May 27, 2020, https://www.voanews.com/africa/south-africas-mental-health-care-falls-wayside-during-pandemic.

(62) Uwizeyimana, Theogene & Yusuff Adebayo, Adebisi & David, Odhiambo & Tuyishime, Simeon & Blaise, Ntacyabukura & III, Don. (2020). COVID-19 Pandemic: Need for Mental Health Support Consideration in Africa. 10.13140/RG.2.2.23058.07362.

(63) "COVID-19-Tackling Mental Health during Isolation Is Essential to Full Recovery," *World Health Organization*, July 7, 2020, https://www.afro.who.int/news/covid-19-tackling-mental-health-during-isolation-essential-full-recovery.

(64) "Guidance for Mental Health and Psychosocial Support for COVID-19," *Africa CDC*, June 10, 2020, https://africacdc.org/download/guidance-for-mental-health-and-psychosocial-support-for-covid-19/.

(65) Canny Maphanga, "Covid-19: This Is the Role Traditional Medicine Practitioners Can Play," *News24*, July 9, 2020, https://www.news24.com/news24/southafrica/news/covid-19-this-is-the-role-traditional-medicine-practitioners-can-play-health-dept-20200709.

(66) Isaac Mugabi, "COVID-19: WHO Cautions against the Use of Traditional Herbs in Africa," *DW.com,* May 5, 2020, https://www.dw.com/en/covid-19-who-cautions-against-the-use-of-traditional-herbs-in-africa/a-53341901.

(67) Ahunna Eziakonwa and Eleni Gabre-Madhin, "Africa's COVID-19 Moment: How Youth Startups Are Addressing the Pandemic – And What They Need to Reach the Next Level," *Next Billion*, 2020, https://nextbillion.net/africa-youth-startups-addressing-the-pandemic/.

(68) Pavithra Rao, "Nigerian Digital Healthcare Startup Helps Triage COVID-19 Cases," *United Nations Africa Renewal,* June 25, 2020, https://www.un.org/africarenewal/magazine/june-2020/coronavirus/nigerian-digital-healthcare-startup-helps-triage-covid-19-cases.

(69) "CapeBio," *CapeBio*, 2020, https://capebiosa.com/.

(70) Liz Kariuki, "From Passion to Business: Meet Jennet Lemma of Gaber Garment," *GrowthAfrica,* September 26, 2019, https://growthafrica.com/from-passion-to-business-meet-jennet-lemma-of-gaber-garment/.

(71) "Who we are," *BLEN Corp*, 2020, https://blencorp.com/.

(72) Bobby Demissie, Tania Holt, and Marilyn Kimeu, "Acting Now to Strengthen Africa's Health Systems," *McKinsey & Company,* June 12, 2020, https://www.mckinsey.com/featured-insights/middle-east-and-africa/acting-now-to-strengthen-africas-health-systems.

(73) Cesar Augusto Mba Abogo, "3 Ways COVID-19 Could Actually Spark a Better Future for Africa," *World Economic Forum,* May 11, 2020, https://www.weforum.org/agenda/2020/05/africa-response-covid19-lasting-benefits/.

(74) "World Bank's Response to COVID-19 (Coronavirus) in Africa," *World Bank,* June 2, 2020, https://www.worldbank.org/en/news/factsheet/2020/06/02/world-banks-response-to-covid-19-coronavirus-in-africa.

(75) "COVID-19 Scientific and Public Health Policy Update1 – (14 July 2020)," *Africa CDC,* July 14, 2020, https://africacdc.org/download/covid-19-scientific-and-public-health-policy-update-14-july-2020/.

(76) "African Union Commission Launches Consortium for COVID-19 Vaccine Clinical Trial," *Africa CDC,* July 9, 2020, https://africacdc.org/news-item/african-union-commission-launches-consortium-for-covid-19-vaccine-clinical-trial/.

(77) Ibid.

(78) "COVID-19 Scientific and Public Health Policy Update1 – (14 July 2020)," *Africa CDC*, July 14, 2020, https://africacdc.org/download/covid-19-scientific-and-public-health-policy-update-14-july-2020/.

An Assessment of the Economic Responses to Covid-19 in the African Continent

Noah Wamalwa, John Mutua and Raphael Muya

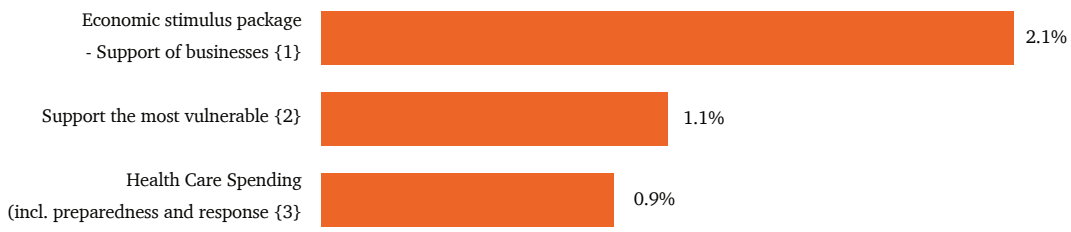
Even though a majority of the 54 countries in the African continent were among the last countries in the world to be struck by the COVID-19 pandemic, they remain among the least prepared in terms of both medical personnel and health-related infrastructure, and disease surveillance mechanisms. As these countries were already highly indebted and saddled with massive budget deficits before the pandemic, they have been disproportionately hit by the economic fallout of the crisis. The biggest dilemma faced by the majority of the countries was that the measures to address the pandemic—such as total lockdowns that were successful in countries like South Korea, Italy and China—were untenable in Africa, given that most livelihoods remain extremely precarious.

This chapter outlines the economic responses to the pandemic that have been taken by countries in the African continent. As the pandemic spread to Africa, the countries put in place a variety of measures—fiscal and monetary—and sought international support to protect livelihoods and the future of their economies. Some like Botswana, Comoros, Ethiopia, Zambia and Kenya sought to establish an Emergency Relief Fund to attract contributions from the public, including the private sector. They also instituted a range of social security measures and cash transfers to support the most vulnerable households. These measures included the setting up of a special fund to provide targeted income support to the poorest households, the mass distribution of grain and food for livestock, and the supply of electricity and water free of charge for the months.

High indebtedness had already exposed most of Sub-Saharan African (SSA) to external shocks. To stabilise their exchange rates, a majority of the region's countries opted for reducing the bank policy rate. Some countries like Ghana, Uganda, The Gambia, Madagascar and Kenya also sought to appeal to development partners for additional financing under the Rapid Credit Facility.[1] In Zimbabwe, meanwhile, the Central Bank returned to the multi-currency system, allowing both the Zimbabwean dollar and US dollar to become legal tender.[2] The bank also moved from a floating exchange rate system to a fixed one.

On 27 April this year, the Heads of States of the West-Africa Economic and Monetary Union (WAEMU) declared a temporary suspension of the WAEMU Converge, Stability, Growth and Solidarity Pact—[3] which had set six convergence criteria including the three percent of GDP fiscal deficit rule—to

Figure 1: Summary of fiscal responses of select 31 Sub-Saharan African countries (as % of GDP)



Data Source: Authors' computation from IMF[4]

help member countries cope with the fallout of the COVID-19 pandemic. This suspension was meant to allow member countries to raise their overall fiscal deficit temporarily and use the additional external support provided by donors in response to the crisis. The Heads of States' Declaration set a clear expectation that fiscal consolidation will resume once the crisis was over.

FISCAL RESPONSES

Nearly all of the Sub-Saharan African countries have undertaken some form of fiscal measures in response to the pandemic. The fiscal responses of the majority of countries in SSA have comprised of efforts towards the following: (i) enhancing COVID-19 healthcare spending; (ii) protecting the most vulnerable in society; and (iii) supporting businesses.

There have been more responses to protect businesses compared to direct support for healthcare spending and support for the most vulnerable in society. On average, these countries allocated 2.1 percent of GDP to protecting businesses, which includes the allocation of subsidies. Rwanda, for example, launched a fund to support affected businesses through subsidised loans from commercial banks and MFIs and credit guarantees, especially targeted to SMEs and hard-hit sectors such as the hospitality industry.

Meanwhile, support for the most vulnerable averaged only 1.1 percent of GDP for these countries.[5] Furthermore, on average, SSA countries set aside about 0.9 percent of GDP for direct COVID-19 healthcare funding, including preparedness and response.

Tax policy

Africa is overwhelmingly a continent of small business and micro enterprises. These small businesses are particularly vulnerable to the effects of the COVID-19 pandemic. To mitigate the negative impact on these businesses, a wide variety of measures have been employed by African governments.

Tax relief measures were announced by Botswana, Ethiopia, Guinea, Malawi, Nigeria, Uganda, Zambia—including a waiver of tax penalties and fees on the outstanding tax liabilities resulting from COVID-19, suspension of taxes such as customs duties and VAT on some medical supplies and medical related commodities, and removal of the provisions relating to VAT claims on imported spare parts, lubricants and stationery to ease pressure on companies. In Kenya, reduction of the Turnover Tax rates from 3 percent to 1 percent for all micro, small and medium enterprises was made effective 1st April 2020, as well as the temporary suspension of the listing on the Credit Reference Bureau (CRB) of persons, micro, small or medium or corporate entities.[7] Furthermore, tax relief measures included reduction of resident income tax to 25 percent and VAT rate from 16 percent to 14 percent, effective 1 April 2020. In South Africa, the government promised to set aside 2 billion Rand to be made available through the Debt Relief Fund to assist small and medium local enterprises in distress.[8] The country's small businesses received a four-month tax holiday and the option to delay payment on 20 percent of their pay-as-you-earn liabilities. Major banks also offered relief, mostly in the form of three-month debt holidays.

Nigeria's Central Bank retroactively lowered interest rates from nine percent to five percent as of March 1, for one year. The government also announced credit relief of US$136.6 million to businesses affected by the pandemic, including small traders and enterprises. In Cameroon, provisions were made for the temporary tax accommodation for businesses directly affected by the crisis, through tax moratoriums and deferred payments, with notable exemptions from tourist tax for hotels and the catering sector for the rest of financial year 2020. Exemptions were also granted from the withholding tax for taxis, motorbikes and petty traders for the second quarter and an allocation of a special envelope of CFAF 25 billion for the expedited clearance of VAT credits awaiting reimbursement was made.[9]

MONETARY POLICY RESPONSE

The World Bank (WB) and the International Monetary Fund (IMF) estimate that the economic costs of COVID-19 for African countries will be at least 5 percent of GDP, with 20 million jobs being lost. Economic activity will contract, coupled with a reduction in remittances and foreign direct investments (FDI). Thus a monetary policy stimulus becomes crucial, even as across the world, the pandemic has exposed the limits of monetary policy for ameliorating such crises. African Central Banks' monetary policy responses in the ongoing pandemic have included lowering of interest rates and providing additional liquidity to ensure financial stability and increased economic activity.

Table 1: Summary of fiscal measures instituted for ameliorating the impacts of COVID-19, by the select 31 Sub Saharan African Countries

SSA Country	Response	Amount (US$ Mn)	% GDP	Objective
Angola	✓	40.00	0.11	- Health Care Spending (incl. preparedness and response)
		80.00		- Health Care Spending (incl. preparedness and response)
Benin	✓	102.00	1.70	- Health Care Spending (incl. preparedness and response)
		85.00		- Economic stimulus package - Support of businesses
		68.00		- Economic stimulus package - Support of businesses
Botswana	✓	172.00	1.10	- Health Care Spending (incl. preparedness and response)
Burundi	✓	12.00	0.40	- Health Care Spending (incl. preparedness and response)
				- Economic stimulus package - Support of businesses
Cabo Verde	✓	10.17		- Economic stimulus package - Support of businesses
		3.05	10.04	- Economic stimulus package - Support of businesses
		7.57		- Economic stimulus package - Support of businesses
		0.82	0.40	- Health Care Spending (incl. preparedness and response)
		2.48	1.20	- Support the most vulnerable
Cameroon	✓	99.11	0.26	- Health Care Spending (incl. preparedness and response)
Central African Republic	✓	45.90	1.90	- Health Care Spending (incl. preparedness and response)
Chad	✓	52.70	0.47	- Health Care Spending (incl. preparedness and response)
		187.00	1.66	- Economic stimulus package - Support of businesses
Republic of Congo	✓	170.00	1.60	- Health Care Spending (incl. preparedness and response)
				- Support the most vulnerable
Côte d'Ivoire	✓	163.20	0.30	- Health Care Spending (incl. preparedness and response)
		884.00	1.50	- Support the most vulnerable
		471.47	0.80	- Economic stimulus package - Support of businesses
Djibouti	✓	70.94	2.40	- Health Care Spending (incl. preparedness and response)
				- Economic stimulus package - Support of businesses
				- Support the most vulnerable
Equatorial Guinea	✓		1.20	- Health Care Spending (incl. preparedness and response)
				- Support the most vulnerable
Eritrea	✗	-	-	No fiscal measures
Eswatini	✓	6.60	0.14	- Health Care Spending (incl. preparedness and response)
				- Economic stimulus package - Support of businesses
				- Support the most vulnerable
Ethiopia	✓	154.00	0.15	- Health Care Spending (incl. preparedness and response)
		635.00	0.60	- Support the most vulnerable
		430.00	0.40	- Health Care Spending (incl. preparedness and response)
		282.00	0.30	- Support the most vulnerable
		293.00	0.30	- Economic stimulus package - Support of businesses
Gabon	✓	110.20	0.74	- Health Care Spending (incl. preparedness and response)
		193.20	1.30	- Economic stimulus package - Support of businesses
		375.00	2.52	- Economic stimulus package - Support of businesses
The Gambia	✓	19.00	1.00	- Health Care Spending (incl. preparedness and response)
		1.50	0.08	- Support the most vulnerable
Ghana	✓	100.00	0.15	- Health Care Spending (incl. preparedness and response)
		210.00	0.32	- Economic stimulus package - Support of businesses
Kenya	✓	392.16	0.40	- Health Care Spending (incl. preparedness and response)
		554.90	0.50	- Economic stimulus package - Support of businesses

SSA Country	Response	Amount (US$ Mn)	% GDP	Objective
Guinea	✓	328.00	2.30	- Health Care Spending (incl. preparedness and response)
Guinea Bissau	✓	0.80	0.06	- Health Care Spending (incl. preparedness and response)
		0.90	0.06	- Support the most vulnerable
Lesotho	✓	41.30	2.00	- Health Care Spending (incl. preparedness and response)
		88.50	4.29	- Support the most vulnerable
		5.90	0.29	- Economic stimulus package - Support of businesses
Liberia	✓	4.00	0.12	- Health Care Spending (incl. preparedness and response)
Madagascar	✓	269.60	1.85	- Health Care Spending (incl. preparedness and response)
		160.00	1.10	- Economic stimulus package - Support of businesses
Malawi	✓	20.00	0.25	- Health Care Spending (incl. preparedness and response)
		50.00	0.60	- Support the most vulnerable
Mali	✓	8.58	0.50	- Health Care Spending (incl. preparedness and response)
Mauritania	✓	80.00	1.10	- Health Care Spending (incl. preparedness and response)
		210.00	3.20	- Economic stimulus package - Support of businesses
Mauritius	✓	32.50	0.28	- Health Care Spending (incl. preparedness and response)
		168.75	1.40	- Economic stimulus package - Support of businesses
Mozambique	✓	28.00	0.20	- Health Care Spending (incl. preparedness and response)
		700.00	5.00	- Economic stimulus package - Support of businesses
Namibia	✓	536.00	4.25	- Health Care Spending (incl. preparedness and response)
Nigeria	✓	1300.00	0.34	- Health Care Spending (incl. preparedness and response)
		5980.00	1.60	- Economic stimulus package - Support of businesses

Source: Authors' computation using IMF data[6]

South Africa, Mozambique, Kenya, Botswana, Cameroon, Central Republic of Cameroon, and Chad are examples of countries that registered policy rate cuts. The Central Bank of Nigeria (CBN) reduced interest rates on all applicable CBN interventions from nine to five percent and a one-year moratorium on CBN intervention facilities while the Ghananian policy rate was cut by 150 basis points, to 14.5 percent. Kenya also lowered its policy rate by 100 basis points to 7.25 percent. A majority of the SSA countries used this monetary tool to reduce their interest rate for a certain period of time to stimulate economic growth during the pandemic.

In order to discourage cash transactions, Uganda, Kenya and Nigeria lowered their mobile money fees to aid the flow of remittances and make it easier to use mobile money and reduce cash circulation. The objective was to reduce the risk of transmission of the virus through handling bank notes, and to lessen the use of the cash in the economy in the medium term. Additionally, mobile operators in countries like Kenya and Tanzania approved and increased mobile money transaction limits. The move was meant to encourage customers to use digital platforms while conducting businesses and discourage physical visits to banks.

Another popular monetary policy intervention has been the lowering of commercial banks' cash reserve ratios. In effect, this reduced the amount of cash that banks are required to hold in reserves which in turn allowed them to make more loans to consumers and businesses. This was done to increase and expand the nation's money supply. For instance, Kenya reviewed its rate (from 1 percent to 4.5 percent), Rwanda (from 1 percent to 4 percent), while Ghana lowered the primary reserve requirement from 10 percent to 8 percent and capital conservation buffer from 3 percent to 1.5 percent. Ethiopia injected cash into commercial banks. This strategy is more targeted and reduces the risk of insolvency for the specific sectors of the economy.

Liquidity support measures by the African governments were employed as a strategy to bolster financial institutions including banks. The objective was to ensure ease in access to credit and support to liquidity. Countries in Africa that put in place the liquidity measures included Kenya, Nigeria, South Africa, Uganda, Ethiopia, Zambia and Rwanda. The

Bank of Zambia (BoZ) provided 10 billion Kwacha (3 percent of GDP) of medium-term liquidity support to eligible financial services providers to scale up open-market operations and provide short-term liquidity support to commercial banks.

The SSA countries, compared to their counterparts in Northern Africa, provided more monetary policy support. In fact, all the Sub-Sahara African countries provided some form of monetary policy support to cushion their economies.

INTERNATIONAL SUPPORT

The global economy is facing a recession that may persist through 2020. UNCTAD[10] estimates that a one percentage point drop in global economic growth results in lost income of US$ 900 billion, and that the costs of the pandemic are likely to wipe out approximately US$ 2 trillion off the global economy. This will have an adverse impact particularly on African countries which depend on trade and investment, tourism, foreign expertise and financial assistance from developed economies.[11] This has left many African countries with urgent balance of payments crises and fiscal financing needs.

Table 2: Tax policy responses for select Sub-Saharan African countries

Country	Response	Type of Response
Angola	✓	**Key Policy Responses as of June 29, 2020** - tax exemptions on humanitarian aid and donations and some delays on filing taxes for selected imports were granted.
Benin	✓	**Key Policy Responses as of July 1, 2020** - CFAF40 billion to support struggling businesses through targeted and temporary tax exemptions and - relaxation of certain payment rules
Botswana	✓	**Key Policy Responses as of July 1, 2020** - tax deferral of 75% of any quarterly payment between March and September 2020 to be paid by March 2021 - fund a government loan guarantee scheme of 1 billion Pula (20% financed by commercial banks) for businesses that are tax compliant (including those who are not eligible to pay taxes/)
Burkina Faso	✓	**Key Policy Responses as of June 28, 2020** - lowering import duties and VAT for hygiene and healthcare goods and services critical to tackle COVID-19, and for tourism businesses - lowering other selected tax rates - delaying tax payments, and waiving late payment fines and penalties - suspending government fees charged on informal sector operators for rent, security and parking in urban markets - lowering the licensing fee for companies in the transportation and tourism sectors - suspending on-site tax inspection operations
Burundi	✓	**Key Policy Responses as of July 1, 2020** - taxes owed will be forgiven for hotels and industries that will not be able to pay - subsidies are planned to help pay salaries in these sectors and avoid massive layoffs
Cabo Verde	✓	**Key Policy Responses as of June 30, 2020** - loan guarantees of up to 50 percent for large companies in all sectors (CVE 1 billion, about 9 million) - loan guarantees of up to 100 percent for small-and medium-sized enterprises in all sectors (CVE 300 million, 2.7 million) - loan guarantees for micro-enterprises in all sectors (CVE 700 million CVE, about 6.7 million) - faster settlement of invoices and VAT refunds - extension of the tax payment period, payment in installments for VAT and other withholding taxes - cancellation of contributions to the Pension Fund for three months

Cameroon	✓	**Key Policy Responses as of July 1, 2020** - exemptions from the tourist tax in the hotel and catering sectors for the rest of the 2020 financial year - exemption from the withholding tax for taxis and motorbikes and petty traders for the second quarter - the allocation of a special envelope of CFAF 25 billion for the expedited clearance of VAT credits awaiting reimbursement - the postponement of the deadline to pay land taxes for the 2020 financial year, to 30 September 2020. - an increase in the family allowance from CFAF 2,800 to CFAF 4,500 - a raise of 20 percent for pensions that did not benefit from the 2016 reform - continued payment of family allowances from May to July to staff of companies which are unable to pay social security contributions or which have placed their staff on technical leave due to the crisis - spreading the payment of the social security contributions for the second quarter over three instalments and canceling late fees - full income tax deductibility of donations and gifts made by companies for the fight against Covid-19 - three-month suspension of the payment of parking and demurrage charges in the Douala and Kribi ports for essential goods - the establishment of a MINFI-MINEPAT consultation framework aimed at mitigating the crisis and promoting a rapid resumption of activity
Central African Republic	✓	**Key Policy Responses as of June 30, 2020** - tax relief or suspension and easing of public procurement procedures - a draft supplementary budget law is currently under discussion
Chad	✓	**Key Policy Responses as of July 1, 2020** - reduce by 50 percent the business license fees and the presumptive tax for 2020 - tax breaks such as carryforward losses and delays in tax payments will also be examined on a case-by-case basis - clearance of domestic arears of about CFAF 110 billion owed to suppliers - a subsidy planned to the agricultural sector (0.3 percent of non-oil GDP) - the simplification of the import process for food and necessity items, including health equipment, and tax exemptions for these items - temporary suspension of payments of electricity and water bills for the lifeline consumption - replenishment of the national food distribution program (Office National de Sécurité Alimentaire, ONASA) (0.5 percent of non-oil GDP)
Comoros	✓	**Key Policy Responses as of July 1, 2020** - import taxes on food, medicines, and items related to hygiene were reduced by 30 percent
Republic of Congo	✓	**Key Policy Responses as of June 28, 2020** - more time has been given to companies to pay their taxes and tax assessments on site have been abandoned - the import duty directorate is also strongly encouraging electronic payment of dues and allowing more electronic documents to be accepted at the port - corporate income tax has been reduced to 28 percent from 30 percent and the turnover tax has been reduced to 5 percent from 7 percent for small businesses with turnover below 100 million XAF - heads of states of the West-Africa Economic and Monetary Union (WAEMU) declared a temporary suspension of the WAEMU growth and stability Pact setting six convergence criteria, including the 3 percent of GDP fiscal deficit rule, to help member-countries cope with the fallout of the Covid-19 pandemic.

Côte d'Ivoire	✓	**Key Policy Responses as of July 1, 2020** - delay financial debt reimbursements, especially for SME - decrease the cost of fund transfers through mobile money, in order to avoid a low in transactions - fund commercial banks with enough cash to guarantee a good working of cash machines - 1,700 companies have been granted loans, while they were not eligible so far
Djibouti	✓	**Key Policy Responses as of July 1, 2020** - 82.5% reduction in port tariffs and granted Free Terminal Handling Charges for 60 days, from Thursday, April 16th, 2020 for Ethiopia export cargo to the world gated in Djibouti Ports - support to vulnerable households so far has been provided in the form of food vouchers
Equatorial Guinea	✓	**Key Policy Responses as of July 1, 2020** - reduced electricity bills for firms affected by the Covid crisis, with a focus on SMEs, and for households. - the government is also postponing execution of non-priority capital expenditures to the second half of 2020
Eritrea	✗	No fiscal measures
Eswatini	✓	**Key Policy Responses as of July 1, 2020** - taxpayers projecting losses will file loss provisional returns and no payment will be required - extension of returns filing deadlines by 3 months before penalties kick-in - payment arrangements for taxpayers facing cash flow problems - waiver of penalties and interest for older tax debts if principal is cleared by the end of September 2020 - up to E90 million (0.13 percent of GDP) in tax refunds for SMEs that have complied with tax obligations, retain employees
Ethiopia	✓	**Key Policy Responses as of June 18 2020** - forgiveness of all tax debt prior to 2014/2015 - a tax amnesty on interest and penalties for tax debt pertaining to 2015/2016-2018/2019 - exemption from personal income tax withholding for 4 months for firms who keep paying employee salaries despite not being able to operate due to Covid-19
Gabon	✓	**Key Policy Responses as of June 18 2020** - student relief fund to support Gambian students abroad and a GMD 800 million (US$15.8 million) - nation-wide food distribution program to benefit 84 percent of the households - 2000 tons of fertilizer will be distributed to support the needs of farmers
Ghana	✓	**Key Policy Responses as of June 25 2020** - the government plans cutting spending in goods and services, transfers - the government has agreed with investors to postpone interest payment on non-marketable domestic bonds held by public institutions to fund the financial sector clean-up for about GHc 1.2 billion (0.3 percent of GDP).
Kenya	✓	**Key Policy Responses as of June 30 2020** - full income tax relief for persons earning below the equivalent of $225 per month - reduction of the top pay-as you earn rate from 30 to 25 percent - reduction of the base corporate income tax rate from 30 to 25 percent - reduction of the turnover tax rate on small businesses from 3 to 1 percent - reduction of the standard VAT rate from 16 to 14 percent
South Africa	✓	**Key Policy Responses as of June 30 2020** - the revenue administration is accelerating reimbursements and tax credits - allowing SMEs to defer certain tax liabilities - has issued a list of essential goods for a full rebate of customs duty and import VAT exemption - a 4-month skills development levy tax holiday is also being implemented

Source: IMF

Therefore, most African countries need urgent foreign assistance to address deteriorating fiscal positions and increased public debt as they have little headroom to deploy fiscal policy. The World Bank Africa Pulse report[12] shows that the SSA region paid US$ 35.8 billion in total debt service in 2018. This accounts for 2.1 percent of regional GDP of which US$ 9.4 billion (0.7 percent of regional GDP) was paid to official bilateral creditors. Therefore, to create more fiscal space and inject liquidity into these respective economies, the Bank, in addition to providing support, also makes the case for the need for debt moratorium for these countries.

Support from international institutions

This section outlines the measures of support provided to SSA countries by key international financial institutions:

The World Bank

Of the US$ 160 billion that the World Bank will make available in financing support for over 65 countries across the globe[13], up to US$ 50 billion will be set aside over a 15-month horizon for African countries. This fund is expected to focus on saving lives, protecting livelihoods and securing the future. A Report from the Bank[14] provides a list of the assistance provided so far and measures still in the pipeline:

- 27 African countries as of 29 May were beneficiaries of the first set of emergency health projects amounting to USD 471 million. These projects focused on strengthening prevention and limiting local transmission, expanding healthcare facilities, real-time community-based tracing; scaling up communication and messaging; supporting vulnerable populations; and strengthening coordination and collaboration.
- 17 countries are to leverage redeployment of existing resources including USD 350 million through the Emergency components of existing projects.
- Over USD 150 million was mobilised through existing Regional Disease Surveillance Systems Enhancement Program (REDISSE) to support 13 countries.
- The Catastrophe Deferred Drawdowns (CAT DDOs) has been triggered, disbursing more than USD 160 million to support Seychelles, Cape Verde, Kenya, Malawi and other countries in preparing their health emergency response and to strengthen preparedness and long-term disaster and climate resilience.

The International Monetary Fund (IMF)

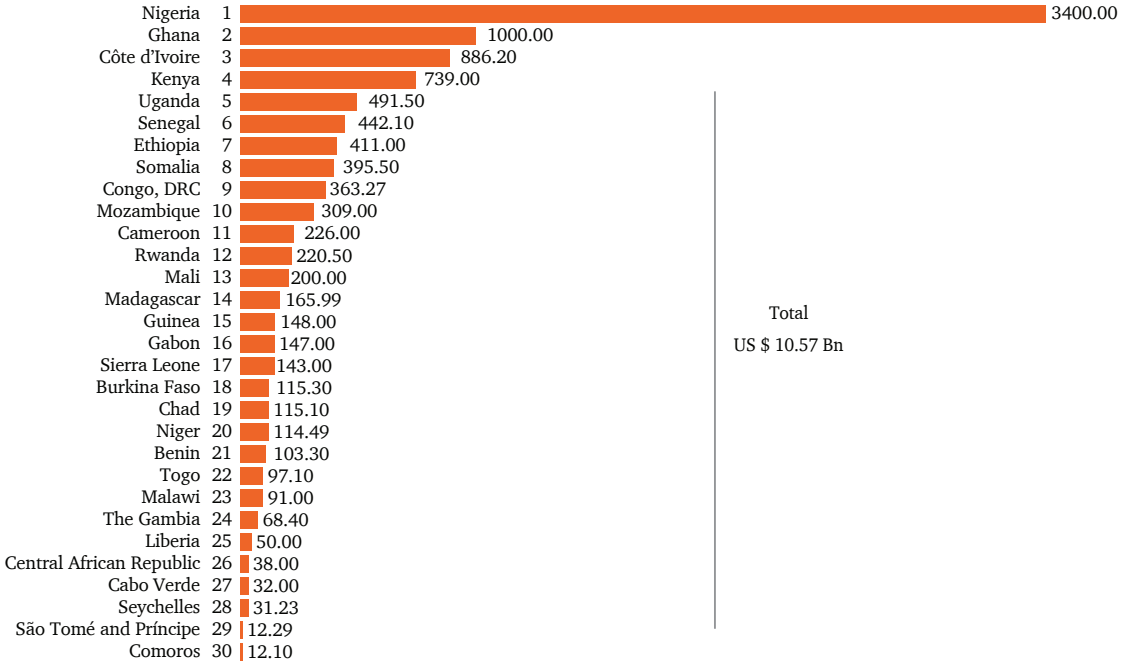
A Majority of Sub-Saharan African countries have applied for emergency financing from the IMF, which is critical in providing liquidity support to help them cover their balance of payments gaps and access much-needed resources to save lives and protect livelihoods. Due to the unprecedented call and demand for emergency financing of about US$ 100 billion, the IMF has doubled access to the two facilities—the Rapid Credit Facility (RCF) and Rapid Financing Instrument

Table 3: IMF-approved emergency financing support to SSA countries

Type of Emergency Financing	Region	# Countries
Rapid Credit Facility (RCF)	West Africa	12
	East and Central	9
	Southern	4
Rapid Financing Instrument (RFI)	West Africa	4
	East and Central	1
	Southern	1
Augmentation of ECF	West Africa	2
Extended Credit Facility and Extended Fund Facility	East and Central	1

Source: IMF

Figure 2: Sub-Saharan African countries that received financial assistance
(Emergency financing from the IMF between March 2020 and July 2020)



Source: IMF

(RFI). From as early as 25 March for Somalia and as recent as 19 June for Guinea, the IMF specifically approved US$ 10.5 billion as emergency financing for 31 SSA countries as shown in Table 4 According to the IMF, the RCF carries a zero percent interest rate with a five and a half years grace period and a final maturity of 10 years.[15]

The approval of extension of these emergency facilities is contingent on meeting certain conditions, primarily that the country's debt should be sustainable or on track to be sustainable. Secondly, each country has to demonstrate that it has urgent balance of payment needs and that it is pursuing appropriate policies to address the crisis. The IMF also considers countries that are in the process of managing their debt with high prospects of success.

The African Development Bank

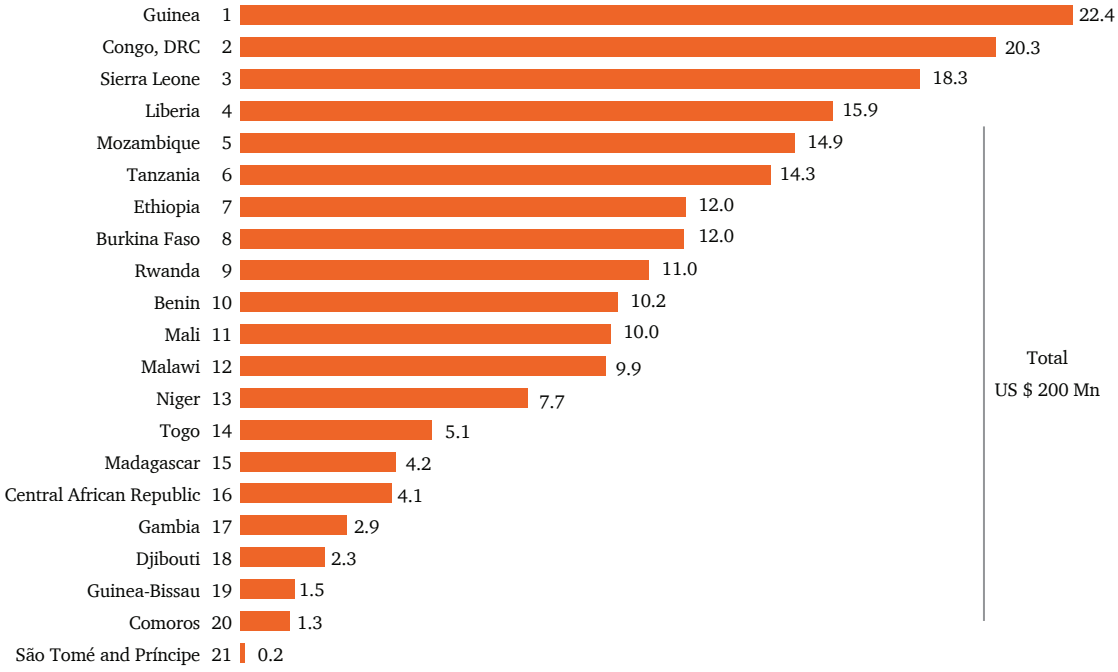
In June 2020, the African Development Bank (AfDB) prepared emergency packages for Africa's five geographical regions. The AfDAB forecasted that the continent's cumulative GDP will see a drop between US$22.1 billion and US$88.3 billion. Based on this analysis, the Bank's support was targeted towards strengthening African countries' health systems infrastructure in order to accurately identify cases and devise appropriate response measures. Second, they suggested that support will be directed to provide financial relief to cushion the vulnerable segments of the population and those who will suffer job losses. Table 5 lists the beneficiary countries by region and corresponding finances.

Support from Official Bilateral Creditors

The African Union formed a team of dignitaries to pursue the goal of securing USD 44 billion in debt relief, generalised suspension of interest payment for all African economies, and a stimulus package of USD 100-150 billion.[16] In April 2020, the G20 announced a debt moratorium for 76 low-income countries (of which 40 are SSA countries), and 22 SSA countries so far, including Nigeria and Angola, have applied for the initiative.[17]

The World Bank estimates that official bilateral loans account for 26.4 percent[18] of debt in Africa but the extent to which this moratorium is expected to reduce repayment costs is unclear. While this will provide some relief, it covers only concessional lending from

Figure 3: Sub-Saharan African countries that received debt service relief from the Catastrophe Containment and Relief Trust (CCRT) from the IMF between March and July 2020



Source: IMF

official creditors. Private sector debt, and debt routed through public sector enterprises—most important of which are BRI loans from the Chinese government—will not be covered. Estimates suggest that these account for around 20 percent of Africa's debt. Therefore, unless the debt moratorium is expanded to cover these loans, the impact on the fiscal positions of African nations is likely to be marginal.

The controversial Belt and Road Initiative (BRI) debt has also constrained support from other creditors, who are concerned that debt relief provided by them will be used to pay back Chinese loans. Recently, India and the US opposed an expansion of the IMF's Special Drawing Rights, which could have been used to support low-income nations. This had been requested by most African nations, including through an op-ed published jointly by European and African leaders in the *Financial Times*.[19] China, however, had not announced a comprehensive plan for BRI debt relief at the time of writing.

OIL AND COMMODITY PRICE SHOCKS AND COVID-19: GOVERNMENT RESPONSES

The UN Economic Commission for Africa (UNECA) has noted that African countries with commodity dependent economies that have faced a dual shock of collapse in oil/commodity prices and the challenge of dealing with the COVID-19 crisis, will suffer the largest disruption to trade and exchange rate stability. UNECA estimates the losses linked to the collapse of oil prices at USD 65 billion for the continent.[20] Similarly, the World Bank Commodities Price Data shows that non-oil commodity prices have also declined since January, with natural gas and metal prices dropping by 30 percent and 4 percent, respectively.[21]

A major proportion of Africa's oil exporters are North African such as Libya and Algeria, but SSA oil exporters - including Angola, Cameroon, Chad, Congo, Equatorial Guinea, Gabon and Nigeria - will also be among the hardest-hit. For two of the largest Sub-Saharan oil exporters, Nigeria and Angola, reports[22] show that oil represents more than 90 percent of export revenues

Table 4: Africa Development Bank COVID-19 emergency packages

Region	Country	Amount
West Africa	Nigeria	$288.5 million
	Senegal	88 million euros
	Cote D'Voire	75 million euros
	Cape Verde	30 million euros
	ECOWAS	$22 million
East Africa	Kenya	188 milion euros
Southern Africa	Mauritius	188 million euros
	Zimbabwe	13.7 million USD
Central Africa	Cameroon	13.7 million USD

Source: African Development Bank

and more than 70 percent of their respective national budgets. Both Nigeria and Angola need oil prices to be around USD 60 per barrel to balance their budgets.

Nigeria has consistently relied on crude oil exports as its primary source of revenue. Crude oil exports, which generate 76 percent of the country's foreign exchange, will be considerably reduced given the expected oil price to be below USD 30 per barrel (60-percent drop). It is also estimated that export revenues will be reduced by USD 806 billion (2.2& of GDP) over a period of.[23] This shows the risk and vulnerabilities that the country faces due to the lack of concrete efforts to diversify its exports and reduce imports of goods that can be made locally, despite its potential. Furthermore, foreign exchange reserves are expected to fall, which will put pressure on the Nigerian currency. Notably, Nigeria's stock markets reflect the economy's dampened sentiment.

Both Nigeria and Angola have therefore found themselves constrained in their ability to combat the COVID-19 crisis. The Nigerian government had to reduce budgeted expenditures, which were based on oil price benchmarks of USD 57/bbl. Similarly, the Angolan Minister of Finance noted the need to review the state budget downwards, with a reference to the new estimate of oil prices deemed to remain below USD 35 per barrel against earlier targets of USD 55 per barrel.

This crisis is another wake-up call for a majority of these countries, regarding the importance of investing in export diversification and the need for a conducive environment to attract foreign direct investment. Tied to this is the need to invest in value addition and productivity, especially in agribusiness.

Conclusion

African nations have mounted as strong a response as possible to the COVID-19 pandemic and its economic fallout. However, they have been constrained by weak fiscal positions, poor healthcare capacity, and the oil and commodity price shocks which further reduced fiscal space. Their reliance on international trade, finance and tourism has led to a situation where the economic impact has been more severe than that on healthcare.

To emerge stronger, SSA countries should reduce their reliance on commodities and remittances by diversifying their economies to strengthen the forex market. They should also work on trade relationships and upgrade their positions in global value chains, while also strengthening local manufacturing bases. To invest in the above, better debt management, in particular, is crucial to reduce reliance on foreign currency denominated debt and strengthen the fiscal positions of SSA countries. Increased investment in public health and infrastructure is now imperative, more than ever, to curb the current and any future health pandemics. This requires a tremendous effort to recover strong and build much more resilient and robust economies for the future.

Endnotes

(1) Andrew Minzer, "African countries receive IMF support for Covid-19," *African Law and Business,* April 14, 2020, https://iclg.com/alb/11307-african-countries-receive-imf-support-for-covid-19.

(2) Alois Vinga ,"Zimbabwe: RBZ Reintroduces Multi-Currency System to Ease COVID-19 Pressures," *allAfrica,* March 26, 2020, https://allafrica.com/stories/202003270543.html.

(3) "COVID-19: WAEMU suspends temporarily Convergence Pact," *The North Africa Post,* April 29, 2020, https://northafricapost.com/40469-covid-19-waemu-suspends-temporarily-convergence-pact.html.

(4) "Policy Responses to COVID-19," *International Monetary Fund,* accessed July 7th, 2020, https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19.

(5) Ibid.

(6) Ibid.

(7) "Kenyan Government introduces tax measures in response to COVID-19,"*EY Global,* March 26, 2020, https://www.ey.com/en_gl/tax-alerts/kenyan-government-introduces-tax-measures-in-response-to-covid-19.

(8) "COVID-19: Payment Relief and Other Government and Private Sector Interventions for SMEs", *SME South Africa*, April 10, 2020, https://smesouthafrica.co.za/covid-19-survival-guide/.

(9) Kate Hairsine, "Covid-19: Relief promises for Africa's small businesses", *Deutsche Welle*, April 04, 2020, https://www.dw.com/en/covid-19-relief-promises-for-africas-small-businesses/a-52995876.

(10) The Corona Virus Sock: A story of Another Global Crisis Foretold and What Policy makers should Do About It, Geneva: *UNCTAD*, 2020, https://unctad.org/en/PublicationsLibrary/gds_tdr2019_update_coronavirus.pdf.

(11) Parliament of Kenya, "The COVID 19 global pandemic: Impact to the economy and policy options," *Special Bulletin No. 1/2020, Nairobi: Parliamentary Budget Office (PBO),* 2020 http://parliament.go.ke/sites/default/files/2020-04/Special%20Bulletin%20Covid%2019%202.4.2020%20final.pdf.

(12) Albert G. Zeufack, Cesar Calderon, Gerard Kambou, Calvin Z Djiofack,Megumi Kubota, Vijdan Korman, Catalina Cantu Canales, *Africa's Pulse* (Washington DC.: International Bank for Reconstruction and Development, 2020) Doi: 10.1596/978-1-4648-1568-3.

(13) "The World Bank Group Moves Quickly to Help Countries Respond to COVID-19", *The World Bank News,* April 10 ,2020, https://www.worldbank.org/en/news/feature/2020/04/02/the-world-bank-group-moves-quickly-to-help-countries-respond-to-covid-19.

(14) "World Bank's Response to COVID-19 (Coronavirus) in Africa", *The World Bank News*, June 2, 2020, https://www.worldbank.org/en/news/factsheet/2020/06/02/world-banks-response-to-covid-19-coronavirus-in-africa

(15) Abebe Selassie, "IMF Emergency Assistance to Africa on COVID-19: Finance, Debt-Relief and Policy Reforms," *The World Bank,* 2020, MPEG Video, https://www.worldbank.org/en/events/2020/06/02/imf-emergency-assistance-to-africa-on-covid-19-finance-debt-relief-and-policy-reforms.

(16) “Communiqué - African Ministers of Finance - Immediate call for $100 Billion support and agreement the crisis is deep and recovery will take much longer.” *UNECA Media Centre,* March 31, 2020, https://www.uneca.org/stories/communiqu%C3%A9-african-ministers-finance-immediate-call-100-billion-support-and-agreement-crisis.

(17) “Debt Service Suspension and COVID-19,” *The World Bank News*, May 11, 2020, https://www.worldbank.org/en/news/factsheet/2020/05/11/debt-relief-and-covid-19-coronavirus.

(18) “Assessing the Economic Impact of COVID-19 and Policy Responses in Sub-Saharan Africa”, *The World Bank News,* April 2020, https://openknowledge.worldbank.org/bitstream/handle/10986/33541/9781464815683.pdf?sequence=18&isAllowed=y.

(19) “US holds off on IMF plan to boost emerging economies’ finances”, *The Financial Times,* April 15, 2020, https://www.ft.com/content/9cb75566-bfd2-4f25-81f7-55780ebdaa3d.

(20) “ECA estimates billions worth of losses in Africa due to COVID-19 impact”, *UNCEA*, March 13, 2020, https://www.uneca.org/stories/eca-estimates-billions-worth-losses-africa-due-covid-19-impact.

(21) “Commodity Market Outlook: Implications of COVID-19 for Commodities,” *International Bank for Reconstruction and Development,* 2020, https://openknowledge.worldbank.org/bitstream/handle/10986/33624/CMO-April-2020.pdf.

(22) Christina Golubski and Anna Schaeffer, “Africa in the news: New EU-Africa strategy, impacts of the oil price crash, and spread of coronavirus,” *Brookings*, May 14, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/03/14/africa-in-the-news-new-eu-africa-strategy-impacts-of-the-oil-price-crash-and-spread-of-coronavirus/.

(23) Camron Aref-Adib and Sarah Martin ,“Economic impacts of and policy responses to the coronavirus pandemic: early evidence from Nigeria,” *Overseas Development Institute,* April 7, 2020, https://set.odi.org/wp-content/uploads/2020/04/Economic-impacts-of-and-policy-responses-to-the-coronavirus-pandemic-early-evidence-from-Nigeria-2.pdf.

The Politics of the Pandemic: Cultivating a Pan-African Response

Meghna Chadha

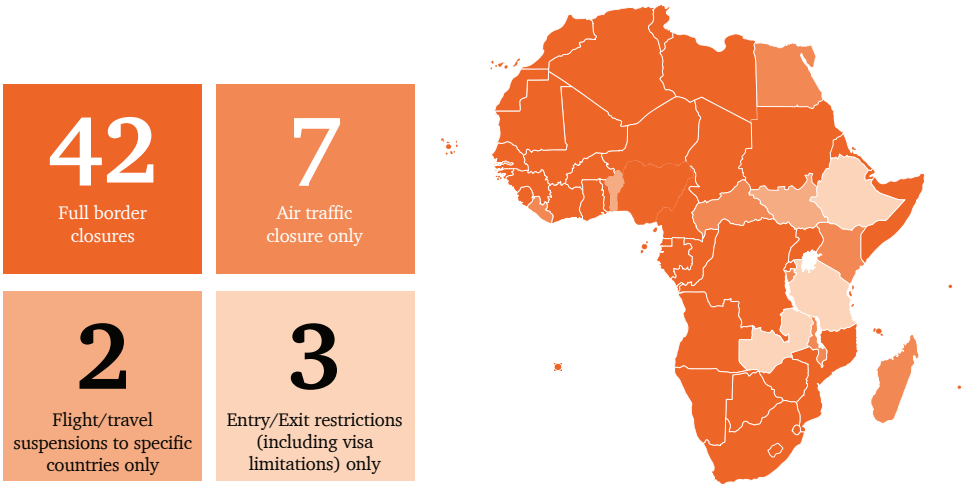
As the COVID-19 pandemic sweeps across Africa, leaders from the continent have had to take swift and decisive action to curtail its spread. Decision-making has been a complex and strategic affair to ensure that help reaches the weakest and most vulnerable sections of society, there are minimal disruptions to daily life, and economies are safeguarded as best as possible. The politics of the pandemic has played out interestingly, with manifold and diverse institutional responses emerging from each African nation. Drawing on lessons learned from the HIV/AIDS and Ebola epidemics in the mid-1900s and the early 2000s, the first four months of the COVID-19 pandemic in Africa have been approached with emboldened methods of political crisis-response to tackle the new challenges it poses.

This chapter specifies the measures that governments and institutions across Africa have taken to combat COVID-19. Further discussion probes into factors that may have an impact on the effectiveness of the response, including (1) the nature and style/legitimacy of the political regimes in place, (2) citizens' trust in their leaders, (3) perception of corruption, and (4) the spread of misinformation. An assessment of pan-African partnerships, assistance from international bodies, and multilateral collaboration in response to the pandemic has also been made. Lastly, the impact of the political response to the pandemic on peacekeeping and humanitarian efforts across Africa has also been considered.

COVID-19 mitigation strategy

African countries, like most others worldwide, have followed the guidelines issued by the World Health Organization to tackle the COVID-19 pandemic.[1] Policies, systems and procedures have been put in place; testing protocols have been established; contact tracing has been undertaken; lockdowns and curfews have been imposed where necessary; and people are being educated on the importance of social distancing, wearing marks and maintaining hygiene.

Figure 1: Travel restrictions (as of July 14, 2020)



Data Source: Adapted from Africa Centre for Disease Control and Prevention

The Africa Centre for Disease Control and Prevention (Africa CDC) issues periodic updates on the COVID-19 situation across the continent, and advisories for governments and the public.[2]

Several countries have imposed travel restrictions to curb the spread of the virus (see Figure 1). The travel restrictions range from a full closure of borders to partial shutdowns, suspension of air traffic and visas, and mandatory self-quarantine for visitors entering countries.

Across the continent, restrictions on movement have been put into place, including night-time curfews and partial and country-wide lockdowns (see Table 1). Although lockdowns have been effective in curtailing the spread of the pandemic and are now slowly being eased continent-wide, the significant challenges posed by these strict measures must be noted.

Maintaining social distancing is not possible in slums and other areas where the population density is high. Poor infrastructure makes it difficult to access remote areas, and the lack of education and media in many parts of Africa makes disseminating information a challenge. Strict lockdown measures have had a severe adverse impact on the economy.[3] Retrenchments and the extended closure of many businesses leading to increased unemployment rates, and pay cuts and furloughs have dramatically reduced people's incomes. Remaining at home during extended lockdown periods has taken a toll on people's mental health.[4] Domestic violence has been on the rise, gender-based violence has increased, and crime rates have risen due to unemployment.[5] While people understand the necessity of these measures, social tensions have risen,[6] and an increasing number of people are now critical of their governments for their inability to control the pandemic.

Other physical distancing measures (see Table 2) include school closures, limitations on visitation hours at prisons and hospitals, and bans or limitations on social gatherings.

The multi-pronged approach by governmental authorities to curb the spread of the COVID-19 pandemic has brought to the forefront several gaps in the African countries' political response. It is crucial to consider the factors that influence the effectiveness of the governments' crisis responses and how African countries have fared in their fight against the COVID-19 pandemic.

Authoritarian regimes vs. democracies

The Economist Intelligence Unit's 2019 Democracy Index, which provides an assessment of the state of democracy in 167 countries worldwide, has been used to categorise and evaluate the types of political regimes in African countries.[7] Covering 50 countries across North and Sub-Saharan Africa,[8] the index reports that one-half (50 percent) of all African people live under authoritarian rule, and one-third (34 percent) are governed under a hybrid regime.[9] The remaining 16 percent, or eight countries, live under some form of democratic rule, with only one country—Mauritius—classifying as a full democracy (see Figure 3).[10]
Analyses of how countries have fared during the pandemic have shown that there appears to be little correlation between the efficacy of a country's

Table 1: Restrictions on movement

Measures	Number of Countries That Have Implemented Them (as of 12 July 2020)
Night-time curfews	34
Partial lockdown	21
National lockdown	12
Easing the mitigation measures	31

Data Source: Africa Centre for Disease Control and Prevention

mitigation measures and the nature of its political regime.[11] Global trends have shown that democracies and autocracies have been amongst the best and worst performers.[12] The top- and bottom-ranked African countries (by the number of cases) are categorised under various political regimes, indicating that no regime type, in particular, has fared better when responding to the pandemic (see Table 3).

Factors other than regime type are better metrics to assess the success of the countries' pandemic responses.

Trust in leaders and institutions

In their efforts to mitigate global health crises over the past century, countries around the world have seen that without their citizens' trust, no governmental or institutional response is effective.[13,14,15,16] Compliance, not obedience, is key, and people's willingness to comply is strengthened by leaders that instill hope and confidence, and are transparent and forthright in their approaches.

The trust deficit across Africa is worrying. In a survey of 36 African countries conducted by Afrobarometer, more than half of the respondents said they trusted informal institutions more than the state's executive agencies, with 72 percent placing their trust in religious leaders, 61 percent in traditional leaders, and 54 percent on average in the country.[17] Compared to the legislative branch and electoral institutions, respondents expressed finding certain executive agencies, like their nation's army and presidency, more trustworthy.[18]

Perceptions of Corruption and Bribery, and the Politicisation of the Pandemic

In countries where the perception of corruption is high, citizens often believe that the funds being secured by their governments for supposed COVID-19 relief are being funneled into the pockets of corrupt politicians[19,20]. The lack of transparency breeds discontentment[21] and causes people to engage in dishonesty themselves.

The Global Transparency Barometer Africa, which presents comprehensive public opinion data on corruption and bribery, reports that more than half of the respondents (55 percent) believe that corruption in their country had increased in the one year before the survey being conducted.[22] Bribery is rampant, with over a quarter of the people surveyed (equating approximately 130 million citizens in the 35 surveyed countries) reporting having paid a bribe to access public services such as healthcare and education.[23] There is a strong belief (among nearly 30 percent of respondents) that police officers, government officials and parliamentarians are corrupt.[24] In Zimbabwe, for instance, health minister Obadiah Moyo faces corruption charges and was arrested over a scandal concerning the procurement of COVID-19 tests and other equipment.[25]

Citizens' lack of trust corresponds directly to a refusal to comply with government directives. Some political leaders are using the COVID-19 pandemic as an opportunity to solidify and strengthen their authoritarian forms of governance, imposing harsher restrictions that may become permanent.[26] In lacking moral authority and the capacity to combat crises

Table 2: Physical distancing measures

Measures	Number of Countries That Have Implemented Them (as of 12 July 2020)
Country-wide closure of educational institutions	36
Limit on public gatherings	54
Limit on prison and hospital visits	20
Public use of face masks	41

Data Source: Africa Centre for Disease Control and Prevention

effectively, political leaders may resort to coercion and, in extreme cases, violent means to ensure citizens do not disobey their guidelines and break the law. Police brutality has only intensified during the pandemic. Defying lockdown orders and social distancing rules has been met with teargas-fueled police crackdowns in Kenya,[27] shootings in Rwanda,[28] and arrests of innocent people on the grounds of living in an LGBTQ+ shelter in Uganda, where gay sex is still criminal.[29]

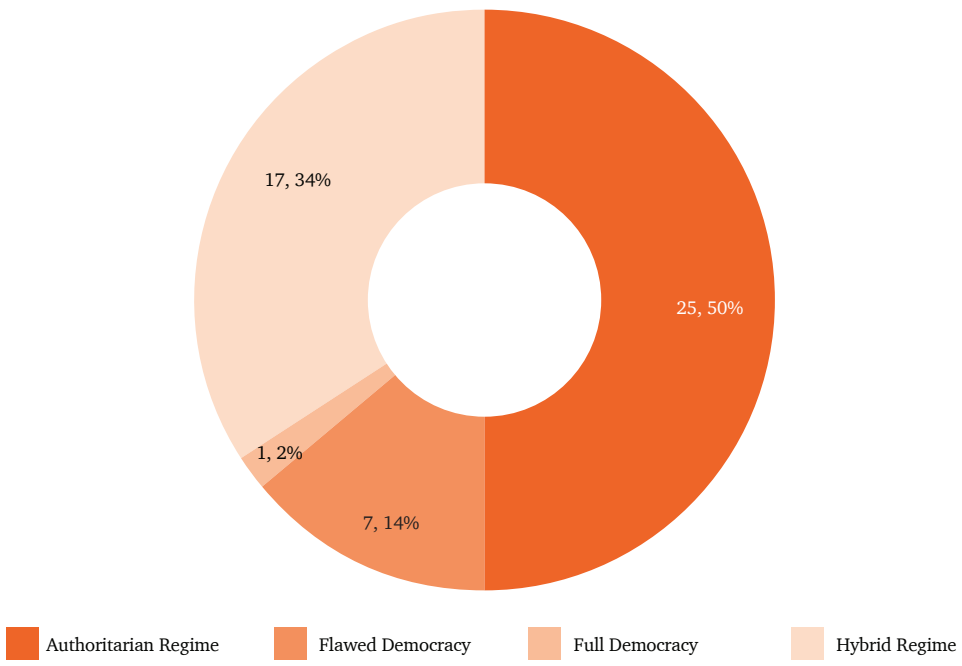
As another means of accumulating political power, politicians may use the ongoing global health crisis as a means of manipulating elections and the electoral process. More than 20 African countries are scheduled to go to the polls in 2020, to elect presidents, parliamentarians and municipal officials.[30] Several countries, such as Togo, Guinea, Mali, Burundi and Malawi, held their elections between February and June.[31] With the number of COVID-19 cases still increasing, countries that were to go to the polls in the second half of the year need to decide on whether to hold the elections or postpone them. Some countries, such as Ethiopia and Chad, have already chosen postponement.[32] Countries that decide to go ahead with the polls will need to take into consideration social distancing, sanitation and other safety measures that are necessary to protect the health of voters and election officials.

The postponement of elections should be done for the right reasons—saving lives and managing the socio-economic impact of the pandemic—and not for the parties in power to extend their term in office. Some countries that have postponed their elections, such as Tanzania,[33] Egypt[34] and Nigeria,[35] have markedly corrupt leaders, and their constituents are prone to gerrymandering and otherwise being bribed and browbeaten into supporting unscrupulous leaders.

Fostering Collaboration: A pan-African approach

In Africa, as in the rest of the world, the COVID-19 pandemic has exposed flagrant disparities and the critical need for political intervention; expansion in state capacity; for leaders to exhibit increased accountability, transparency and trustworthiness; and for all actors involved to do their part. Ensuring that the most at-risk groups—those with pre-existing health conditions, the elderly, children, women, the poor, and Africa's 25.2 million refugees, asylum-seekers and internally displaced people[36]—receive timely and equitable aid is the primary duty of the continent's leaders.

Figure 3: Type of political regime
(Number of countries, %)



Data Source: Economist Intelligence Unit's 2019 Democracy Index

In late March, United Nations Secretary-General António Guterres announced a US$2 billion global humanitarian package for COVID-19. Most of the priority countries that this package would benefit were in Africa.[37] In May, Guterres expanded the plan to US$6.7 billion, and encouraged African nations to consider humanitarian workers as essential.[38] Bience Gawanas, Under-Secretary-General of the UN's Office of the Special Adviser on Africa, also championed the message of bolstering the African response to the pandemic by forging strong international partnerships, while keeping local needs at the forefront of political priorities.[39]

While there is no one-size-fits-all response to the pandemic, the most effective route to ensuring a successful pandemic response is for leaders to work in conjunction with their people.[40] With increased state capacity, trust and transparency, collective action and community mobilisation, Africa can emerge victorious in its battle against the pandemic. While the socio-political ramifications of the COVID-19 pandemic will be manifold and long term, in sharing experiences, insights and strategies, pan-African partnerships can grow stronger, ensuring that together, the continent will be able to lay out a blueprint for a 'new normal' with higher levels of preparedness, revamped economies and revitalised international partnerships.

Table 3: Top 5 and Bottom 5 Performing Countries in the African Union by Number of Cases and Type of Political Regime

Country	Rank	Number of Reported Cases (as of July 7, 2020)	Number of Reported Deaths (as of July 7, 2020)	Number of Reported Recoveries (as of July 7, 2020)	Type of Political Regime
The Gambia	1	61	3	27	Hybrid regime
Seychelles	2	80	0	11	No data
Lesotho	3	91	0	11	Flawed democracy
Burundi	4	191	1	128	Authoritarian regime
Eritrea	5	215	0	56	Authoritarian regime
			... ...		
Algeria	44	15941	952	11492	Hybrid regime
Ghana	45	21077	129	16070	Flawed democracy
Nigeria	46	29286	654	968	Hybrid regime
Egypt	47	76222	3422	21238	Authoritarian regime
South Africa	48	205721	3310	97848	Flawed democracy

Data Sources: Africa Centre for Disease Control and Prevention; Economist Intelligence Unit's 2019 Democracy Index

Endnotes

(1) "Technical Guidance Publications," *World Health Organization*, 2020, https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance-publications.

(2) "Outbreak Brief 25: COVID-19 Pandemic – 07 July 2020," *Africa Centre for Disease Control and Prevention,* July 10, 2020, https://africacdc.org/download/outbreak-brief-25-covid-19-pandemic-07-july-2020/.

(3) "As COVID-19 Cases Rise, African Countries Grapple with Safely Easing Lockdowns | Africa Renewal," *United Nations | Africa Renewal,* 2020, https://www.un.org/africarenewal/magazine/june-2020/coronavirus/covid-19-africa-cases-rise-along-economic-hardship-countries-grapple-safely-easing.

(4) "Coronavirus in Africa: Tips to Improve Your Mental Health during Lockdown," BBC News, April 24, 2020, https://www.bbc.com/news/av/world-africa-52410188/coronavirus-in-africa-tips-to-improve-your-mental-health-during-lockdown.

(5) Chuku Chuku, Adamon Mukasa, and Yasin Yenice, "Putting Women and Girls' Safety First in Africa's Response to COVID-19," *Brookings*, May 8, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/05/08/putting-women-and-girls-safety-first-in-africas-response-to-covid-19/.

(6) Edwin Ikhuoria, "Tension from Lockdown Response to COVID-19 in Africa," *ONE*, April 8, 2020, https://www.one.org/international/blog/tension-lockdown-covid-africa/.

(7) "Democracy Index 2019: A year of democratic setbacks and popular protest," *Economist Intelligence Unit,* January 2020, https://www.eiu.com/public/topical_report.aspx?campaignid=democracyindex2019.

(8) Note: Four countries – Sao Tome and Principe, Seychelles, South Sudan and Somalia – were not included in the EIU's analysis.

(9) Economist Intelligence Unit, "Democracy Index 2019".

(10) Ibid.

(11) Rachel Kleinfeld, "Do Authoritarian or Democratic Countries Handle Pandemics Better?," *Carnegie Endowment for International Peace,* March 31, 2020, https://carnegieendowment.org/2020/03/31/do-authoritarian-or-democratic-countries-handle-pandemics-better-pub-81404.

(12) "Countries Where COVID-19 Has Spread," *Worldometer*, 2020, https://www.worldometers.info/coronavirus/countries-where-coronavirus-has-spread/.

(13) Robert A. Blair, Benhamin S. Morse, and Lily L. Tsai, "Public Health and Public Trust: Survey Evidence from the Ebola Virus Disease Epidemic in Liberia," *Social Science and Medicine*, Pergamon, November 14, 2016.

(14) Kathryn Whetten et al., "Exploring Lack of Trust in Care Providers and the Government as a Barrier to Health Service Use," *American Journal of Public Health* 96, no. 4 (2006): pp. 716-721, https://doi.org/10.2105/ajph.2005.063255.

(15) Danielle Resnick, "Trust in Science and in Government Plays a Crucial Role in COVID-19 Response," *IFPRI*, June 10, 2020, https://www.ifpri.org/blog/trust-science-and-government-plays-crucial-role-covid-19-response.

(16) Heidi J. Larson, "Public Health Response to Influenza A(H1N1) as an Opportunity to Build Public Trust," *Jama* 303, no. 3 (2010): p. 271, https://doi.org/10.1001/jama.2009.2023.

(17) "Trustworthy institutions play vital role in Africa's development, new Afrobarometer findings suggest," *Afrobarometer*, August 23, 2016), http://afrobarometer.org/press/trustworthy-institutions-play-vital-role-africas-development-new-afrobarometer-findings.

(18) Ibid.

(19) "Coronavirus in Kenya: Fearing 'Money Heists' amid Pandemic," *BBC*, May 7, 2020, https://www.bbc.com/news/world-africa-52540076.

(20) "Cameroon: Investigate, Distribute Health Fund," *Human Rights Watch,* July 15, 2020, https://www.hrw.org/news/2020/06/12/cameroon-investigate-distribute-health-fund.

(21) "IMF: Make COVID-19 Funds Transparent, Accountable - Press," *Transparency International,* April 8, 2020, https://www.transparency.org/en/press/imf-make-covid-19-funds-transparent-accountable.

(22) Coralie Pring and Jon Vrushi, "Global Corruption Barometer Africa 2019: Citizen's Views and Experiences of Corruption," *Transparency International,* 2019, https://images.transparencycdn.org/images/Full-Report-Global-Corruption-Barometer-Africa-2019.pdf

(23) Ibid.

(24) Ibid.

(25) "Zimbabwe's Health Minister Granted Bail in $60m Corruption Case," *Al Jazeera,* June 20, 2020, https://www.aljazeera.com/news/2020/06/zimbabwe-health-minister-granted-bail-60m-corruption-case-200620190428039.html.

(26) "Global Response to COVID-19 in Africa Must Protect Lives, Livelihoods, and Freedoms," *Development Matters*, July 1, 2020, https://oecd-development-matters.org/2020/04/08/global-response-to-covid-19-in-africa-must-protect-lives-livelihoods-and-freedoms/.

(27) Rael Ombuor and Max Bearak, "Kenya's Coronavirus Curfew Begins with Wave of Police Crackdowns," *The Washington Post,* March 28, 2020, https://www.washingtonpost.com/world/africa/kenyas-coronavirus-curfew-begins-with-wave-of-police-crackdowns/2020/03/28/358327aa-7064-11ea-a156-0048b62cdb51_story.html.

(28) "Some African Governments Are Enforcing Lockdowns Brutally," *The Economist,* April 4, 2020, https://www.economist.com/middle-east-and-africa/2020/04/04/some-african-governments-are-enforcing-lockdowns-brutally.

(29) Ibid.

(30) "To Vote or Postpone? Elections in Africa in the Time of COVID-19 | Africa Renewal," *United Nations | Africa Renewal,* July 13, 2020, https://www.un.org/africarenewal/magazine/july-2020/vote-or-postpone-elections-africa-time-covid-19.

(31) Ibid.

(32) Ibid.

(33) Athuman Mtulya, "Five Things Tanzania's President 'Bulldozer' Magufuli Has Banned," *BBC News*, March 5, 2019, https://www.bbc.com/news/world-africa-47334545.

(34) Victoria Gatenby, "Egypt's President El-Sisi Denies Corruption Allegations," *Al Jazeera*, September 15, 2019, https://www.aljazeera.com/news/2019/09/egypt-corruption-president-el-sisi-denies-wrongdoing-190915072848667.html.

(35) Ruth Maclean and Eromo Egbejule, "Nigeria Election: 'Mr Honesty' Tainted by Failure to Tackle Corruption," *The Guardian*, February 11, 2019, https://www.theguardian.com/world/2019/feb/11/nigeria-election-mr-honesty-muhammadu-buhari-tainted-by-failure-to-tackle-corruption.

(36) "Policy Brief: Impact of COVID-19 in Africa," *United Nations India,* May 2020, https://in.one.un.org/wp-content/uploads/2020/06/sg_policy_brief_on_covid-19_impact_on_africa_may_2020.pdf

(37) Ibid.

(38) Ibid.

(39) "OSAA, Africa, UN and Africa, United Nations and Africa, Special Adviser, UN, United Nations, NEPAD, African Union," *United Nations OSAA*, 2020, https://www.un.org/en/africa/osaa/statements/statement1.shtml.

(40) "COVID-19 in Africa: 'Know Your Epidemic, Act on Its Politics.'," *African Arguments,* April 1, 2020, https://africanarguments.org/2020/03/31/covid-19-in-africa-know-your-epidemic-act-on-its-politics/.

How Africa Leveraged Technology to Combat Covid-19

Sadhika Sasiprabhu

The African continent was still grappling with the residual effects of successive disease outbreaks like cholera, dengue, Lassa fever, and Ebola, when the COVID-19 pandemic struck in early 2020. These outbreaks have occurred concurrently with various humanitarian and political crises that have weakened the economy and debilitated war-torn regions in the continent. The COVID-19 pandemic now further threatens lives and livelihoods in African economies that have fragile healthcare systems and sizable informal sectors, to begin with. The World Health Organization (WHO) projects some 83,000-190,000 COVID-19-related deaths, and between 29 million to 44 million infections within the first year of the pandemic, if containment measures are not effectively implemented.[1] As the continent is set to lose millions in dollars and, potentially, human lives, this chapter will discuss the technological responses implemented to mitigate the effects of the COVID-19 pandemic.

Almost 60 percent of Africans are under the age of 25.[2] They are a precious resource for the continent, playing a pivotal role in harnessing digital technologies to support governments and health institutions. The use of technology is helping reduce the strain on hospitals and sparking innovation throughout the continent. Understanding the unique context and concerns of the continent is key to finding sustainable solutions to health emergencies. An increase in 'Made in Africa' technology, designed by African minds for African problems, is helping the continent in its battle against COVID-19.[3]

Contact tracing and diagnostics

The host of previous health crises in Africa have informed and allowed countries to mount an effective response to the COVID-19 pandemic. The continent recognises that rapid diagnostics, increased disease surveillance, and thorough contact tracing are essential to combat the spread of the virus. Creative localised technology is helping bridge the gap between the immense population and understaffed governments.

In Kenya, the app Msafari allows all passengers on any shared minibus, ('matatu'), to register to the specific vehicle. If any passenger subsequently tests positive for the virus, all co-passengers on that vehicle can be easily traced and informed.[4] In rural South Africa, where smartphone penetration is low, Samsung has donated 1,500 smartphones to the worst affected areas, aiding in the identification and tracking of infections. The tracker phones will be connected for free using Telkom's FreeMe packages for the next six months.[5]

In the absence of traditional contact-tracing methods, countries are tailoring existing technology to suit their needs. To quickly identify and isolate new disease flare-ups, South Africa is using anti-poaching technology.[6] Originally used by combining multiple streams of data to identify rhinoceros poaching hotspots in national parks, it is now helping screen and track down infected persons. The Kenyan app, Ushahidi, was developed by cyber activists in 2008 to pinpoint acts of violence on an interactive map after a highly contentious election. This was the first open-source software in Africa and the first attempt at a crisis-mapping application globally.[7] Ushahidi has since been adopted by Italy, Spain and Japan to identify and deliver supplies to isolated and elderly people in precarious situations during the COVID-19 pandemic. This is a testament to the technological capabilities of African innovators, scientists, engineers and activists.

To speed-up and better streamline diagnosis, many countries have developed self-diagnostic tools. Nigeria's COVID-19 Triage Tool is freely available and helps users self-assess their coronavirus risk based on their symptoms and their exposure history. It has helped reduce the numbers of unnecessary calls to emergency helplines and has been used by more than 380,000 people globally since March 19.[8] Algeria's application offers remote medical advice or redirects people to a nearby healthcare facility depending on their answers.[9] The use and implementation of these technologies is, however, disparate, as some countries lack the required digital identification system to trace the spread of the virus. With just mass SMS at their disposal, contact-tracing in Guinea is currently an arduous task.[10]

Education

African countries are launching a series of e-learning opportunities to minimise the impact of lost school days on children's education. These measures are tailored to the needs of a particular country but also reflect the disparities in the existing digital infrastructural frameworks.

The Tunisian Arab League Educational, Cultural and Scientific Organization (ALECSO) has launched an e-learning initiative with freely accessible educational resources, applicable and beneficial to 10 North African and 12 Arab countries.[11] Egypt has successfully deployed an online knowledge hub, allowing millions of students to take exams simultaneously.[12] For countries like Sierra Leone, Liberia and South Sudan that do not have the required capacity and digital penetration to scale-up online learning, students continue to learn via radio and SMS.[13] In addition to having a free television channel for students, Tanzanian youth are supported by free video tutorials on entrepreneurial skills, like putting together business plans and the importance of networking. Reputed resource partners such as Khan Academy and Wikipedia help ensure the quality of the information delivered during these times.[14]

Many of these solutions have been utilised in the recent past, during the Ebola outbreak for instance, making them easier to adopt during the current COVID-19 pandemic. This previous experience has provided African students an almost seamless continuation of school courses, unlike the prolonged disruption faced by students in inexperienced countries across the globe.

Supply of essential services

Social distancing, virtual workplaces, and lockdowns are the primary means of curtailing the contagion and keeping economies afloat. It comes at a tremendous price for Africa, however. High levels of poverty, high population density, informal urban settlements and congested cities create the perfect breeding ground for COVID-19 to spread like wildfire. Poor hygiene practices and pre-existing health conditions add to the risk.

Technological innovations are helping support those most vulnerable to mobility restrictions and economic hardships. These digital solutions are enabling people to meet basic livelihood needs like access to food, services and creating safer working conditions for essential workers. The Ugandan app Market Garden, for example, allows vendors to safely sell fruits and vegetables to customers while following social distancing restrictions.[15] Developed by the Institute for Social Transformation, it reduces crowds in markets and allows women to sell their produce through the app from their homes, and these are then delivered to customers by motorcycle taxis. Zimbabwe's Fresh-in-a-box app delivers farm-fresh produce directly to homes while maintaining social distancing protocols.[16]

The Egyptian broadband network is deploying telehealth solutions to 500 primary care units and facilitating buying and selling via e-commerce platforms such as Jumia, Otolob and Olex.[17] In Kibera, the largest slum settlement in Kenya, handwashing stations, community toilets and clean water kiosks have been established at all access points. Over half of the population, i.e 139,000 people, have subscribed to the WhatsApp platform that provides information regarding the locations of the above and guidelines to protect the community.[18] Safaru credit is using a blockchain-backed system of community credit-vouchers to help people purchase food and other essentials from their local shops. To enhance efficiency in the fight against COVID-19, Rwanda is using drones to deliver essential food, supplies and medicines to remote and rural areas.[19]

This 'all hands on deck' approach to technological innovation in Africa is helping sidestep service inefficiencies in infrastructure-deficient and capital-constrained nations.

E-Money

The same violent uprising that led to the creation of Ushahidi forced people to give electronic payments a chance. Scared to venture outside, ordinary people began transferring money via their mobile phones through an app called M-Pesa. Today M-Pesa is the most renowned mobile money payment service globally and handles transfers worth US$11bn annually.[20] This exemplifies the ability of African innovators to leverage their creativity in times of crises to create sustainable solutions and globally reputed ideas.

Cashless payments serve more than one purpose, especially during COVID-19, allowing for the continuation of socially-distanced financial transactions. The luxury of online payments has largely been restricted to the digitally literate who have bank accounts. Mobile payments disseminate this idea by bringing financial empowerment to the unbanked, making it possible for villagers in remote areas to continue their usual buying and selling

without risk of disease transmission. Across Kenya, 1,200 transfers were carried out every second in 2018.[21] Kenyan President Uhuru Muigai Kenyatta declared electronic payments to be of national priority in the fight against COVID-10.[22] To further encourage a shift to e-payments for daily activities, Kenyan network providers, Airtel and Safaricom have waived all charges on e-payments and increased transaction limits. A similar call for increased mobile transactions has reverberated in many African nations. Ghana's central bank directed mobile money providers to waive fees on transactions of GH¢100 and above.[23] Paga, a Nigerian venture, has made adjustments to allow merchants to accept e-payments without extra charges to slow the spread of coronavirus by reducing cash handling.[24] In Rwanda, mobile transactions have increased fivefold during the lockdown, in Senegal, they have doubled.[25]

Significantly, Ghana has relaxed its formal identification requirements to register a mobile payment account, allowing anyone with access to a mobile phone to transfer $170 daily.[26] Although intended for financial regulation, these rules served as a barrier to keep out people without official documentation like women, refugees, migrants and the poor. Governments are increasingly providing digital relief to those stranded, starving and unemployed. Mobile payments provide a way of including those who are traditionally excluded from the formal financial system and strengthen the African payments landscape for long-term sustainability. Digital adoption and e-payments also help support public health measures in the short term.

Technological innovation in healthcare

The African continent is highly dependent on imports for drugs, machinery, equipment and food—the export of which is heavily concentrated and dominated by a select few countries globally. This dependency leaves Africa at risk of a severe shortfall of life-saving equipment. The sparse digital connectivity, insufficient healthcare, and weak local production systems are additional obstacles. African scientists and engineers have coordinated to help navigate these inherent limitations. Creating and implementing inventive models of care delivery has dramatically improved healthcare access, affordability and quality.[27] This burgeoning healthcare innovation ecosystem has tapped into local potential by incentivising manufacturers and resources to create cost-effective, homegrown health solutions.

A Senegalese research organisation has developed a $1-COVID-19 home diagnostic kit and the Kwame Nkrumah University in Ghana has developed Rapid Diagnostic Tests (RDT) for COVID-19.[28] Continental collaboration and sharing technological know-how has helped African entrepreneurs become first-responders by locally producing life-saving equipment. Start-ups in Kenya, Benin, Morocco are making 3D printed face visors, valves and ventilator components to ease reliance on imports.[29]

As the pandemic exerts unprecedented demand on hospitals globally, healthcare systems are reeling under the pressure and governments are scrambling to buy life-saving equipment. Based on the experience of countries ahead in their epidemiology curve, as the virus escalates, ventilators face the greatest risk of shortage. As infections steadily rise, Africa is woefully under-stocked. South Sudan has four ventilators, Burkina Faso has 11, Sierra Leone 13 and the Central African Republic has just three.[30] According to the Africa Centres for Disease Control and Prevention, 10 nations have no ventilators and 41 African countries cumulatively have fewer than 2,000 functional ventilators.[31] The continent averages about five beds per 1 million people, compared to 4,000 beds per 1 million people in Europe.[32] African universities and laboratories are working overtime to make a dent in this disparity.

Engineering and medical students have collaborated at the Kenyatta University to produce a low-cost ventilator, which is currently undergoing clinical trials. The Ghanaian Academic City College and the Kwame Nkrumah University have produced ventilators costing between $500 and $1000—a staggering reduction from the usual $10,000.[33] The machine is easily assembled in less than an hour. Rwandan biomedical scientists in Kigali have also been testing locally made prototype ventilators and a Somalian student has invented an automatic resuscitator made of wood and pipes, an inexpensive way of supplying vital oxygen.[34]

However, even a healthy supply of ventilators will not be life-saving in the absence of trained medical staff to look after patients and equipment. Project Echo stands-in by providing tele-mentoring services, connecting experts via a video platform to rural health workers. Experts share tips on best practice with limited resources and encourage a peer-to-peer learning network. Earlier used for HIV, it has been adapted for COVID-19 use and is operational in Namibia, Kenya, Côte d'Ivoire and Zambia.[35]

To minimise transmission of the virus, Rwanda is using robots to protect the lives of valuable health workers. The robots can administer temperature checks, monitor patient status, and deliver food and medication to patients. Their capacity to screen 50-150 people per minute and notify officers on duty about any detected abnormalities ensures quality and timely service delivery.[36] The University of Pretoria has helped construct the Vulnerable Communities Map, which uses publicly available data to identify and support the most vulnerable communities. Utilising demographic, health and social vulnerabilities it helps demarcate the regions and people most at risk. By highlighting poverty levels, median age and prevalence of life-threatening diseases like HIV and cardiovascular issues it helps customise response strategies in different areas.[37]

Managing misinformation

While the continent faces a shortage of medical supplies, it has an abundant supply of misinformation, rumours, fake news and bizarre claims about COVID-19. A Reuters report finds 76 percent of respondents in Kenya and 72 percent in South Africa concerned about being unable to detect fake news on the internet.[38]

In Tanzania, the government has stopped publishing COVID-19-related news, has dissuaded citizens from wearing masks and encouraged public religious gatherings to "pray away" the virus.[39] In Burundi, the government has held elections without adherence to any safety protocols and refused the assistance of a WHO COVID-19 response task-force. The President of Madagascar has urged citizens to drink an organic herbal beverage to prevent the virus.[40] Many believe the virus does not survive in high temperatures, others are consuming alcohol as a preventive and curative, and some Africans think they are naturally immune to COVID-19 despite substantial evidence to the contrary. As fabrications flourish, UNESCO has referred to the situation as a 'disinfodemic' that gravely threatens fact-based journalism and lives.[41]

Many nations are countering this influx of lies with information portals. The South African government is using WhatsApp to run an interactive chatbot which answers common queries and counter myths related to COVID-19. It has reached over 3.5 million users in five different languages since it was launched last month.[42] The Senegalese government has set up an interactive dashboard providing reliable information, practical advice and updates available in French and Wolof. Facebook is collaborating with Nigerian media agencies to combat misinformation on social media and Cameroon is sending mass free SMS to provide accurate updates to its citizens.[43] Presidents and senior health leaders are also using their daily briefings to dispel rumours about COVID-19. In South Africa, Kenya and Mauritius people have been arrested for spreading misinformation with the intent to cause panic.[44]

Conclusion

The technological response of African nations to COVID-19 is anchored on a cross-continental strategy. The African Union has championed action, focusing on cooperation, collaboration, coordination and communication between the 54 member states. They have appointed special envoys to mobilise support, with multilateralism and solidarity forming the core of their strategy. To limit transmission, the Africa CDC has provided prevention and control training to several nations. Start-ups from Benin, Kenya, Morocco, South Africa and Nigeria are freely offering their technological know-how across the continent to upskill their fellow nations and reduce reliance on imports.[45] The African continent has also accelerated its diplomatic engagement with other developing nations. India has provided medical equipment to nations like Burkina Faso, Comoros and Mali, and will be supplying hydroxychloroquine to up to 20 African nations. Indeed, the pandemic has highlighted the need for greater inter-continental collaboration.[46] African countries and India have aligned interests and common goals to develop their medical, manufacturing, IT and education sector to become self-sufficient.[47]

African countries are creatively utilising existing technology to adapt to their needs. The intellectual capabilities of its young populations are helping harness innovation and create life-saving digital technology. Measured responses to lockdowns and new ways of working are being piloted, including using robots and drones to reduce transport times and increase accessibility. For example, Ghana has pioneered pooled blood testing of COVID-19 samples to speed up processing times and population coverage.[48] The growth in local manufacturing of face masks and virtual workplaces is enlarging the landscape of opportunities. Digital technology can help build online businesses, easily process loans from home, support and stabilise agricultural food chains, and allow virtual medical consultations. Technology is proving to be key in mitigating the impact of the pandemic.

Endnotes

(1) "Africa's Response To COVID-19?," *United Nations Economic Commission For Africa.* https://read.oecd-ilibrary.org/view/?ref=134_134617-5ewrwojglf&title=AFRICA-S-RESPONSE-TO-COVID-19-What-roles-for-trade-manufacturing-and-intellectual-property.

(2) Melanie Pinet, Ethel Boateng, and Phionah Sanyu, "This Is How The Youth Is Mobilising Tech During COVID19," *African Arguments*, May 27, 2020, https://africanarguments.org/2020/05/27/activists-not-leaders-how-the-youth-have-used-tech-under-covid-19/.

(3) Kim Harrisberg, "Here's How Africans Are Using Tech To Combat The Coronavirus Pandemic," *World Economic Forum,* 2020, https://www.weforum.org/agenda/2020/04/africa-technology-coronavirus-covid19-innovation-mobile-tech-pandemic/.

(4) Fran Blandy,"'We Can Get It Done Here': Africa's Tech Scene Tackles Virus," *Medicalxpress.Com*, 2020, https://medicalxpress.com/news/2020-05-africa-tech-scene-tackles-virus.html.

(5) Aditya Chaturvedi, "How South Africa Uses Tech To Fight Covid-19," *Geospatial World,* 2020, https://www.geospatialworld.net/blogs/how-south-africa-uses-tech-to-fight-covid-19/.

(6) Sarah Wild, "Antipoaching Tech Tracks COVID-19 Flare-Ups In South Africa". *Scientific American,* 2020, https://www.scientificamerican.com/article/antipoaching-tech-tracks-covid-19-flare-ups-in-south-africa.

(7) Samir Abdelkrim, "From M-Pesa To Ushahidi: How African Tech Is Fighting The Coronavirus,"*Friends Of Europe,* 2020, https://www.friendsofeurope.org/insights/from-m-pesa-to-ushahidi-how-african-tech-is-fighting-the-coronavirus/.

(8) Ibid.

(9) Ibid.

(10) "Innovative Tech And Connectivity Key To Fighting COVID-19 In Africa," *United Nations | Africa Renewal,* 2020, https://www.un.org/africarenewal/news/coronavirus/innovative-tech-and-connectivity-key-fighting-covid-19-africa.

(11) "COVID-19: Revamping Africa's Telecoms Infrastructure Crucial For Digital Health Services," *United Nations | Africa Renewal,* 2020, https://www.un.org/africarenewal/news/coronavirus/covid-19-revamping-africa%E2%80%99s-telecoms-infrastructure-crucial-digital-health-services.

(12) Ibid.

(13) "How Countries Are Using Edtech (Including Online Learning, Radio, Television, Texting) To Support Access To Remote Learning During The COVID-19 Pandemic," *World Bank*, 2020, https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-covid-19-pandemic.

(14) Ibid.

(15) Ibid.

(16) Ibid.

(17) “United Nations Economic Commission For Africa,” *Uneca.org,* 2020, https://www.uneca.org/leveraging-technology-against-covid-19.

(18) “African Adaptations To The COVID-19 Response – Africa Center,” *Africa Center For Strategic Studies,* 2020, https://africacenter.org/spotlight/african-adaptations-to-the-covid-19-response.

(19) “Robots Boost Rwanda’s Fight Against COVID-19,” *Aa.Com.Tr,* 2020, https://www.aa.com.tr/en/africa/robots-boost-rwandas-fight-against-covid-19/1847225.

(20) “The Covid-19 Crisis Is Boosting Mobile Money,” *The Economist*, 2020, https://www.economist.com/middle-east-and-africa/2020/05/28/the-covid-19-crisis-is-boosting-mobile-money.

(21) “West Africans Are Switching From Cash To Mobile Money Because Of COVID-19,” *World Economic Forum*, 2020, https://www.weforum.org/agenda/2020/04/coronavirus-set-to-spur-mobile-money-growth-in-w-africa.

(22) Ibid.

(23) Jake Bright, “Techcrunch Is Now A Part Of Verizon Media”. *Techcrunch*, 2020, https://techcrunch.com/2020/03/25/african-turns-to-mobile-payments-as-a-tool-to-curb-covid-19/.

(24) Ibid.

(25) “How The COVID-19 Crisis May Affect Electronic Payments In Africa”, *McKinsey*, 2020, https://www.mckinsey.com/industries/financial-services/our-insights/how-the-covid-19-crisis-may-affect-electronic-payments-in-africa.

(26) Ibid.

(27) Patricia Odero, Jennifer Cook, Sylvia Sable, and Krishna Udayakumar, “Healthcare Innovation In East Africa Navigating The Ecosystem”. *Innovationsinhealthcare.org,* 2020, https://www.innovationsinhealthcare.org/East%20Africa%20Landscape%20Report%20-%20SEAD.pdf.

(28) Ibid.

(29) Ibid.

(30) Amy Woodyatt, “The World Is Scrambling To Buy Ventilators In The Covid-19 Pandemic. One Country Has Only Four Of Them -- For 12 Million People”, *CNN*, 2020, https://edition.cnn.com/2020/04/18/africa/covid-19-ventilator-shortage-intl-scli/index.html.

(31) Ibid.

(32) Ibid.

(33) Ibid.

(34) Ibid.

(35) “Project Echo: “The Audacious Project”,” *The Audacious Project*, 2020, https://audaciousproject.org/ideas/covid-19-response/project-echo.

(36) “Rwanda To Use High-Tech Robots In Fight Against COVID-19,” *CGTN Africa,* 2020, https://africa.cgtn.com/2020/05/19/rwanda-to-use-high-tech-robots-in-fight-against-covid-19.

(37) Stephen van der Heijden, “SA COVID-19 Project: Vulnerable Communities Map,”*Offerzen Blog,* 2020, https://www.offerzen.com/blog/sa-covid-19-project-vulnerable-communities-map.

(38) Ashwanee Budoo, "Controls To Manage Fake News In Africa Are Affecting Freedom Of Expression", *The Conversation,* 2020, https://theconversation.com/controls-to-manage-fake-news-in-africa-are-affecting-freedom-of-expression-137808.

(39) Yomi Kazeem, "With Over 250,000 Cases, Misinformation Is Compromising Africa'S Covid-19 Response," *Quartz Africa,* 2020, https://qz.com/africa/1871683/whatsapp-is-a-key-source-of-covid-19-information-for-africans/.

(40) Ibid.

(41) "During This Coronavirus Pandemic, 'Fake News' Is Putting Lives At Risk: UNESCO," *UN News,* 2020, https://news.un.org/en/story/2020/04/1061592.

(42) Ibid.

(43) Ibid.

(44) Ibid.

(45) Ibid.

(46) Elizabeth Roche, "India Promises Help On Coronavirus To Four African Nations," *Livemint*, 2020, https://www.livemint.com/news/india/india-promises-help-on-coronavirus-to-four-african-nations-11587833794516.html.

(47) Dipanjan Chaudhury, "India, Africa Favour New Dimensions To Multifaceted Partnership In Post-Covid World Order," *The Economic Times*, 2020, https://economictimes.indiatimes.com/news/politics-and-nation/india-africa-favour-new-dimensions-to-multifaceted-partnership-in-post-covid-world-order/articleshow/76037917.cms?from=mdr.

(48) Emmanueal Agogo, and Chikwe Ihekweazu. "Africa's Response To COVID-19," *BMC Medicine,* 2020, 15 (18). doi:https://doi.org/10.1186/s12916-020-01622-w.

III. RESILIENCE

Building Resilient Healthcare Systems in the African Continent

Abhishek Mishra and Alisha George

The deadly COVID-19 pandemic is still in the process of unveiling its full nature and extent. Almost all countries worldwide have been revealed as inadequately prepared to address one of the most widespread health crises of our lifetimes. In Sub-Saharan Africa, health systems have been overburdened due to the rapid spread of the disease, and most African countries are struggling to cope with the pandemic given their strained and fragile healthcare systems. Although the immediate health impact is still unfolding and is yet to be fully felt in the continent, the prolonged lack of investment has significantly weakened critical healthcare systems in Africa. Indirect factors such as food insecurity, lack of medical supplies, difficulties in applying sanitation and physical distancing measures, and loss of incomes and livelihoods have also compounded Africa's vulnerabilities.

True health resilience derives from "stronger health and healthcare systems, improved population health, and the capabilities to sustain physically, mentally, socially healthy individuals and communities."[1] In Sub-Saharan Africa, there has been a renewed interest in strengthening national health systems to make them more resilient to meet national and global threats. While access to healthcare is increasing across the continent, there has not been a corresponding surge in the capacities of healthcare facilities in many African countries to cope with the higher demand for services. Many hospitals routinely operate below sub-optimal capacities, while doctors and frontline healthcare workers are often unpaid. Besides, there are many inherent gaps in the health systems in Sub-Saharan Africa (as in much of the developing world), such as a lack of adequate infrastructure, equipment and trained human resources; the absence of surveillance, health reporting systems, vital registration systems and clinic-oriented health system designs, which are often slow in responding to viral disease outbreaks.[2]

The unified, continent-wide responses adopted by African countries under the leadership of the African Union (AU), in close collaboration with the Africa Centre for Disease Control and Prevention and African health ministers, and the decisive and early political engagement at the highest level, has helped most African countries create awareness and alertness around COVID-19 and put in place public safety measures. At present, the spread of the virus has been contained to a large extent due to the sustained collaborative efforts by the African nations, deriving their preparedness from past experiences of dealing with viral outbreaks such as Ebola, tuberculosis, malaria, Lassa Fever, measles and HIV/AIDS. However, health experts have cautioned that Africa cannot let its guard down just yet, as the rising caseloads and accelerating spread of infection may make the African continent the new epicentre of the disease.[3]

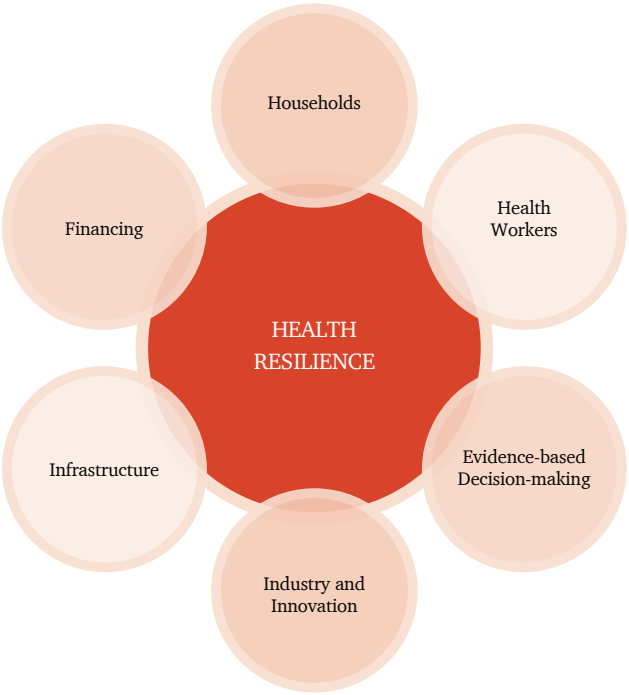
The COVID-19 pandemic presents an opportunity for policymakers in developing countries to revisit policy choices to shore up preparedness for the future. Health resilience requires an adequate health workforce, sophisticated disease surveillance, and health leadership and governance, in addition to health financing and a well-functioning health information system.[4] This chapter attempts to highlight a few key ways in which African countries can fill the lacunae in their present health response and build a resilient healthcare system for the future.

This chapter analyses four significant aspects of developing health resilience in Sub-Saharan Africa—households capacity, healthcare workers, training and capacity building, and financing. Two additional key components—evidence-based decision-making and healthcare innovation—have been discussed in the technological resilience section of this report. These six aspects are interlinked and reinforce each other and must be treated as such. The chapter also attempts to draw lessons from India—Africa's partner and co-member of the Global South--and its experience in tackling COVID-19 and discusses ways in which India can partner with Africa to build health resilience.

Households: Returning to the basics

Households are the basic units of disease containment. In the event of an epidemic outbreak, a three-pronged approach must be adopted—providing households with basic facilities such as soap and clean drinking

Figure 1: Building Health Resilience



Source: Authors

water, sharing timely and updated information and instructions, and providing essential items food items and personal protective equipment (PPE) like masks and gloves.

Water and Sanitation: Access to clean and safe drinking water and sanitation is a fundamental human right, and accessible, affordable, and contamination-free water supply to households is essential. Unfortunately, 40 percent of the 783 million people in Sub-Saharan Africa do not have access to an improved source of drinking water from the region.[5] As many as one in every four people still lack adequate sanitation in Sub-Saharan Africa.[6] Research indicates that proper hand hygiene (through the regular washing of hands) can prevent about 30 percent of all diarrhea related illnesses and about 20 percent of respiratory sickness.[7] The production and distribution of soaps and access to water can provide a massive positive ripple effect.

Communication: Clear communication and dissemination of information to households by the relevant authorities will keep fake news and panic at bay. This can be done through various modes of transmission, including cable television, newspapers, internet, mobile telephones, and the radio. Local leaders, volunteers and social media influencers must be engaged in this effort.

Ensuring availability of essential supplies: Ensuring food security and availability of medical supplies needs to be a priority for African countries. Almost all African countries are overly dependent on food and pharmaceutical imports. The continent imports 94 percent of its drugs and there has no home-made vaccines.[8] Africa must become self-reliant in manufacturing pharmaceuticals and PPEs, and in ensuring food security.

The World Health Organization (WHO) has warned about the potential impact of COVID-19 on food insecurity in Africa where one in every five persons is undernourished.[9] A population that is malnourished and prone to illnesses is highly susceptible to contracting diseases like the coronavirus.. According to Maximo Torero, Chief Economist at the Food and Agriculture Organization, there is no shortage of agricultural supplies in the world, but the challenge is to overcome the bottlenecks in accessibility and logistics to reach the customers.[10] African countries

must ensure timely procurement of agricultural produce and last-mile connectivity to urban and rural spaces alike. Other countries can learn from Chad, where the government and development partners are providing food kits, distributing seeds for harvest in the future, and setting up cereal banks.[11] Such unique interventions "will help address the immediate need for food, but also preserve the productive capacity of smallholder farmers."[12]

Another aspect associated with food security is the provision of social safety nets. As of 2018, only 10 percent of the African population has been covered under any social safety program.[13] With the disruption of livelihoods, providing social security to households is crucial to maintain their purchasing power as food rations account for the major portion of household expenditure bills.

Missing frontline health workers

Healthcare workers—doctors, nurses, and community health workers—are the first responders in the fight against any disease. There is a huge dearth of human resources, critical care beds and laboratory capacity across African countries. Poor working conditions, scarcity of PPEs, and fear of contracting the COVID-19 infection compound the challenge. Besides, the continent also has the highest disability-adjusted life years (the number of lost years of 'healthy life') from all causes, as compared to other regions in the world.[14]

Table 1 shows a rudimentary way of measuring the number of missing medical personnel in Africa, which amounts to around 1.45 million health workers. In taking averages, the table conceals large variations within the continent, which, for example, range from 1.46 nurses/midwives per ten thousand of the population in Madagascar in 2018, as opposed to 54.03 nurses/midwives per ten thousand of the population in Botswana in 2018.[17]

Over the past two decades, there has also been a huge exodus of doctors and nurses from African countries to Europe and other developing countries due to both push and pull factors. Push factors include poor remuneration and working conditions, and lack of opportunities for further research, while pull factors include better career opportunities and security in high-income countries.[18]

African countries should do more to retain healthcare professionals who they have trained, especially by giving them their due in the form of better working conditions, training, equipment, insurance related to workplace risks and remuneration. They could also consider partnering with development partners and high-income countries to secure investment for quality medical training and equipment, especially those that benefit from the personnel that were trained in their respective countries. In 2014, the government of Canada and WHO invested in a successful venture to enhance the ability of the frontline workers in Nigeria.[19] Such programmes should be replicated in other countries as well.

Table 1: Disparity between WHO-recommended and actual average number of healthcare personnel in Africa

Frontline Health Worker	WHO Recommended (per 10,000 population)	Average number (per 10,000 population) in the 54 African Countries based on latest figures (mostly 2016- 2018)	Missing Personnel using population of 2018
Medical doctors	10	3.98	775,328.44
Nursing and midwifery personnel	20	14.77	673,582.68

Source: Authors' calculations using UN population databases and WHO data on indicators[16]

There are a number of priority interventions that can safeguard frontline healthcare workers in Africa.[20] These include securing supplies of good quality PPEs; developing a general capacity on PPE use and infection control; prioritising COVID-19 testing for health workers in ICU and other medical wards; providing health workers with food and daily living supplies; and compensating healthcare workers with risk allowances.

Training and capability building in healthcare

There is an inherent need to build human resource capabilities for health systems through quality training by leveraging innovations to improve health outcomes. Community health capacity grows where there are supportive organisational structures, such as schools, workplaces and community planning mechanisms that are conducive to health. African countries must work to set up more testing laboratories, hospitals, and medical schools. The capabilities of African students and researchers, along with staff in research institutes and health policy organisations, need to be improved significantly to conduct better operational research.

Developing a repository of open-access materials, subject to peer review and revision, is vital for countries to improve research on health systems. Even individual volunteers, such as retired academics or health service practitioners, can act as facilitators for online discussion groups. However, we must be mindful that building capabilities is not a day's work but involves years of dedicated investment in the health sector. The decision to invest more in public health systems—around 15 percent of GDP, as was decided by African governments in the 2001 Abuja Declaration—cannot be delayed any further.[21]

Governments must work to set up new medical schools in areas where medical facilities have been very scarce, such as rural areas. This will ensure the double benefit of better health service availability for areas with lower accessibility and training more healthcare professionals to fill the gap of missing workers. However, merely setting up medical schools will not suffice. The primary challenge is to ensure proper enrolment and attendance in such schools. Overall, healthcare capacity building programmes must consider which outcomes are of the highest priority. If such an exercise is conducted either by a working group or any other body, then it will be possible to align high priority outcomes with interventions that offer the best chance of achieving those outcomes.

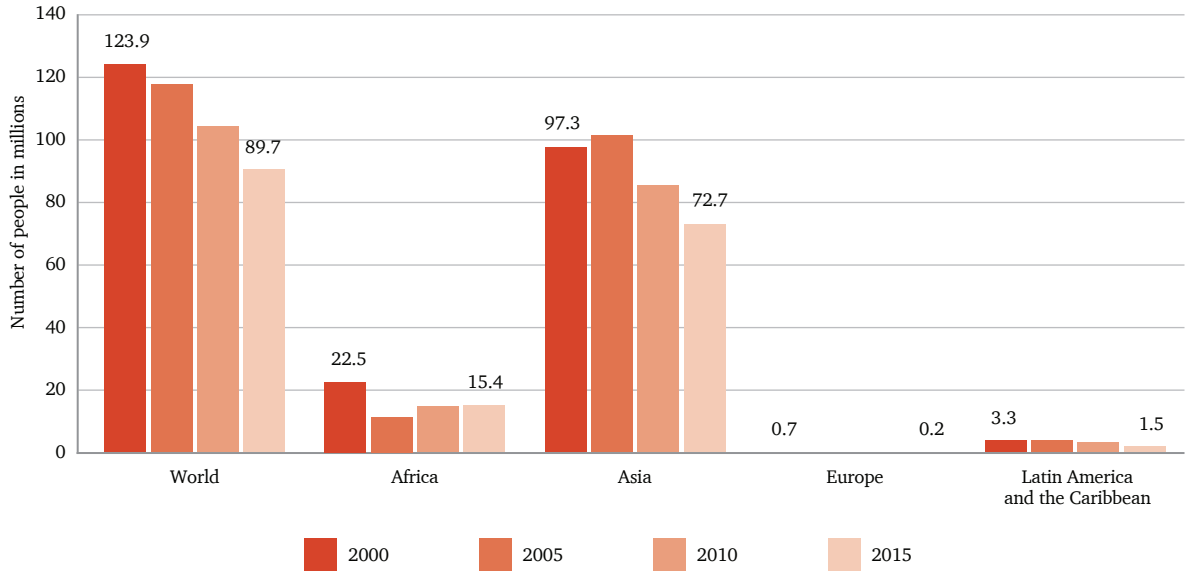
Financing issues

Strengthening households, supporting healthcare workers, and enhancing training hinge on tinvestment directed towards these goals. The COVID-19 pandemic has revealed glaring infrastructural and capacity deficiencies in African healthcare systems. However, it is the lack of fiscal space that has principally constrained Africa's response and efforts to ramp up infrastructure rapidly. The lack of funding and investment in medical facilities, health research and education has led to skill shortages and over-reliance on imports from foreign countries. There are no home-made vaccines on the continent, and almost 94 percent of Africa's pharmaceuticals are imported.[22] According to the WHO, the African continent "accounts for 24 percent of the global burden of disease, with only 3 percent of health workers commanding less than 1 percent of world health expenditure."[23] This is a meagre amount. The problem is compounded by the fact that African countries spend more on paying interests on external debts rather than on public healthcare. A substantial amount of Africa's health spending comes from out-of-pocket payments.

Due to the reliance on out-of-pocket health expenditure, Africa is seeing an upward trend in the absolute number of people in poverty (see Figure 2). This has significant implications for households. Since a significant chunk of household spending is on healthcare, pooling these resources will allow planned purchasing of health services. Universal health coverage (UHC) initiatives provide opportunities to combine finances, and many African countries are attempting to pursue this goal.[24] Apart from the moral imperative to invest in UHC—no citizen should face death, disability or malnourishment, which can be addressed at a limited cost—there are long term benefits that are associated with a healthier society, including more productivity, higher earnings and better living standards. Although several African countries have committed to UHC initiatives, now is the time to put words into action, but this is dependent on the political will of African leaders and local circumstances.

Healthcare is a growing sector for many African countries, and governments must, therefore, work on attracting global investors and international financial institutions to finance their healthcare systems. The World Bank and International Monetary Fund (mobilised up to US$57 billion for Africa in 2020), African Development Bank (US$10 billion COVID-19 response facility) and the European Union (US$6.8

Figure 2: Global and regional trends in impoverishment due to out-of-pocket health spending at US$1.90 a day



Source: Figures from WHO, IBRD and World Bank's Global Monitoring Report on Financial Protection in Health, 2019[25]
Note: North America and Oceania had negligible figures and were not included in the analysis.

million to the Horn of Africa) have already donated considerable resources to help augment African countries' public health measures and response preparedness. However, donors must be made aware of the need to target aid to the healthcare sector; COVID-19 may ensure that contributing to boosting healthcare systems is viewed as a global public good.[26]

It is this responsibility of delivering public goods during unprecedented health and economic crises that has prompted India, as a co-member of the Global South and an equal development partner, to assist African countries with medical and other critical supplies.

Health synergies: India and Africa

Public health security is a domestic priority for India and African countries alike, and the COVID-19 pandemic has provided an opportunity to prioritise close collaboration in the healthcare sector to create an inclusive health architecture.

India's position as the 'pharmacy of the world' and as the supplier of low-cost generic medicine is widely acknowledged. Pharmaceutical and petroleum products account for 40 percent of India's total exports to African markets.[27] As the first wave of the pandemic struck, India reached out to African countries with medical aid. It sent consignments of essential medicines, including hydroxychloroquine and paracetamol, and doctors and paramedics to 32 African countries on a commercial and grant basis. The initial beneficiaries were Mauritius, Seychelles, Comoros and Madagascar under 'Mission SAGAR'.[28] The Indian government also started a new, timely initiative known as e-ITEC COVID-19 management strategies training webinars, which aimed at training healthcare professionals from African countries and the sharing of best practices by Indian health experts.

There are many ways in which India can assist African countries in capacity building, training, and skill development of healthcare professionals. The Pan Africa e-Network project, which connected 12 Indian hospitals with over 50 African countries through fibre optics and wireless network, was successful in creating significant linkages for tele-education and telemedicine, internet, video conferencing and VoIP services. It has now been upgraded to the e-VBAB (e-VidyaBharati and e-Aarogya Bharati) project, entirely funded by the Indian government and which aims to conduct 20,000 tele-education courses over the next five years, as well as 5,000 free continuing medical education courses for African nurses/doctors and para-medical staff.[29] It also aims to provide 15,000 scholarships to Africans to pursue under-graduate and

post-graduate courses in Indian universities. Sixteen African countries are participating in this project.

In recent years, India has made significant technological advancements in areas such as cloud computing and advanced manufacturing. India can leverage digital technologies to conduct telemedical consultancy and share technical know-how and best practices with African countries under the e-VBAB platform. The goal for India is to harness its experience in the digital sphere to support Africa's development and extend the provision of training and education, especially for Africa's healthcare professionals.

The Indian Council for Medical Research (ICMR) is expanding its research development and technical partnership with the AU and other agencies. In September 2016, the first-ever India Africa Health Sciences meet was organised in New Delhi during which a memorandum of understanding was signed between ICMR and the AU Scientific Technical Research Commission to conduct annual training courses; by December 2019, seven training courses were conducted, with eight more set to be held this year.[30] The courses primarily focus on HIV/AIDS, tuberculosis and cancer. However, the AU has now also requested the ICMR to conduct COVID-19 related research under the programme to develop African capacities for pandemic preparedness and management.

Capacity building and training is thus an integral part of India's partnership with African countries. Both regions would do well to galvanise and encourage such mutually beneficial partnerships and the sharing of best practices to build more resilient systems.

Endnotes

(1) Katharine Wulff, Darrin Donato, and Nicole Lurie, "What is Health Resilience and How Can We Build It?", *Annual Review of Public Health,* Vol 36 (March 2015): 361-374, https://doi.org/10.1146/annurev-publhealth-031914-122829

(2) ibid

(3) Ruth Maclean, "Coronavirus Accelerates Across Africa", *The New York Times,* June 16, 2020, https://www.nytimes.com/2020/06/16/world/africa/coronavirus-africa.html.

(4) Everybody's business: Strengthening health systems to improve health outcomes-WHO's framework for action 2007 (Geneva: World Health Organization, 2007), 6, https://www.who.int/healthsystems/strategy/everybodys_business.pdf?ua=1

(5) "International Decade for Action 'Water for Life' 2005-2015", *United Nations Department of Economic and Social Affairs,* accessed July 15, 2020, https://www.un.org/waterforlifedecade/africa.shtml.

(6) "UNICEF urges swift action, 'robust financing' to close water and sanitation gaps in sub-Saharan Africa", *United Nations, Blogs,* December 16, 2015, https://www.un.org/sustainabledevelopment/blog/2015/12/unicef-urges-swift-action-robust-financing-to-close-water-and-sanitation-gaps-in-sub-saharan-africa/.

(7) "Show Me the Science - Why Wash Your Hands?", *Centers for Disease Control and Prevention,* accessed July 9, 2020, https://www.cdc.gov/handwashing/why-handwashing.html.

(8) Annalisa Primi, Stephen Karingi, Lily Sommer, Wafa Aidi, Vasiliki Mavroeidi and Manuel Toselli, "Accelerating the response to COVID-19: what does Africa need?", *OECD Development Matters,* May 1, 2020, https://oecd-development-matters.org/2020/05/01/accelerating-the-response-to-covid-19-what-does-africa-need/.

(9) "COVID-19 could deepen food insecurity, malnutrition in Africa", *World Health Organisation Regional Office for Africa News*, May 14, 2020, https://www.afro.who.int/news/covid-19-could-deepen-food-insecurity-malnutrition-africa.

(10) "Tackling COVID-19's effect on food supply chains in Africa", *Food and Agriculture Organization of the United Nation's Africa Regional Office News,* April 23, 2020, http://www.fao.org/africa/news/detail-news/en/c/1272643/.

(11) "Climate Resilient Agriculture and Productivity Enhancement Project", *The World Bank,* accessed July 14, 2020, https://projects.worldbank.org/en/projects-operations/project-detail/P162956?lang=en

(12) Simeon Ehui, "Protecting food security in Africa during COVID-19", *Brookings*, May 14, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/05/14/protecting-food-security-in-africa-during-covid-19/.

(13) "Expanding Social Safety Nets in Africa to Reduce Poverty, Boost Opportunities and Build Resilience", *The World Bank Publications,* October 17, 2018, https://www.worldbank.org/en/region/afr/publication/potential-social-safety-nets-in-africa.

(14) Hebe N Gouda, Fiona Charlson,Katherine Sorsdahl, Sanam Ahmadzada, Alize J Ferrari, Holly Erskine, Janni Leung, Damian Santamauro, Crick Lund, Leopold Ndemnge Aminde, Bongani M Mayosi, Andre Pascal Kengne, Meredith Harris, Tom Achoki, Charles S Wiysonge, Dan J Stein and Harvey Whiteford , "Burden of non-communicable diseases in sub-Saharan Africa, 1990-2017: results from the Global Burden of Disease Study 2017", *The Lancet 7*, no.10 (October 1, 2019)

:E1375-E1387 https://doi.org/10.1016/S2214-109X(19)30374-2.

(15) "Interactive Data", Department of Economic and Social Affairs Population Dynamics, *United Nations*, accessed July 11, 2020, https://population.un.org/wup/DataQuery/.

(16) "World Health Data Platform", *World Health Organization*, accessed July 11, 2020, https://www.who.int/data/gho/data/indicators/indicator-details.

(17) ibid.

(18) Linda Ogilvie, Judy E. Mill, Barbara Astle, Anne Fanning and Mary Opare, "The exodus of health professionals from sub-Saharan Africa: balancing human rights and societal needs in the twenty-first century", *Nursing Enquiry* 14, no.2 (February 2007) 114-124. https://www.equinetafrica.org/sites/default/files/uploads/documents/OGIhres020607.pdf

(19) "Enhancing the Ability of Frontline Health Workers to Improve Health in Nigeria", World Health Organization and *Government of Canada*, 2014, https://www.who.int/docs/default-source/health-workforce/stories-from-the-field-issue2-nigeria.pdf?sfvrsn=71a350a8_2.

(20) Matthew F. Chersich, Glenda Gray, Lee Fairlie, Quentin Eichbaum, Susannah Mayhew, Brian Allwood, Rene English, Fiona Scorgie, Stanley Luchters, Greg Simpson, Marjan Mosalman Haghighi, Minh Duc Pham and Helen Rees, "COVID-19 in Africa: care and protection for frontline healthcare workers", *Globalization and Health 16, no. 46 (May 15, 2020):1-6*, https://doi.org/10.1186/s12992-020-00574-3.

(21) African Summit on HIV/AIDS Tuberculosis and Other Related Infectious Diseases, Abuja Declaration on HIV/AIDS Tuberculosis, and Other Related Infectious Diseases, Nigeria : April 2001, https://au.int/sites/default/files/pages/32904-file-2001_abuja_declaration.pdf.

(22) Primi, "Accelerating the response".

(23) "World Health Report Overview," *World Health Organization*, accessed July 15, 2020, https://www.who.int/whr/2006/overview/en/.

(24) Osondu Ogbuoji, Ipchita Bharali, Natalie Emery, and Kaci Kennedy McDade, "Closing Africa's health financing gap", *Brookings*, March 1, 2019, https://www.brookings.edu/blog/future-development/2019/03/01/closing-africas-health-financing-gap/.

(25) Global Monitoring Report on Financial Protection in Health, (Switzerland: World Health Organization, The International Bank for Reconstruction and Development and The World Bank, 2019), 18, https://apps.who.int/iris/bitstream/handle/10665/331748/9789240003958-eng.pdf?ua=1.

(26) Norman Loayza, "Aid effectiveness during the COVID-19 pandemic: This time it must be better", *World Bank Blogs*, May 6, 2020, https://blogs.worldbank.org/developmenttalk/aid-effectiveness-during-covid-19-pandemic-time-it-must-be-better.

(27) Oomen C Kurian and Kriti Kapur, "COVID-19 outbreak could be Indian pharma's big opportunity in Africa", *Quartz India,* April 2, 2020, https://qz.com/india/1830849/coronavirus-could-be-indian-pharmas-big-opportunity-in-africa/.

(28) Ministry of External Affairs, Mission SAGAR: India's helping hand across Indian Ocean, New Delhi: Government of India, May 10, 2020, https://mea.gov.in/press-releases.htm?dtl/32678/Mission_Sagar_Indias_helping_hand_across_the_Indian_Ocean.

(30) "India-African Union sign MoU on strengthening cooperation in healthcare sector", All India Radio News Services Division, March 28, 2019, http://www.newsonair.com/News?title=India-African-Union-sign-MoU-on-strengthening-cooperation-in-healthcare-sector&id=361511.

Built to last: African economies must use the pandemic to build back better

Maureen Barasa, Annah-Grace Kemunto and Kwame Owino

The COVID-19 crisis has had an unexpected yet telling impact on the world. Although Europe and the US have witnessed tremendous death tolls and their economies are in the midst of a severe recession, they have responded through strong fiscal and welfare measures, with the aim of keeping both firms and households afloat. African countries, on the other hand, had remained relatively untouched for a long time in terms of the spread of contagion and human lives lost, but their economies have been severely damaged by the restrictions that governments have implemented to arrest the further spread of the disease. The depth of the effects and the severity will vary depending on the structural foundations of each African The depth of the effects and severity of the impact will vary widely, depending on the structural foundations of each African economy.

This chapter explores the fundamental tenets that shall be critical to building economic resilience across the African continent for it to be better placed to weather similar crises in the future. Africa is extremely heterogeneous, the countries are at varying stages of development and industrialisation, and progress is likely to mean different things in different places. However, a few significant aspects are highlighted that must emerge as priority areas for the continent to build back better.

Structural transformation and the state

An enduring problem for most African countries is the continued disproportionate reliance of the population on basic and subsistence agriculture. While agriculture is an important sector for Africa—smallholder farmers constitute 70 percent of the population, an overwhelming share of the labour force and farming is a major source of income[1]—the character of farm production in most households in Sub-Saharan Africa has created an agriculture sector that is insufficiently modernised and unproductive. The typical producer in Africa relies on rainfall, low machine and fertiliser inputs, and highly labour intensive production. Thus, for most of Sub-Saharan Africa, economic output relies heavily on the export of agricultural and mineral commodities. Under these conditions, most economies in Sub-Saharan Africa have low degrees of diversification in terms of production and employment.

The disadvantage of low diversification appears most salient when a regional or global economic shock occurs. For several African countries, the closure of economies and the suspension of cross-border trade due to COVID-19 resulted in immediate job losses for workers in the main export sectors. The impending global recession has resulted in the contraction of demand for crude petroleum, devastating the economies of the main crude oil exporters, such as Algeria and Libya in North Africa, Nigeria in West Africa, South Sudan in eastern Africa, and Angola in the southern part of the continent. The loss of more than half of the oil revenues usually accruing to the public sector means that these economies will each contract by contract by 2 to 5.4 percent in 2020.[2] These conditions may give a boost to the imperative for structural transformation and could be an opportunity for leaders on the continent to emphasise the need for economic diversification to ensure a robust recovery for Africa.[3]

At the same time, the simultaneous supply and demand shock will expose the fragility of many smaller economies and inflict further structural damage. Since most of the agriculture production in many African countries is for subsistence, it is expected that once the shock of the locust invasion and restrictions on movement are eased, the sectors will bounce back more rapidly and draw in even more labour. This implies that the share of the agricultural industry in GDP will rise not because of productivity gains but because of the shrinkage in the manufacturing and service sectors. This is expected to occur because the service and manufacturing sectors will be the last to recover owing to their fragility and dependence on global supply chains for value creation. Based on the forecasts, sectors such as tourism and passenger aviation will be affected the most, and even a quick recovery in growth will require at least two years before the sector matches its size in 2019.[4] Countries must act

firmly and swiftly to push structural transformation, prevent mass unemployment and increased disguised employment in the agriculture sector, and not let the pandemic stymie their hard-won gains.

Social security frameworks decoupled from formal employment

In some African countries, governments have responded to the Covid-19 pandemic by enlarging support to households by using mobile money transfer facilities to reach citizens who are most at risk. In Sub-Saharan Africa alone, about 33 countries announced new or expanded existing policies for social protection through cash transfers, with an estimate of about 117-120 million citizens receiving payments.[5] Vulnerabilities are heightened by the fact that nearly 80 percent of the working population in Africa accrues their livelihood from the informal sector, which is characterised by both low wages and low savings.

The possibility of a quick global recovery is extremely low, with the World Bank expressing concern for informal African workers, based on the estimate that Sub-Saharan Africa will experience the first economic

Figure 1: A typology of households in the African context

Data Source: Adapted from the World Bank[6]

contraction in a quarter of a century.[7] The lost output for the whole continent is estimated to be in the range of US$37-79 billion in 2020 alone. Even at the lower end, this loss of output will have adverse implications for small firms and households.

Given the precarious condition of most of the working population, the ability of governments to implement adequate social protection programmes will be tested. Most social security systems in Africa were built on social registries that had limited coverage and were static in the extreme. Based on the recent declarations of most governments, direct social assistance provided during the pandemic is based on the assessment of risks to the population rather than on occupation and the formal status of employment. Whether this is sufficient is a different issue, but the situation illustrates that for many African governments, direct means of social protection de-coupled from employment has now become an accepted tool to accomplish the goals of public policy. This would require updating social registries to reflect current realities, and can use technologies such as technologies such as the West Africa Unique Identification for Regional Integration and Inclusion's Mission Billion challenge, to ensure inclusive and large-scale social protection programmes.[8]

Apart from the losses in income on account of the convergence of both ssupply-side (inabiity to go to work resuting in low production) and demand-side (reduced purchasing power due to low incomes and unemployment) shocks, COVID-19 has demonstrated the vulnerability of unequal access to public health services. A brief published by the International Labour Organization recommends that governments in Africa make ad-hoc transition arrangements and build a floor for health services as part of social protection systems.[9] A robust social protection mechanism must go beyond limited cash transfers and also cover health protection, and there must be an urgent and renewed focus on Sustainable Development Goals.

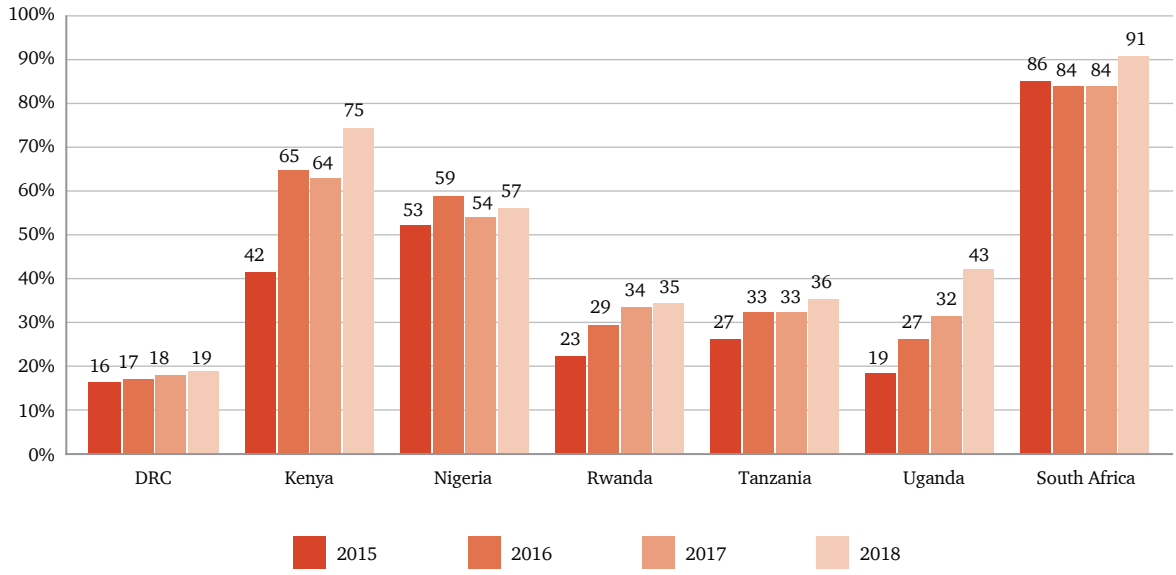
The Green Imperative: The need for green investment for a resilient future

The UN Economic Commission for Africa recently called for a "green" recovery from COVID-19.[10] This will require green investment and a reorientation away from polluting industries, while also building climate resilience in the continent.

Indeed, COVID-19 has impacted the drive for green investment in Africa, and could delay the momentum towards the achievement of a green economy even further. The COVID-19 shock might lead to cuts in development expenditure as all fiscal capacity will be directed towards a stimulus to deal with the pandemic. This can be prevented by "greening" the stimulus provided by countries, but this is easier said than done.

The following paragraphs demonstrate the fragile gains and progress made by the continent, towards greening the economy:

Figure 2: Electricity access rates in select Sub-Saharan African countries and South Africa

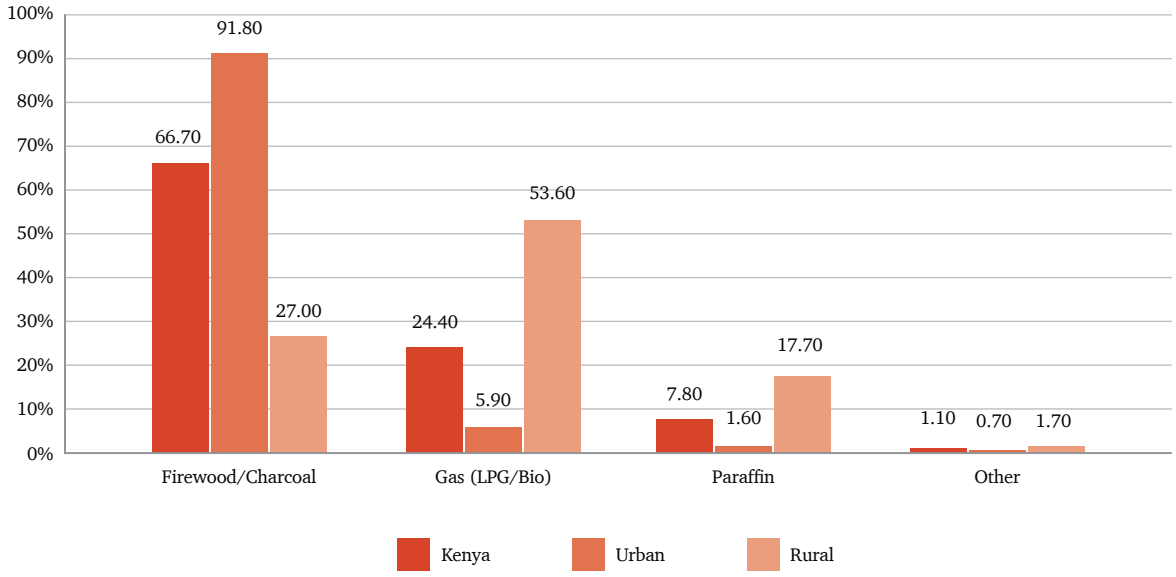


Source: World Bank Data 2018[11]

A majority of the population in South Africa (91.23 percent), Kenya (75 percent) and Nigeria (56.50 percent) had access to electricity as of 2018 (see Figure 2). The following countries have improved electricity access between 2015 to 2018 - the Democratic Republic of Congo (15 percent), Kenya (80 percent), Nigeria (7.6 percent), Rwanda (52.28 percent), Tanzania (34.03 percent), Uganda (13.5 percent) and South Africa (6.7 percent).

On the demand side, the green economy will deteriorate further as African households that could previously afford clean energy for cooking purposes may no longer be able to do so. Households are experiencing an income shock due to the pandemic, and this might force turn to use less efficient fuels like wood, paraffin and charcoal. About 66.7 percent of Kenyan households use firewood or charcoal as a cooking fuel, while 24.4 percent used gas, 7.8 percent used paraffin, 3 percent use electricity and 1.1 percent use other sources. This is an improvement from 2015, when 81.54 percent of households used charcoal and firewood for cooking.[13]

Figure 3: Cooking fuel used in Kenya



Source: KNBS Economic Survey 2020[12]

If investment in the green economy is delayed and not incorporated in the stimulus package for COVID-19, households may be forced to go back to using less efficient forms of energy as these are still far more affordable for most Africans.

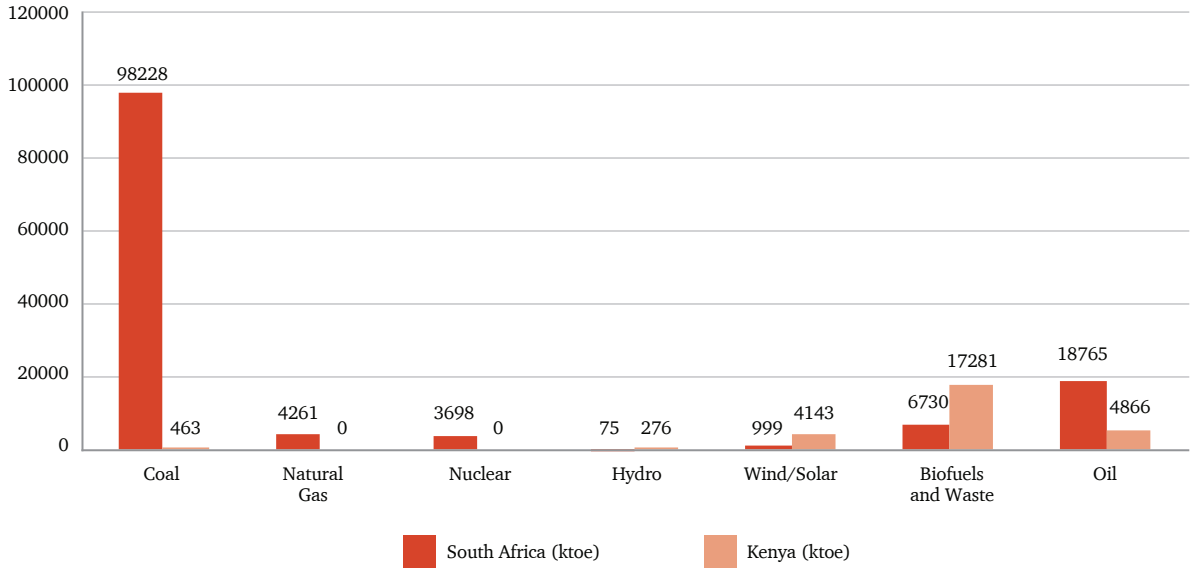
There are many differences even among Africa's industrialised countries, for instance, in energy investment. Kenya has more investments in wind and hydro-energy than South Africa, which has more coal, natural gas, nuclear and oil energy investment (see Figure 4). The motivation to invest in green solutions and the push towards clean energy in countries like Kenya is in danger of being lost due to COVID-19.

Governments have not been able to set up a stimulus for green imperatives as the budget that had been set aside for green investment is being used in response to the COVID-19 emergency. This might delay the push to a green economy unless both things are considered a priority and green investment is incorporated into the stimulus for COVID-19.

In the financial year 2020/2021, Kenya's energy sector was allocated KSh 6.8 billion (US$63,279) each for electricity transmission and distribution and for exploration and geothermal power generation to develop green alternatives.[15] In 2018, Kenya had invested KSh 140 billion (US$1.3 billion) to be used for geothermal, solar and wind energy. Kenya also set up the National Energy Policy and National Climate Change Action Plan in 2018, and South Africa set up the carbon tax in 2019 as a means to develop the green economy. Meanwhile, Nigeria adopted the Flare Gas Prevention and Waste Pollution Regulations and the National Petroleum Policy in 2018 as a push toward the green economy development. Funds allocated to these schemes in each country are now likely to be re-allocated.[16]

The African governments are reducing investment in green energy and are raising taxes at the same time, which will affect both supply and demand incentives for green sectors.[17] For instance, in the recent Finance Bill, the Kenyan government imposed a 14 percent VAT for plastic biodigesters, biogas related equipment and leasing of biogas equipment, and a 15 percent VAT on companies that operate recycling plants.[18] The National Treasury also proposed imposing a 14 percent tax on LPG, a 14 percent tax on solar equipment and accessories, and import duty on biomass stoves.[19] This is because the government is under pressure to have funds in store for a projected economic shock.[20] But these areas were exempt from VAT to increase green investment, and imposing taxes now is a disincentive to boost the use of more efficient forms of energy.[21]

Figure 4: Comparison of energy investment between South Africa and Kenya



Source: International Energy Agency. World Energy Investment 2020[14]

Human capital: Education and training for a resilient population

At the outset of the COVID-19 outbreak, most governments closed schools as a measure to combat the spread of the disease, which has meant that students must now learn at home through online tools or by using printed materials that have been distributed to them. Learning at home is being driven through programmes on TV, the radio and the Internet to ensure continued education during the pandemic. The Ugandan government, for instance, announced through the Office of President Yoweri Museveni that it planned to supply radios and wireless systems to every household to ensure that children could continue their lessons and public information related to COVID-19 was readily available.

East African governments have also made substantial investments in education. Kenya's education budget allocation is 26.7 percent[22] of the total national budget, while in Uganda, it is 8 percent.[23] The Kenyan government has also set aside KSh 2 billion (US$18.6 million) to employ 5000 intern teachers, KSh 800 million (US$7.4 million) for the digital learning programme and competency-based curriculum, and KSh 300 million (US$2.7 million) for the recruitment of information and communication technology interns to support digital learning in public schools.[24]

The ball must not be dropped on education and vocational training due to the disruption caused by the pandemic. The move towards digital transformation has only been accelerated by the pandemic (for more on this, see the chapter on building technological resilience in this report), and Africa must prioritise keeping children engaged and in schools, building digital literacy and capabilities, soft skills, high-order analytical skills and providing vocational training to citizens in order to be able to reap the gains of the Fourth Industrial Revolution.

Thinking About Debt Sustainability

Many countries in Sub-Saharan Africa will suffer not only depressed growth but also risk defaults on debt due to the reduction in exports and depleted foreign reserves. The finance ministers of the G-20 countries recognised the risk of debt default for low-income nations, including 38 in Sub-Saharan Africa.[25] The statement acknowledged that the outstanding debt-service obligations for 2020 for these Sub-Saharan countries would be equivalent to 1.2 percent of the cumulative GDP. This quantum is among the highest of all developing countries under debt and is an indicator that with the real possibility of a collapse in exports and the reduction in GDP growth, repayments will be severely damaging for these countries.

Noting that debt burdens and economic fragility are linked, the G-20 finance ministers proposed debt postponement until the end of 2021. "Extending the standstill to 2021 would help reduce medium-term uncertainty, and provide US$ 36 billion more in liquidity in 2021," they said.[26] This will be a welcome relief and provide the stability that is anticipated, but many African countries (such as Ghana, Kenya, Nigeria, Senegal and Angola) will still experience turbulence since they bear debt obligations to private lenders for whom debt standstill is not an option. African governments must work together with regional and international partners to ensure that debt burdens do not stifle their hard-won gains and create negative feedback loops for countries in particularly precarious positions. Long-term sustainability must be the prerogative for all stakeholders involved.

Table 1: Estimated remaining debt service for 2020 by region

Region	Bilateral	Multilateral	Private	Bilateral + Private	
	In USD billion			In USD billion	As % of countries' GDP
East Asia & Pacific	1.5	0.4	0.9	2.4	0.014
Europe & Central Asia	0.5	0.7	0	0.5	0.005
Latin America & Caribbean	0.2	0.6	0.5	0.7	0.012
Middle East & North Africa	0.2	0.2	0	0.2	0.009
South Asia	4.4	3.4	0.5	4.9	0.007
Sub-Saharan Africa	9.6	3.8	6.9	16.5	0.012
Total	16.5	9.2	8.8	25.3	0.01

Source: OECD[27]

Supply Chain Resilience

In the bid to limit social interaction that enables the rapid spread of COVID-19, most governments were quick to impose domestic and international travel restrictions. The disruption in regional and global supply chains became particularly significant when countries were unable to procure important commodities for medical service delivery. Many countries saw this disruption as an opportunity to resort to domestic manufacturing for necessary items such as personal protective equipment, with varying degrees of success. Many countries in Sub-Saharan Africa rely on India for pharmaceutical products and China for medical equipment, and the adoption of a "domestic preservation approach" by both countries affected access to these goods in the early part of the pandemic. This situation demonstrated the fragility of global supply chains during crises since governments quickly resorted to export restrictions, and firms were unable to supply critical inputs (such as reactive agents for testing) due to hard lockdowns and protectionist instincts.

The disruption in supply chains illustrates the important role that India, China and other countries play in providing intermediate goods for manufacturing for a growing number of African countries. This cannot be reversed entirely, even as countries speak of making supply chains more resilient and re-shoring production. However, the pandemic has activated local manufacturers in Africa to produce inputs and has reactivated debates on import substitution and its sustainability as a policy for growth and development. The extent and scope of the pandemic has sparked hope that African countries may be spurred to develop

regional or domestic manufacturing hubs. The ability to refashion manufacturing plants because of necessity illustrates a degree of resilience at the firm level, but it was necessitated by the failure to secure supplies globally. Whether these hubs will truly emerge and whether their products will be competitive globally will be seen in due course.

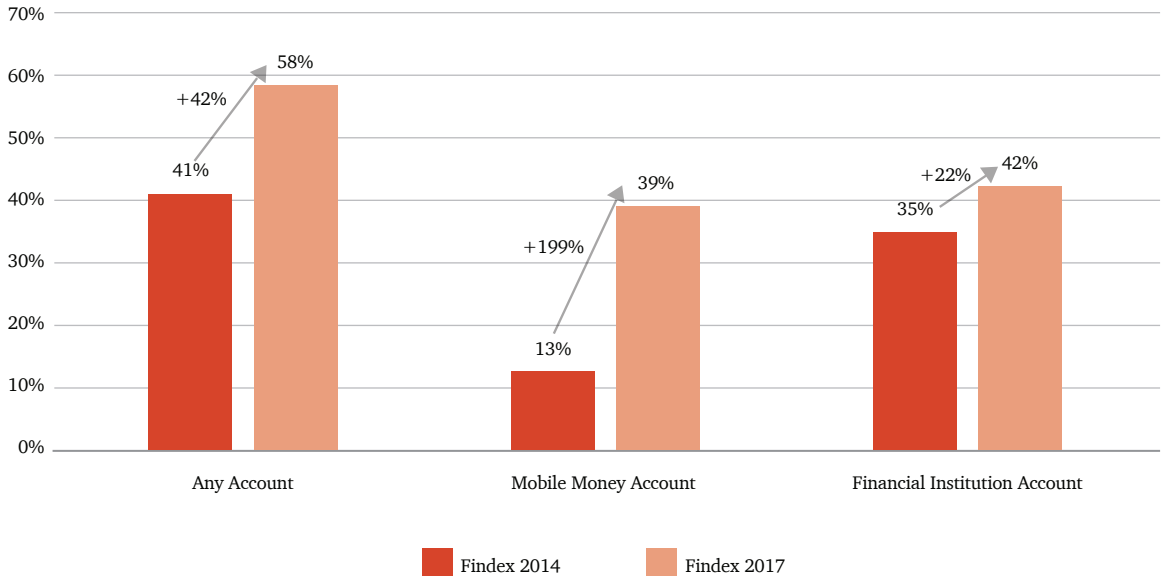
Strengthening the Banking and Financial System

Among the first responses to COVID-19 were those from the banking and financial sector. Initial policy interventions touched on the digital payment ecosystem, central bank rate reduction and loan restructuring by banking institutions. Many African countries are taking advantage of the current pandemic to use digital finance systems to deepen financial inclusion especially among the poor.

The Ghanaian government has developed, in collaboration with GhanaPost and telecommunication service providers, a system which facilitates opening of mobile money and bank accounts remotely using a GPS addressing system[28]. As evidenced in the graph below, as more mobile money accounts are opened, there is a significant increase in financial account ownership. There is therefore expected to be an improvement in access to loan facilities from banking institutions for the newly banked.

Prior to the coronavirus outbreak, Africa's digital economy was doing quite well for itself. Now in the face of this pandemic, governments are tightening their belts to scale up the digital transformation process. In Kenya, approximately 80 percent of mobile money transactions are of KSh 1000 (US$ 9.3) or

Figure 5: Mobile money drives Ghana's increase in financial account ownership



Data Source: Adapted from CCAP[29]

below[30]. The fee waiver for mobile money transactions of up to KSh 1000 has improved financial inclusion as an additional 1.6 million customers are now using this service[31]. The elimination of limits on mobile money transactions; the increase in balance limits in mobile money wallets to KSh 300000 (US$2792) and the removal of charges by payment service providers and commercial banks for transfers between mobile money wallets and bank accounts have contributed to the overall increase in mobile money transactions.[32]

In addition to increasing the limit on individual mobile money transfers, the National Bank of Rwanda has gone a step further to encourage the use of digital channels and contactless mobile payments by waiving all charges on mobile money transfers, transfers

between bank accounts and mobile money wallets and payments for all contactless point of sale transactions. Social protection programmes in countries such as Kenya, Ghana[33], Togo[34] and South Africa[35] during this period have opted to disburse funds via mobile money in an effort to move towards cash-less economies to reduce the spread of the virus.

Business and household incomes are experiencing a shock because of COVID-19, and it is uncertain how long the effects will be felt. What is certain is that there will be an increment in non-performing loans due to the decline in incomes and revenues. Micro-finance institutions that have a high concentration of low-income earners with unstable incomes are most likely to face insolvency issues as their borrowers might fail to meet their debt obligations. In Ghana, a 150-basis points reduction in the monetary policy rate to 14.5%[36] is expected to have positive effects on aggregate demand and household abilities to service debts. The Central Bank of Kenya's[37] response to this was to allow borrowers, both private and corporate, to negotiate with their respective banks for loan extensions for up to a year, with the banks meeting all costs related to the restructuring of loans. In addition to the suspension of the interest rate cap, the Central Bank Rate was lowered to 7 percent[38] from 8.5 percent in a bid to improve access to credit for the economy. However, how much banks are willing to lend, especially to high-risk borrowers such as SMEs and low-income borrowers, is at their discretion and is highly dependent on the bank's risk appetite.

Moving forward, this pandemic has made Africans appreciate the digitization of money transfers, the benefits of which extend beyond the prevention of the spread of COVID-19. Banks shall need to be fortified in order to prevent this health crisis from becoming a financial one, even as viable SMEs and big business should receive more support in the form of loans, especially from international finance institutions to keep their businesses afloat.[39]

Conclusion

The measures discussed in this chapter are ambitious and will require a whole range of policy prescriptions that are beyond the scope of our analysis here. Tremendous political will is also needed to implement the proposed policies as the COVID-19 pandemic tears through the continent. However, this chapter draws attention to these policies as they will be vital building blocks in creating a much more sustainable economy in the long run. These goals require not just political will but also investment. COVID-19 must act as a wake-up call for governments to invest in economic diversification and digital transformation. States must galvanise public investment and incentivise public-private partnerships towards bolstering health systems and state capacity. Governments must also strengthen partnerships with regional and international development organisations, such as the World Bank and the International Monetary Fund, which have acted promptly to provide a combination of grants and loans for African governments as their economies began to falter. It is only by working together that countries will be able to weather the storms ahead.

Endnotes

(1) "Africa Agriculture Status Report 2017," *Alliance for a Green Revolution in Africa,* August 28, 2017, https://agra.org/wp-content/uploads/2017/09/Final-AASR-2017-Aug-28.pdf.

(2) "A Crisis Like No Other, An Uncertain Recovery," *World Economic Outlook Update,* June 2020, https://www.imf.org/en/Publications/WEO/Issues/2020/06/24/WEOUpdateJune2020.

(3) "Impact of COVID19 can open up new avenues for structural transformation in North Africa," *UNECA Media Centre,* June 16, 2020, https://www.uneca.org/stories/impact-covid19-can-open-new-avenues-structural-transformation-north-africa.

(4) "New Data Shows Impact Of Covid-19 On Tourism As UNWTO Calls For Responsible Restart Of The Sector," *United Nations World Trade Organisation News,* June 22, 2020, https://www.unwto.org/news/new-data-shows-impact-of-covid-19-on-tourism.

(5) Yomi Kazeem, "African governments are being forced to develop social welfare programs in an economic crisis," *Quartz Africa,* June 23, 2020, https://qz.com/africa/1872046/african-countries-offer-cash-relief-covid-19-welfare-programs/.

(6) Melis Guven, Himanshi Jain, Jehan Arulpragasam And Iffath Sharif, "Social insurance for the informal sector can be a lifeline for millions in Africa," *World Bank Blogs,* May 20, 2020, https://blogs.worldbank.org/africacan/social-insurance-informal-sector-can-be-lifeline-millions-africa.

(7) "COVID-19 (Coronavirus) Drives Sub-Saharan Africa Toward First Recession in 25 Years," *World Bank News*, April 9, 2020, https://www.worldbank.org/en/news/press-release/2020/04/09/covid-19-coronavirus-drives-sub-saharan-africa-toward-first-recession-in-25-years.

(8) "2020 Mission Billion Challenge: Wuri West Africa Prize," *MIT Challenges*, 2020, https://solve.mit.edu/challenges/wuri-mission-billion-2020.

(9) "Social protection responses to the COVID-19 pandemic in developing countries: Strengthening resilience by building universal social protection," *International Labor Organization*, May 2020, https://www.ilo.org/wcmsp5/groups/public/---ed_protect/---soc_sec/documents/publication/wcms_744612.pdf.

(10) "UN Economic Commission For Africa Calls For A 'Green' COVID-19 Recovery; Joining Other Agencies," *Health Policy Watch,* June 26, 2020, https://healthpolicy-watch.news/un-economic-commission-for-africa-joins-agencies-calling-for-a-green-covid-19-recovery/.

(11) "Access to electricity (% of population) - Sub-Saharan Africa", *World Bank*, https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS?locations=ZG.

(12) "Data Publications," *Kenya National Bureau of Statistics*, https://www.knbs.or.ke/?page_id=3142.

(13) "World Energy Investment 2020," *International Energy Agency*, May 2020, https://www.iea.org/reports/world-energy-investment-2020.

(14) Ibid.

(15) "The National Treasury of Kenya, Budget Statement FY 2020/21," *The National Treasury of Kenya,* June 2020, https://www.treasury.go.ke/component/jdownloads/send/208-2020-2021/1573-budget-statement-fy-2020-21.html.

(16) World Energy Investment Report, 2020.

(17) Nicholas Nhede, "Review of COVID-19 to Reduce Global Investments in Clean Energy," *Smart Energy,* April 27, 2020. https://www.smart-energy.com/renewable-energy/covid-19-to-reduce-global-investments-in-clean-energy/.

(18) "The National Treasury of Kenya, Budget Statement FY 2020/21," *The National Treasury of Kenya,* June 2020, https://www.treasury.go.ke/component/jdownloads/send/208-2020-2021/1573-budget-statement-fy-2020-21.html.

(19) Ibid.

(20) "Review of COVID-19 in Africa: Regional Socio-Economic Implications and Policy Priorities," *OECD*, May 7, 2020.

(21) "The National Treasury of Kenya, Budget Statement FY 2020/21," *The National Treasury of Kenya,* June 2020, https://www.treasury.go.ke/component/jdownloads/send/208-2020-2021/1573-budget-statement-fy-2020-21.html.

(22) Ibid.

(23) "National Budget Framework Paper FY 2020/21," *Ministry Of Finance, Planning And Economic Development,* December 2019, https://budget.go.ug/sites/default/files/National%20Budget%20docs/National%20Budget%20Framework%20Paper%20FY%202020-21_0.pdf.

(24) "The National Treasury of Kenya, Budget Statement FY 2020/21," *The National Treasury of Kenya*, June 2020, https://www.treasury.go.ke/component/jdownloads/send/208-2020-2021/1573-budget-statement-fy-2020-21.html.

(25) "A 'debt standstill' for the poorest countries: How much is at stake?," *OECD Policy Responses to Coronavirus (COVID-19),* May 27, 2020, https://www.oecd.org/coronavirus/policy-responses/a-debt-standstill-for-the-poorest-countries-how-much-is-at-stake-462eabd8/#tablegrp-d1e1143.

(26) Ibid.

(27) Ibid.

(28) "Benefits Of GHANAPOSTGPS," *GhanaPost,* 2020, https://ghanapostgps.com/benefits/

(29) Max Mattern, "How Ghana Became One of Africa's Top Mobile Money Markets," *CGAP Blog,* June 21, 2018, https://www.cgap.org/blog/how-ghana-became-one-africas-top-mobile-money-markets.

(30) "Review Of Emergency Measures To Facilitate Mobile Money Transactions," *Central Bank of Kenya,* June 24, 2020, https://www.centralbank.go.ke/uploads/press_releases/913082204_Press%20Release%20-%20Review%20of%20Emergency%20Measures%20-%20Mobile%20Money%20Transactions.pdf

(31) Ibid.

(32) "Measures to Mitigate the Economic Impact of COVID19 Pandemic," *National Bank of Rwanda,* March 18, 2020, https://www.bnr.rw/news-publications/news/news-press-release/.

(33) Buddy Buruku, "Ghana Launches World's First Digital Finance Policy Amid COVID-19," *CGAP Blogs*, May 21, 2020, https://www.cgap.org/blog/ghana-launches-worlds-first-digital-finance-policy-amid-covid-19.

(34) Faure Essozimna Gnassingbé, "Mobile cash is the best way to help Africa fight Covid-19," *Financial Times*, April 12, 2020, https://www.ft.com/content/adc604f6-7999-11ea-bd25-7fd923850377.

(35) “Coronavirus: South African Social Security Agency (SASSA) on faster payment of Coronavirus COVID-19 Grants during Level 3 lockdown,” *Africa News,* May 26, 2020, https://www.africanews.com/2020/05/26/coronavirus-south-african-social-security-agency-sassa-on-faster-payment-of-coronavirus-covid-19-grants-during-level-3-lockdown/.

(36) “Monetary Policy Committee Press Release,” *Bank of Ghana,* March 18, 2020, https://www.bog.gov.gh/wp-content/uploads/2020/03/MPC-Press-Release-March-2020-3.pdf.

(37) *Central Bank of Kenya,* “Review of emergency measures to facilitate mobile money transactions,

(38) “Central Bank Rate,” *Central Bank of Kenya*, 2020, https://www.centralbank.go.ke/.

(39) Judith Tyson, “The impact of Covid-19 on Africa’s banking system,” *ODI*, June 8, 2020, https://www.odi.org/blogs/17013-impact-covid-19-africa-s-banking-system.

One ring to rule them all: Fostering socio-political resilience for effective crisis response

Sangeet Jain

The COVID-19 pandemic has been an extraordinary stress-test for political systems across the globe. As states work to arrest the further spread of the pandemic, their experiences reveal that an effective response to crisis is not just a function of infrastructure and readiness, but is also determined by political will, social cohesion and the resilience of political systems. As developed, high-functioning states around the world buckle under the weight of the health crisis—even as their "pandemic preparedness scores" were deemed high by the Global Health Security Index—analysts are pointing to various determinants that have enabled regions like East Asia to out-perform the West in their response. These factors include leadership, trust, and political culture. This chapter focuses on the role of political resilience in combating health crises such as the COVID-19 pandemic, and the ways to build political resilience to make crisis response more effective.

Political resilience does not merely imply state capacity and robustness, but encompasses the idea of collaborative governance and the strength and participative capacities of political actors beyond the state.[1] Given that disease outbreaks do not recognise state boundaries, countries will be rendered weaker if they do not recognise the importance of global coordination and collaboration. This is especially true for the continent of Africa, where international assistance and collaboration can greatly bolster weak state capacities. This chapter therefore takes into account both levels of analysis: the nation-state, and the international.

With reference to the nation-state, this chapter outlines five critical components of resilience: political legitimacy and trust, collaborative governance, adaptive responsible leadership, combating corruption and building accountability, and the need for good communication and transparency. At the international level, this chapter examines the role of global collaboration and international institutions, knowledge-sharing mechanisms, and foreign aid and assistance in a country's ability to weather crises such as COVID-19.

Political legitimacy and trust: the key ingredient

The COVID-19 pandemic has exacted a heavy toll on countries and has necessitated massive sacrifices on the part of their citizens. To ensure compliance with directives meant to address the health emergency, governments must work to build trust among their citizens.

This is likely to be a fraught process. Africans are reported to not have a very high opinion of their state's capacities to begin with: a 2016-18 survey found that only about 52 percent rate their governments effective in providing basic health services, and only 44 percent believe that their governments provided clean water and sanitation adequately.[2] Social nets are weak in Africa, and making visible efforts to bolster them will be key to maintaining social cohesion—something countries like Ghana and South Africa are working towards by providing wage subsidies and free food rations. To be sure, trust is also a function of accountability; this is nurtured over time and with effort, when parties fulfil their commitments consistently.

In countries where inequality is high, income and wealth disparities undermine trust in the government and weaken social cohesion. In turn, this engenders the "politics of resentment",[3] which is hugely detrimental to controlling disease outbreaks, as it is scornful of experts and the "elite" state machinery. Higher inequality causes worse health outcomes, in turn increasing the morbidity burden of diseases such as COVID-19.[4] This is why instituting social safety nets and making efforts towards economic empowerment is extremely important, and cannot be decoupled from political resilience.

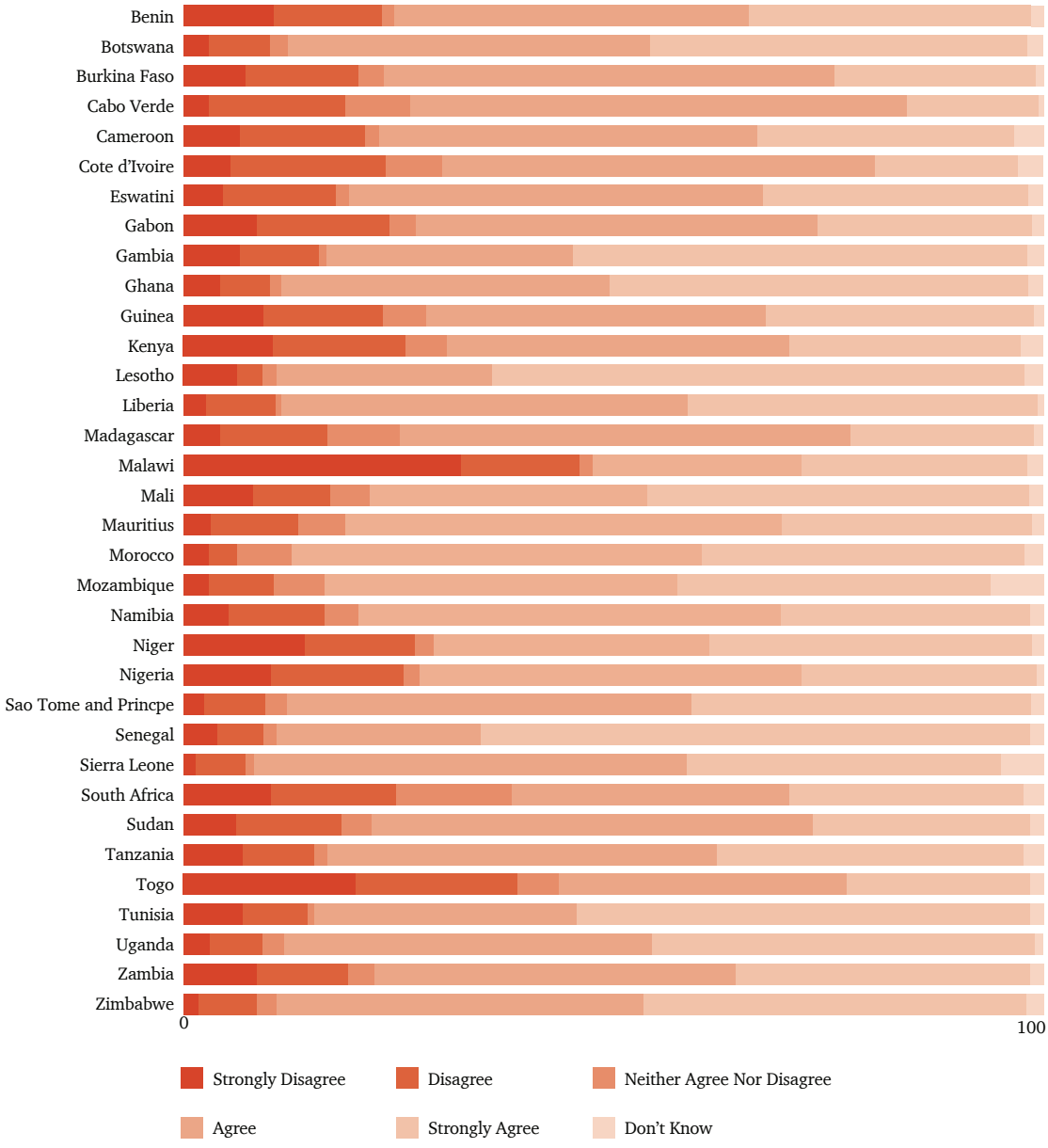
Additionally, the presence of conflict has greatly amplified the impact of the pandemic in Africa. As seen in the chapter on political risks in this report, armed conflict has implications for complicating the pandemic response. Governments have had to rely on innovative measures such as the use of social media to engage people—especially the youth who

comprise huge proportions of the population—during lockdowns, and have intensified efforts to build trust in conflict-ravaged areas.[5] As policymakers may have limited capacity to access such areas, they can engage civil society organisations and local groups to gather public-health data and institute measures to alleviate the impact of the pandemic. They can also be trained and engaged to prevent the exacerbation of tensions and gender-based violence which is likely to increase in such situations.[6]

Trust is essential in order to elicit the necessary changes in behaviour required to combat health crises, and was key to Liberia's approach to combat Ebola in 2016.[7] One of the fundamental ways to build trust is to give people ownership of the process of pandemic response. Engagement with the community is necessary for the cooperation of the public, enabling the government to move more effortlessly and rapidly. Uganda, for example, learned from its experience with Ebola and almost immediately prioritised putting in

Figure 1: Percentage of people in Africa who believe that citizens must obey the law

(An assessment of readiness to comply with the law)



Source: 34 Country Afrobarometer Round 7 Survey (2016-18)

place measures for the communication of the risks involved with regard to the COVID-19 pandemic and the behavioural changes required of the public.[8]

Heavy-handed responses, on the other hand, can do irreparable damage. Police brutality and the use of disproportionate force in the event of lockdown violations can fester discontent and even trigger open revolt among populations, when stability and compliance is imperative. The South African government has charged about 230,000 of its people for lockdown violations, among the highest in the world.[9] In Nigeria, the police are battling accusations of excessive force to enforce lockdowns. Kenya's police forces are being accused of the same behaviour, and Rwandan soldiers have reportedly committed pillage and rape during the pandemic.[10] Such securitised approaches are often the post-colonial legacies of authoritarian states inherited by Africa, which are still haunting present-day polities.[11]

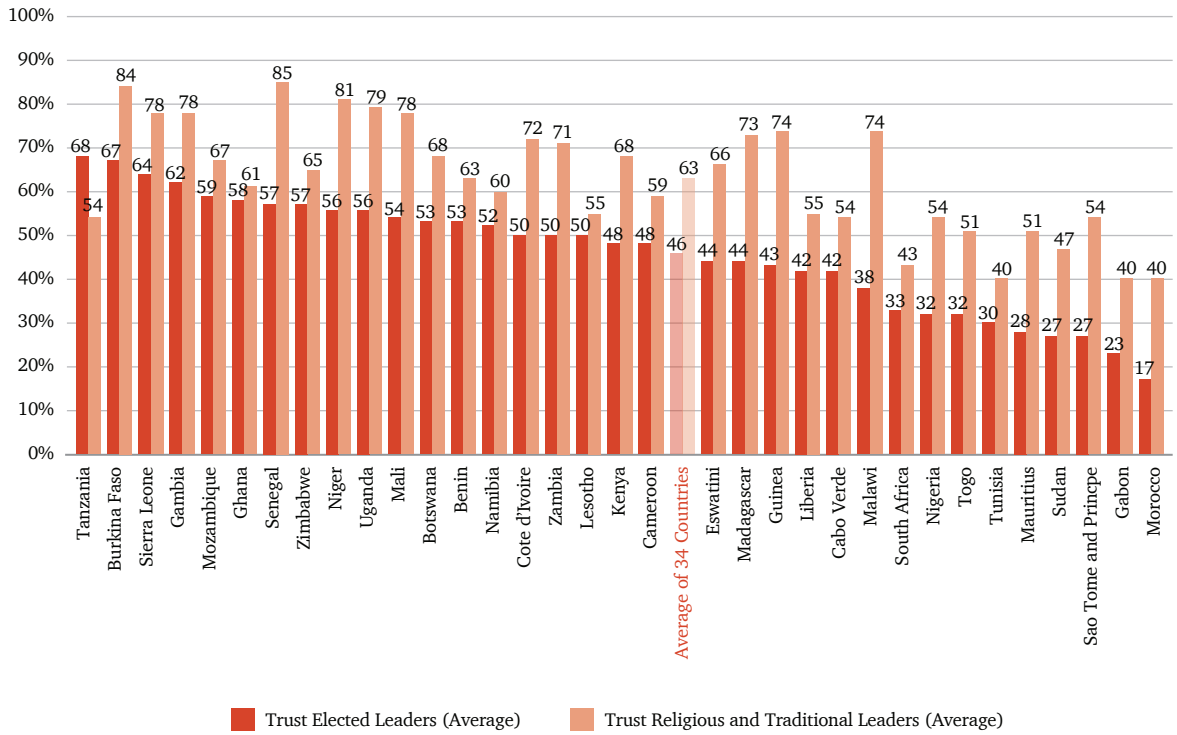
People who have experienced brutality at the hands of state forces often find it difficult to trust any kind of state agency—and this includes public health officials. This creates a formidable challenge for public health response, particularly during crises.[12] Clear and empathetic communication on the part of authorities goes a long way: many Africans are compelled to defy lockdowns due to the need to go out for work, or even just to fetch water (piped water is still a luxury in Africa).[13] Top-down approaches only serve to irk the long-suffering populace. In Kenya, for example, the government has taken to reprimanding the public for their "lack of discipline", which has only provoked resentment.[14]

Building trust in institutions must be a prerogative, as public institutions lead the way during emergency response. State legitimacy is important: if citizens feel that the electoral process is being impinged upon or the crisis is being manipulated to benefit incumbent political parties, it becomes hugely detrimental to public trust. About 18 countries in Africa are due for elections in 2020, including Ghana and Ivory Coast. Holding elections in the present climate may not be feasible, but any measure taken to postpone elections must be constitutionally grounded and keep all stakeholders informed. Preserving the "third pillar", i.e, an independent media and vocal civil society, is often key to political resilience in such situations.[15]

Collaborative governance

While governments are at the forefront of crisis management, the most effective responses are those which take a "whole-of-society approach".[16] Governments must consult widely with all stakeholders, and communicate frequently and clearly with those affected.

Figure 2: Trust in elected leaders vs. religious and traditional leaders in Africa



Source: 34-country Afrobarometer Round 7 Survey (2016-18)

Collaborative sense-making is important in the face of complex crises, and following scientific advice and reviewing all available evidence becomes especially important in a fast-moving crisis such as the present pandemic. Facilitating different sorts of expertise—medical, economic, political—makes for more informed decision-making, and enables learning from mistakes in rapidly evolving situations. Communicating fully and openly, instead of jealously guarding domains, is a much more mature strategy. Since communities have to bear the brunt, they must justly be at the policy table.

Working in collaboration with civil society is all the more crucial in Africa. The same 2016-18 survey found that Africans trust traditional leaders (57 percent) and religious leaders (69 percent) more than their elected leaders (46 percent).[17] Therefore, governments that engage with community leaders—including those from volunteer and professional bodies, as well as religious organisations—and accept their assistance in tackling crises, are likely to fare much better as people will heed their advice faster and in a more sustained, patient way. Nigeria's Covid Presidential Taskforce has done well to institute a cultural arm, responsible for public messaging and using the arts to convey public health information.[18] Local community leaders and non-government organisations can also be drawn into pandemic response to distribute essential resources like masks and encourage behavioural change and disseminate information on public health guidelines. Kenya's Red Cross Society and Zakat Kenya are among the organisations providing assistance in Kenya's informal settlements.[19]

Collaborative governance also refers to multilevel governance, i.e., devolving authority to local governments. After all, they are likely to be more aware of local nuances; the more centralised the response, the less legitimate and more heavy-handed it will appear to citizens. Mira Aki-Sawyerr,[20] Mayor of Freetown in Sierra Leone, shared her city's governance challenges in a webinar in June, emphasising the need for clear command and control structures to manage and disseminate information, and to invest in local governments to empower them. Taiwan's success with COVID-19 pandemic response, for instance, has hinged on coordinated action with its local governments which have independent epidemic response budgets and active neighbourhood wardens. Taiwan has also found a way to build crucial partnerships with the private sector: for instance, the Taiwanese CDC partners with Taipei's hotels for them to act as local checkpoints for foreigners entering the country during disease outbreaks.

Adaptive responsible leadership

One person alone cannot run a country. Leaders who are able to build effective management cultures around them and seek a range of perspectives, have been able to manage crises most effectively. The first crucial step for crisis mitigation to succeed is for leaders to acknowledge the scale of the problem and communicate it accordingly. For example, Burundi and Tanzania were in denial during the early phase of the pandemic. Tanzania's president was reported to have suggested that papayas may also be Covid-positive,[21] and Madagascar's president advocated herbal tea as a "cure".[22] Burundi may have put many of its citizens at high risk, as its leaders were more focused on canvassing votes and conducting elections, than on addressing the pandemic. What is needed instead is scientific humility and an ability to listen, says executive director of Partners in Health, Rwanda.[23] Decision-making must be evidence-based and expert-led as far as possible and be adaptive enough to take changing trends into account. Effective leaders will accept and account for uncertainty.

This pandemic has also demonstrated the importance of inclusivity in leadership. There has been noise around how countries that have performed relatively better during the pandemic also happen to have governments led by women (Angela Merkel-led Germany, Jacinda Ardern-led New Zealand, Sanna Marin-led Finland, and Tsai Ing-wen-led Taiwan are a few examples). Devi Sridhar of the University of Edinburgh[24] suggests that this may be because the presence of a female leader suggests diversity and openness in government structures, and more open political culture and values. It also suggests that a variety of voices and perspectives are present in key decision-making bodies, making for better response and the absence of "groupthink". Africa has made considerable progress in this regard, with the share of women in parliament having doubled since 2000. However, some countries have visibly outperformed others; Rwanda, for one, has the highest number of female parliamentarians in the world at 61.3 percent.[26]

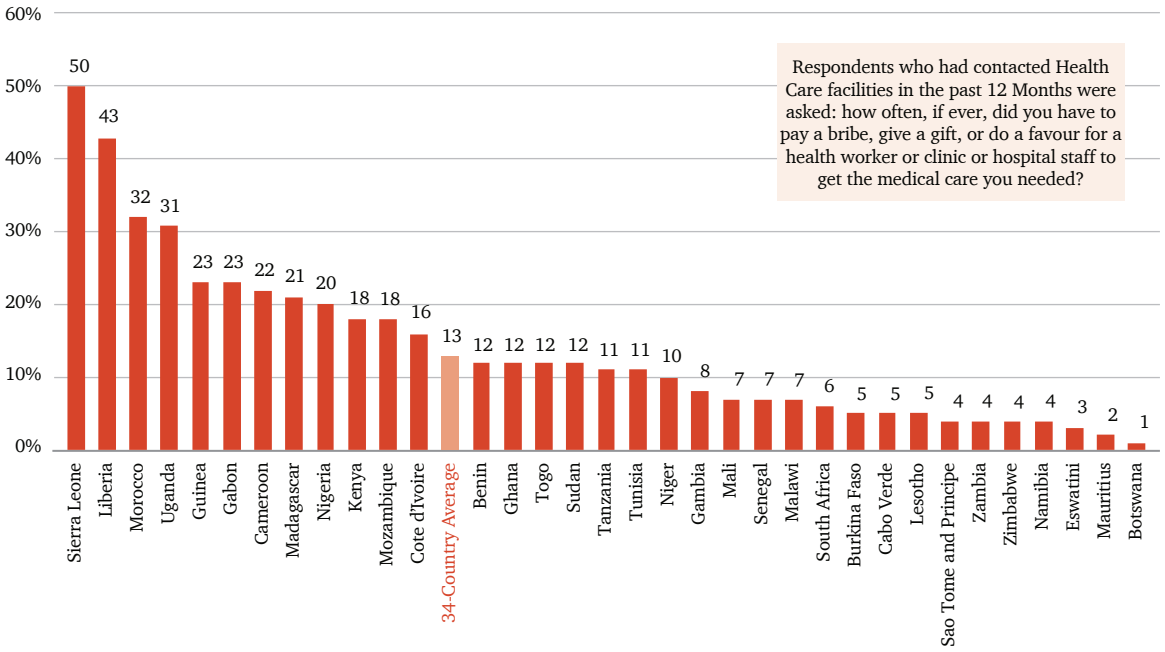
Combating corruption and building accountability

Difficult times tend to expose societal faultlines, heightening the risks of perverse profiteering and corruption, as institutions begin to falter and people feel desperate. This threatens to undermine crisis response. The Ebola Crisis in 2014-16 in Africa saw corruption costs at about US$ 6 million, according to the Red Cross.[26] Even in normal times, the health sector experiences losses of around US$ 500 billion every year due to corruption. Making the system resilient to prevent such leakages and profiteering is essential to ensure that assistance reaches everyone in need.

About 10-25 percent of funds spent on procuring medicines and supplies are lost every year to corruption, according to the UNODC.[27] Stockpiling and black-market selling is a risk—India set up an information hotline for people to report inflated prices and profiteering. Governments and international institutions must put transparent contracting systems in place, to avoid extortionist behaviour. There must also be transparency around impending shortages to enable health systems to prepare accordingly, and corporations must not be allowed to engage in unethical practices. There should be multiple levels of stock-taking to prevent diversion of scarce funds. When public funds are found to be diverted, public trust is shaken. During the Ebola crisis, for example, there were rumours in Liberia that the emergency was a fabrication by the government to capture international funds, inviting much resistance from the community.[28]

Bribery is another major risk as fragile healthcare systems are overwhelmed—ensuring that only the privileged retain access to precious life-saving resources, and are allowed to subvert restrictions meant in the public interest. Once such a perception is formed, it endangers public trust in the system. 2019's Global Corruption Barometer for Africa and MENA found that bribery rates in the region were at 14 percent. It is essential therefore to strengthen institutional capacity of health systems, digitalise accounting records, install sound public financial management systems, and have multi-level independent enforcement authorities for enforcing regulations. This is especially difficult in largely informal economies, and laws must account for this, and not be unrealistic as as to invite corruption. Legitimacy of governments matter.

Figure 3: The incidence of bribery in Africa's health care systems



Source: 34-country Afrobarometer Round 7 Survey (2016-18)

Effective communication and transparency

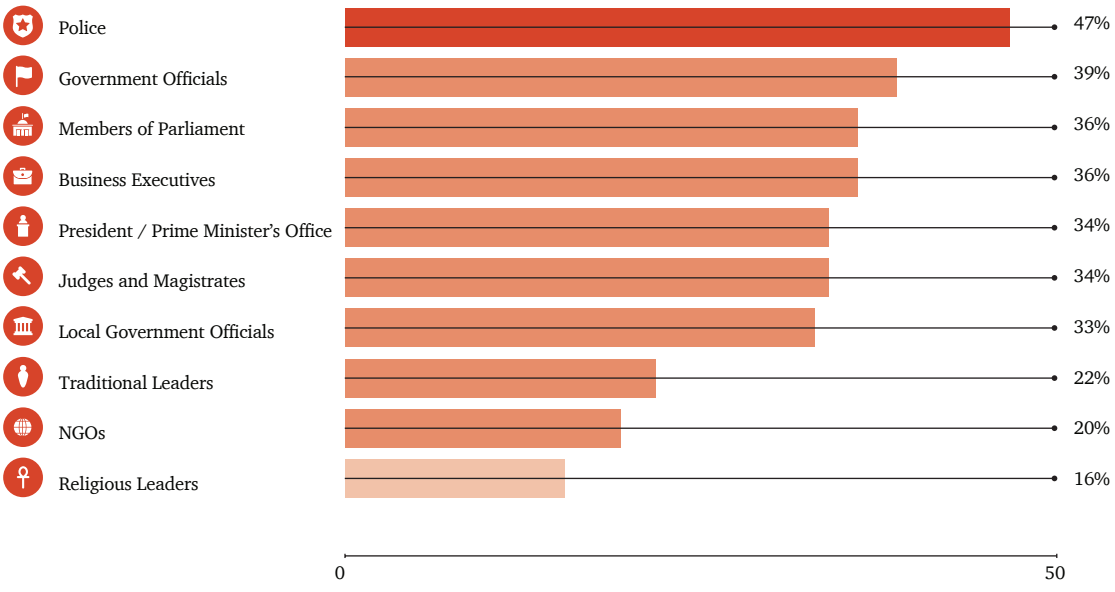
In the current age of incessant communication, rumour-mongering has reached new heights owing to social media. An annoyance in normal times, this is particularly dangerous during a pandemic. Communicating reliable, authoritative information regularly is essential in the management of health crises.

Irresponsible governments can make things worse. Some countries deliberately concealed data such as their availability of medical equipment, in order to shield themselves from political ramifications, according to Benjamin Djoudalbaye of the African CDC.[29] These include the US president advocating injecting bleach as a remedy for COVID-19,[30] and the Tanzanian president criminalising discussion on COVID-19 in the media and deciding to stop releasing case data early in April as the "grace of God" had seemingly rendered his country immune to the virus.[31]

What are the elements of effective communication? One, states must keep people informed by communicating through official channels and frequently enough so that people do not have to turn to rumour mills. Two, communication should be designed keeping in mind the needs of the population: for example, in Nigeria, public health messages were released in English and not Hausa, which many in the country do not understand.[32] Three, authorities should be honest about what is known, and not deceive the public. Four, all efforts must be made to counter misinformation and fake news, by using all available community channels, like Wa FM, an internet radio station in Cote D' Ivoire. States should preferably use the same channels that fed the misinformation in the first place.[33] Misinformation can cause panic, creating additional crises such as price shocks – indeed, Ebola saw rice prices go up by 30 percent in Guinea, Liberia and Sierra Leone.[34] Five, all government experts must speak in one voice. Mixed messaging fosters confusion, anxiety and mistrust. It could help to be clear about which elements of the response may keep changing frequently and which ones are paramount.[35] Six, community and religious leaders should be engaged, in order to ensure public communication is being disseminated by them to enable a wider reach, and bolster the government's messaging effort.

While countries must take all measures in their power to strengthen their domestic systems for resilience, it would be inconceivable for nation-states to address crises of global proportions without the support of other countries and global actors.

Figure 4: Percentage of Africans who think that most or all people in these groups or institutions are involved in corruption



Source: Transparency International's Global Corruption Barometer 2019

Harnessing the Power of Multilateralism

Viruses know no borders. As Ethiopian Prime Minister Abiy Ahmed wrote in an editorial in the Financial Times,[36] if all countries do not come together to tackle the virus in the developing world, it shall inevitably bounce back to the developed world. It would be a mistake to believe that such a crisis can be combated by being inward-looking and erecting barriers.

The world seems to be increasingly skeptical of the power of multilateralism. The credibility of global institutions such as WHO has been severely damaged by the COVID-19 pandemic, especially with the US threatening to withdraw its membership.[37] However, multilateral institutions have proven crucial to combat crises, and especially so for African countries. The WHO helped the African response to COVID-19 as it quickly identified 13 priority countries in Africa and accelerated coordination with their health ministries.[38] The African CDC - a legacy of the Ebola outbreak - has coordinated, and it has coordinated admirably and most successfully with WHO during the present pandemic.[39] It must aim to be even more robust and partner with external CDCs to build infrastructure and streamline communication further to share best practices.[40]

WHO has great capacity to marshal trans-national networks and expertise, and must not be allowed to disintegrate. It is crucial, even more so now with climate change and other such crises on the horizon—to deepen collaboration, and invest in early-warning systems across the globe.[41] To better prepare for infectious disease outbreaks in the future, global agendas must accord priority to the preservation of biodiversity; scientific experts have long advocated for this. Conventions on biodiversity like the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), have not been backed by adequate resources and binding power and need reform.[42] The world had woken to this threat after the SARS outbreak in 2002, when it came up with the updated International Health Regulations in 2005, and institutionalised pandemic response further.

Inter-African forums have also risen to the occasion. African countries created a platform and digital purchasing system under the leadership of the African Union to pool their orders, to gain bargaining strength in a queue for diagnostics and medical equipment, where power is leverage.[43] African countries must further strengthen regional coordination and aim to replicate the success of institutions such as the East Africa Public Health Laboratory Networking Project (EAPHLN).[44] Regional forums are also particularly crucial for effective disease surveillance and mapping zoonotic hotspots, and therefore must share resources and equipment.[45]

Geopolitics is a severely contested area, especially now as global isolationism beckons. Building trust between countries is an even more crucial imperative, as it greatly slows down response if countries and their institutions do not trust each other. During the West Africa Ebola outbreak, for instance, infected samples had to be moved between Guinea and Paris, which required trust-based communication between public health institutions in both countries.[46]

Countries do not exist in a vacuum, as Joia Mukherjee of Partners for Health points out. Africa has suffered a drain of medical health personnel to the West, and Africa's heavily privatised healthcare system is also partly a function of neoliberal policies that made foreign aid and assistance conditional on models that required users to pay fees for medical services.[47] Therefore, pushing for better policy frameworks and strengthened international institutions is much more crucial than countries often realise.

Knowledge-sharing and collaborations

As African governments make efforts to bolster their R&D investment and enhance workforce capabilities in response to the present pandemic, they must also make efforts to strengthen their regional and global partnerships. The NCDC has taken the initiative to share the viral genome of the first confirmed case of the novel coronavirus in Africa. The African CDC created a Regional Integrated Surveillance and Laboratory Networks (RISLNET) platform, to link Africa's public health assets and create a knowledge hub of continent-relevant resources for ready deployment.[48] The Pasteur Institute of Dakar[49] has collaborated with a UK laboratory to produce a cheap and quick diagnostic test for COVID-19 which is manufactured in Senegal. This shall ensure that global solutions are made locally available. Real-time sharing of information and collaboration with regard to manufacturing initiatives and quality standards can catalyse rapid and effective delivery of medical innovation across the continent.

The role of foreign aid and assistance

The role of foreign aid and assistance is of tremendous significance as some countries struggle to put out multiple fires, with the pandemic outbreak straining state capacity as violent conflicts rage on in many parts of Africa. In times like these, international aid must be seen as a global public good.[50]

Conflict-ravaged areas which are already home to refugees and displaced people, are extremely susceptible to disease outbreaks. In many places in Africa, life-saving international assistance was unable to reach its intended beneficiaries due to border closures. Access by international aid groups and healthcare professionals, and the provision of supplies, must immediately be facilitated by host governments.[51] In conflict-affected areas, however, the terrain gets more complicated as the target beneficiaries are often politically marginalised and are likely to be hostile to their government. Research[52] conducted in Guinea suggests that in such regions, people look more kindly at non-governmental actors and local civil society actors delivering public health advisories.

Bilateral and multilateral donors, including partners from developing countries like India,[53] must align their response endeavours for better coordination and targeted delivery of scarce resources. For better aid effectiveness, a crucial tenet is always to treat the recipient country governments as active, collaborative stakeholders, Domestic institutions can best deliver international assistance especially during crises, as new programmes cannot be created amid a crisis. Amanda Glassman of the Centre for Global Development suggests[54] that active information-sharing from African countries would enables better evidence-based donor responses. In crisis situations, telephone hotlines for reporting on aid effectiveness have been found to be useful in Bosnia and Herzegovina in 2014.[55] Apart from diplomatic efforts, international institutions have a role in this regard as well: WHO created the COVID-19 Partners Platform to match country requirements with donor funds.[56]

Conclusion

The pandemic response may take African countries one of two ways. If handled poorly, it may exacerbate political backlash, create widespread discontent and distrust, and reverse the hard-won development gains of many countries. On the other hand, it may well be a shock massive enough to galvanise countries across the continent to undertake much-needed structural reforms. Political crises have a way of triggering shifts in state capabilities and policy perspectives, and have historically been significant in reshaping polities across the globe, often reducing inequalities and producing political leaders that truly make a difference.[57]

South Africa's experience provides a cautionary tale: it was initially able to prevent an outbreak through early decisive action, only to later see a rapidly escalating surge in cases. Therefore, navigating the current and future crises shall necessitate ceaseless vigilance and efforts to make healthcare systems and governance capacity more resilient in the meantime. What is needed is political adaptability and flexibility, keeping in mind the evolving needs of the hour, as well as a steadfast adherence to the rule of law. There is no single metric of "good governance", and an effective response is one which takes into account ground realities and context. For example, South Africa, Ghana and Senegal knew they could act aggressively in the face of COVID-19 and imposed hard lockdowns, while Ethiopia took early interventions but stopped short of a lockdown, using its system of health posts around the country to keep the pandemic in check.[58] Therefore, prescriptive remedies of what a "good" political system looks like are of precious little help. The only universal prescription we offer therefore, is the need for governments and international stakeholders to build trust and accountability, while fostering collaborative and better-coordinated governance on both the domestic and international scale.

Endnotes

(1) Jonathan Schwartz and Muh-Yong Yen, " Toward a collaborative model of pandemic preparedness and response: Taiwan's changing approach to pandemics," *Journal of Microbiology, Immunology and Infection* 50, no. 2 (April 2017) :125-132, https://www.sciencedirect.com/science/article/pii/S1684118216301463.

(2) E. Gyimah-Boadi and Carolyn Logan, "Many Africans distrust their governments. How will that affect their coronavirus response?," *The Washington Post,* May 1, 2020, https://www.washingtonpost.com/politics/2020/05/01/many-africans-distrust-their-governments-how-will-that-affect-their-coronavirus-response/.

(3) Jeffrey D. Sachs, "How Inequality Fuels COVID-19 Deaths," *Project Syndicate*, June 29, 2020, https://www.project-syndicate.org/commentary/inequality-fuels-covid19-mortality-by-jeffrey-d-sachs-2020-06?utm_source=Project+Syndicate+Newsletter&utm_campaign=67133fbc7b-covid_newsletter_02_07_2020&utm_medium=email&utm_term=0_73bad5b7d8-67133fbc7b-107084489&mc_cid=67133fbc7b&mc_eid=b402c6c3cf.

(4) "A Much Better New Normal? Professor Kate Pickett on the impact of COVID-19", *University of Cambridge News*, May 26, 2020, https://www.robinson.cam.ac.uk/news/much-better-new-normal-professor-kate-pickett-impact-covid-19

(5) "Beyond the COVID-19 horizon", *Washington, DC: Wilson Center*, 2020, https://www.wilsoncenter.org/sites/default/files/media/uploads/documents/On_the_horizon_covid_update.pdf.

(6) Adam Burke, "Peace and the pandemic: the impact of COVID-19 on conflict in Asia," *Devpolicy Blog*, April 14, 2020, https://devpolicy.org/peace-and-the-pandemic-the-impact-of-covid-19-on-conflict-in-asia-20200414/.

(7) "African Adaptations to the COVID-19 Response," *Africa Center for Strategic Studies*, April 15, 2020, https://africacenter.org/spotlight/african-adaptations-to-the-covid-19-response/.

(8) Patrick Mugo Mugo, " COVID-19 Response: What Uganda and Rwanda Got Right and What Kenya, Tanzania and Burundi Didn't," *The Elephant*, June 18, 2020, https://www.theelephant.info/features/2020/06/18/covid-19-response-what-uganda-and-rwanda-got-right-and-what-kenya-tanzania-and-burundi-didnt/.

(9) Benjamin Fogel, "Lockdown 2.0," *Africa is a Country*, June 6, 2020, https://africasacountry.com/2020/06/lockdown-2-0.

(10) Jina Moore, "What African Nations Are Teaching the West About Fighting the Coronavirus,"*The New Yorker*, May 15, 2020, https://www.newyorker.com/news/news-desk/what-african-nations-are-teaching-the-west-about-fighting-the-coronavirus.

(11) Patrick Gathara, "The need for a people-driven response to the coronavirus pandemic," *Africa is a Country*, April 11, 2020, https://africasacountry.com/2020/04/the-need-for-a-people-driven-response-to-the-coronavirus-pandemic.

(12) Nicole Wetsman, "Police violence will make it harder to fight COVID-19," *The Verge*, June 1, 2020, https://www.theverge.com/2020/6/1/21275115/police-violence-coronavirus-response-trust-contact-tracers-effects.

(13) Martin Ravallion, "Pandemic Policies in Poor Places," *Center for Global Development,* April, 2020, https://www.cgdev.org/sites/default/files/pandemics-in-poor-places.pdf.

(14) Ibid.

(15) Doss and Mo Ibrahim , "Alan Doss and Mo Ibrahim on preventing covid from killing democracy in Africa," *The Economist,* June 17, 2020, https://www.economist.com/by-invitation/2020/06/17/alan-doss-and-mo-ibrahim-on-preventing-covid-from-killing-democracy-in-africa.

(16) Patrick Gathara, "The need for a people-driven response to the coronavirus pandemic," *Africa is a Country*, April 11, 2020, https://africasacountry.com/2020/04/the-need-for-a-people-driven-response-to-the-coronavirus-pandemic.

(17) E. Gyimah-Boadi and Carolyn Logan, "Many Africans distrust their governments. How will that affect their coronavirus response?," *The Washington Post,* May 1, 2020, https://www.washingtonpost.com/politics/2020/05/01/many-africans-distrust-their-governments-how-will-that-affect-their-coronavirus-response/.

(18) Patrick Dupoux, Jim Larson, Shalini Unnikrishnan, and Wendy Woods, "Fighting COVID-19 in Africa Will Be Different", *Boston Consulting Group,* March 26, 2020,

(19) Jonathan Schwartz and Muh-Yong Yen, " Toward a collaborative model of pandemic preparedness and response: Taiwan's changing approach to pandemics," *Journal of Microbiology, Immunology and Infection 50*, no. 2 (April 2017) :125-132, https://www.sciencedirect.com/science/article/pii/S1684118216301463.

(20) Yvonne Aki-Sawyerr, Nicholas Westcott and David Pilling, " Africa beyond Covid-19," (webinar) June 16 2020, *Overseas Development Institute*, 1:22:29, https://www.odi.org/events/16993-africa-beyond-covid-19.

(21) Patrick Mugo Mugo, " COVID-19 Response: What Uganda and Rwanda Got Right and What Kenya, Tanzania and Burundi Didn't," *The Elephant*, June 18, 2020, https://www.theelephant.info/features/2020/06/18/covid-19-response-what-uganda-and-rwanda-got-right-and-what-kenya-tanzania-and-burundi-didnt/.

(22) Ibid.

(23) Jina Moore, "What African Nations Are Teaching the West About Fighting the Coronavirus,"*The New Yorker,* May 15, 2020, https://www.newyorker.com/news/news-desk/what-african-nations-are-teaching-the-west-about-fighting-the-coronavirus.

(24) Amanda Taub, "Why Are Women-Led Nations Doing Better With Covid-19?, "*The New York Times,* May 15, 2020, https://www.nytimes.com/2020/05/15/world/coronavirus-women-leaders.html.

(25) "Foresight Africa Top Priorities For The Continent 2020-2030," *The Brookings Institution*, Washington DC, 2020, https://www.brookings.edu/multi-chapter-report/foresight-africa-top-priorities-for-the-continent-in-2020/.

(26) "Corruption And The Coronavirus," *Transparency International*, March 18, 2020, https://www.transparency.org/en/news/corruption-and-the-coronavirus.

(27) Kendra Dupuy and Boris Divjak, "Ebola and corruption: Overcoming critical governance challenges in a crisis situation," *Chr. Michelsen Institute U4 Brief,* no. 4 (March 2015): 1-4, https://www.cmi.no/publications/file/5522-ebola-and-corruption.pdf.

(28) Ibid.

(29) Ruth Maclean and Simon Marks, "10 African Countries Have No Ventilators. That's Only Part of the Problem," *The New York Times,* May 17, 2020, https://www.nytimes.com/2020/04/18/world/africa/africa-coronavirus-ventilators.html.

(30) "Coronavirus: Outcry after Trump suggests injecting disinfectant as treatment", *BBC News*, 24 April 2020, https://www.bbc.com/news/world-us-canada-52407177

(32) Ruth Maclean and Simon Marks, "10 African Countries Have No Ventilators. That's Only Part of the Problem," *The New York Times,* May 17, 2020, https://www.nytimes.com/2020/04/18/world/africa/africa-coronavirus-ventilators.html.

(33) Ruth Maclean, "Coronavirus Accelerates Across Africa," *The New York Times,* June 16, 2020, https://www.nytimes.com/2020/06/16/world/africa/coronavirus-africa.html.

(34) Diomma Dramé "The health crisis: Fertile ground for disinformation," *UNESCO Courier*, July 1, 2020 ,https://en.unesco.org/courier/2020-3/health-crisis-fertile-ground-disinformation.

(34) Patrick Dupoux, Jim Larson, Shalini Unnikrishnan, and Wendy Woods, "Fighting COVID-19 in Africa Will Be Different", *Boston Consulting Group,* March 26, 2020.

(35) Ben Ramalingam, Leni Wild and Matt Ferrari ,"Adaptive leadership in the coronavirus response," (London: *Overseas Development Institute,* 2020), https://www.odi.org/sites/odi.org.uk/files/resource-documents/032020_pogo_coronavirus_adaptation_0.pdf.

(36) Abiy Ahmed, "If Covid-19 is not beaten in Africa it will return to haunt us all", *Financial Times*, March 25, 2020, https://www.ft.com/content/c12a09c8-6db6-11ea-89df-41bea055720b

(37) Kim Hjelmgaard, "Trump threatens to permanently cut WHO funding and withdraw US membership", *USAToday*, May 19, 2020, https://www.usatoday.com/story/news/world/2020/05/19/covid-19-trump-threatens-withdraw-permanent-funding-cut-world-health-organization/5218811002/

(38) Joanne Chukwueke , "African countries prepare for a coronavirus pandemic," *Atlantic Council,* February 27, 2020, https://www.atlanticcouncil.org/blogs/africasource/african-countries-prepare-for-a-coronavirus-pandemic/.

(39) Ruth Maclean and Simon Marks, "10 African Countries Have No Ventilators. That's Only Part of the Problem," *The New York Times,* May 17, 2020, https://www.nytimes.com/2020/04/18/world/africa/africa-coronavirus-ventilators.html.

(40) Patricia Geli, "Preparing for the coronavirus and other epidemics in Africa," *Brookings Institution*, February 28, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/02/28/preparing-for-the-coronavirus-and-other-epidemics-in-africa/.

(41) Tom Ridge and Dante Disparte "The World Needs a DARPA-Style Project to Prevent Pandemics," *Harvard Business Review*, April 24, 2017, https://hbr.org/2017/04/the-world-needs-a-darpa-style-project-to-prevent-pandemics.

(42) Jean-Michel Severino "Compassion, Uncertainty, Anxiety—and Hope: Africa in the Time of Coronavirus," *Center for Global Development,* June 15, 2020, https://www.cgdev.org/publication/compassion-uncertainty-anxietyand-hope-africa-time-coronavirus.

(43) Neil Munshi, "African nations join forces to procure medical equipment," *Financial Times*, May 15, 2020, https://www.ft.com/content/72edfd6a-8300-4944-893d-54d08954df6f.

(44) "Pandemic Preparedness and Response in Fragile, Confli,ct and Violence (FCV) Situations, HNP Knowledge Brief", *Washington, D.C. : World Bank Group,* 2019, http://documents1.worldbank.org/curated/en/302471552972075221/pdf/Pandemic-Preparedness-and-Response-in-Fragile-Conflict-and-Violence-FCV-Situations.pdf.

(45) Ibid.

(46) Yvonne Mburu and Yap Boum "Coronavirus: Amid the global pandemic, lessons for Africa,"*Brookings*, March 20, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/03/20/coronavirus-amid-the-global-pandemic-lessons-for-africa/.

(47) Jina Moore, "What African Nations Are Teaching the West About Fighting the Coronavirus," *The New Yorker,* May 15, 2020, https://www.newyorker.com/news/news-desk/what-african-nations-are-teaching-the-west-about-fighting-the-coronavirus.

(48) Patricia Geli, "Preparing for the coronavirus and other epidemics in Africa," *Brookings*, February 28, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/02/28/preparing-for-the-coronavirus-and-other-epidemics-in-africa/.

(49) Ibid.

(50) Norman Loayza, "Aid effectiveness during the COVID-19 pandemic: This time it must be better", *World Bank Blogs*, May 6, 2020, https://blogs.worldbank.org/developmenttalk/aid-effectiveness-during-covid-19-pandemic-time-it-must-be-better.

(51) Diana Roy "Will the Coronavirus Endanger Foreign Aid?," *Council on Foreign Relations,* April 24, 2020, https://www.cfr.org/in-brief/coronavirus-endanger-foreign-aid-WHO.

(52) Allison Namias Grossman "How can African governments persuade citizens to follow coronavirus guidelines?," *The Washington Post*, April 17, 2020, https://www.washingtonpost.com/politics/2020/04/17/how-can-african-governments-persuade-citizens-follow-coronavirus-guidelines/.

(53) For more on India's collaboration with Africa, see the chapter on health resilience in this report.

(54) Norman Loayza, "Aid effectiveness during the COVID-19 pandemic: This time it must be better", *World Bank Blogs*, May 6, 2020, https://blogs.worldbank.org/developmenttalk/aid-effectiveness-during-covid-19-pandemic-time-it-must-be-better.

(55) Kendra Dupuy and Boris Divjak, "Ebola and corruption: Overcoming critical governance challenges in a crisis situation," *Chr. Michelsen Institute U4 Brief,* no. 4 (March 2015): 1-4, https://www.cmi.no/publications/file/5522-ebola-and-corruption.pdf.

(56) Patrick Dupoux, Jim Larson, Shalini Unnikrishnan, and Wendy Woods, "Fighting COVID-19 in Africa Will Be Different", *Boston Consulting Group,* March 26, 2020.

(57) Christopher Cramer, John Sender, and Arkebe Oqubay, "African Economic Development: Evidence, Theory, Policy", (*Oxford: Oxford University Press,* 2020)

(58) Yvonne Aki-Sawyerr, Nicholas Westcott and David Pilling, " Africa beyond Covid-19," (webinar) June 16 2020, *Overseas Development Institute,* 1:22:29, https://www.odi.org/events/16993-africa-beyond-covid-19.

Tech to the rescue: How to make Africa's digital transformation work for resilience

Sangeet Jain and Sadhika Sasiprabhu

The COVID-19 pandemic has revealed the globe to be far more ill-prepared and vulnerable to crises than any one could have ever believed possible only a few months ago. Global healthcare systems have been revealed as inefficient, erratic, error-prone, and easily overwhelmed. A question has emerged since countries were forced to impose lockdowns and disrupt normal life in response to the pandemic—how have decades of technological progress not made people more resilient such crises? The question has inspired introspection on the value and role of technology and innovation in society, especially since the lockdowns meant that a substantial portion of activity moved online.

As robust and well-funded healthcare systems crumble across the developed world, Africa's fragile healthcare systems appear precarious. Technology has the potential to buffer the impact of the crisis and bolster system capacities. In the absence of sophisticated infrastructure, the inter-\net provides a freely available platform that allows for the quick dissemination of real-time knowledge and best practices.[1] Technology has also dramatically revolutionised the instruments of healthcare delivery. Additionally, digital tools have the potential to cushion the socio-economic impact of such crises significantly—remote working tools and automation have enabled much of the skilled workforce globally to continue productive enterprise, while the physical economy remains in limbo.

Africa could not turn to digital solutions quite as readily as the rest of the world. After all, the digital arena tends to reflect and exacerbate global inequities, leaving Africans particularly vulnerable, especially as the pandemic may just have accelerated the drive towards dematerialisation and digital transformation across the world. Presently, technological prowess and resilience are distributed unequally throughout the continent, and the diverse starting points of different countries must be accounted for. However, there is much cause for optimism—even as internet penetration ranges from 55 percent in Southern Africa to 12 percent in Central Africa,[2] the continent is home to the fastest-growing mobile market, projected to have 725 million smartphone users by this year.[3] The region also shows a readiness to embrace full digitalisation, with some countries like Kenya,[4] Rwanda, Mozambique and Malawi being world leaders in mobile financial inclusion and repeat innovation achievers.[5] Many enterprising African states have successfully capitalised on new technologies to ease the burden of the pandemic, including Rwanda's utilisation of anti-epidemic robots, Kenya's widespread use of mobile money, and South Africa's rapid adoption of contact tracing measures.[6]

This chapter analyses the role of technology in bolstering resilience across socio-economic systems in Africa.

Envisioning an agenda for technological resilience

When embarking upon digitalisation, African countries must remember that for a transformation to be sustainable and resilient, its vision must be people-centric and not technology-driven. Crises have a way of exposing deep social cleavages. This is a tremendous learning opportunity for Africa, to take the lead in designing a digital transformation that is inclusive and prioritises human rights and equity, along with growth. Without this, technological solutions may only serve to further entrench the exclusion of the most marginalised sections of society.

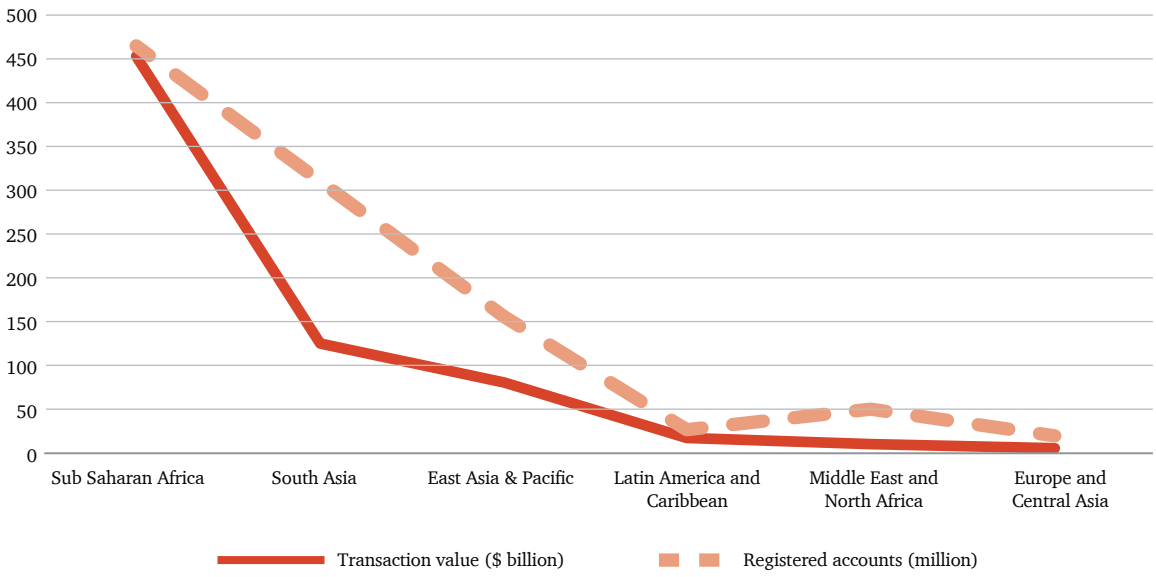
This crisis has also brought home the need for innovation to not just to serve a few privileged interests, but create societal value as well. Economist Mariana Mazzucato[7] suggests that it is time to stop pitting governments against innovation, and accept the possibility that if governments are "mission-oriented" and visualise a clear direction for innovation, it can meet real societal needs. For public health innovation, visionary governments can help define research agendas and determine public health needs to incentivise innovation to meet those needs and even help co-create markets for innovations where there are none.

Building foundational digital systems

An excellent beginning in this regard could be prioritising investment in building foundational digital systems in Africa. Foundational systems such as digital identification and digital payment services have proven their worth during the ongoing crisis and can help build socio-economic resilience for the future. About 58 percent of children under the age of five remain unregistered at birth in Sub-Saharan Africa,[8] leaving them outside social security nets and bereft of government assistance. Utilising its latecomer advantage, Africa can build a next-generation, inclusive, interoperable and secure digital ID framework that would be an asset for the continent, especially in conflict areas where document record systems are vulnerable and insecure. For instance, Morocco, under the auspices of a World Bank project, is learning from India's Aadhaar experience and is pioneering the use of open-source software for its new digital ID system.[9]

Digital payment systems are another tool of empowerment, reaching communities that cannot access traditional banking and enabling people to access services like low-cost loans and receive remittances. African countries have done particularly well on this front (see Figure 1), and Kenya's progress is testament to the power of mobile money (discussed in detail in the technology response chapter of this report). Digital payments are crucial for another reason: their role as a micro-service, i.e. a service that can be part of other digital products like e-commerce, which makes it easier for people to access global trade networks as well.[10]

Figure 1: Sub-Saharan Africa driving global mobile money industry growth (2019)



Source: Quartz Africa[11]

Innovation for healthcare

Building foundational systems is also critical for an effective healthcare response. Healthcare providers produce an abundance of health data (through doctors' notes and lab results, for instance), but 97 percent of the 50 petabytes of data generated each year is not followed-up or analysed in any way.[12] Technology can enable better evidence-based analysis through individualised and digitally integrated health records, which can significantly improve the quality of healthcare, especially in war-torn or crisis-stricken areas with displaced populations that have no access to their records.[13] Simple innovations like digital reminders for people to take medication, can save the public healthcare system a great deal of money.[14]

Healthcare and innovation systems must not be seen in isolation, and instead must support each other. To do that, governments must formulate innovation policies to be far more comprehensive and systems-driven. Africa has faced dire shortages of essential supplies, such as face masks, ventilators and test kits, as global production networks ruptured due to the pandemic. This particular fallout may have been unprecedented, but such supply-chain shocks are an increasing possibility in a world facing geopolitical decoupling and disruption. China was ahead of the curve—their five-year plan in 2010 cited the need to use subsidies and targeted incentives to "develop basic equipment and medical materials that have high demand".[15]

Learning from this crisis, Africa must ramp up domestic manufacturing and invest in basic research to be self-sufficient with respect to essentials like masks, ventilators and diagnostic kits. While the continent need not manufacture everything, it must identify the technologies and resources essential to maintaining its economic and health security. The spillover effects of digitalising manufacturing will create more jobs for scientists and technicians, upskill workers, and improve infrastructural quality. Africa is presently lagging in this area (see Figure 2 for a comparison of regional shares in sales of industrial robots, a useful proxy for assessing digital adoption). Additionally, investing in enduring global and regional partnerships for technology transfer and research could be greatly beneficial for enabling domain knowledge to expedite local production when a crisis strikes.[16] Governments must also have processes in place to escalate local production initiatives and enable industrial reconversions at short-notice.[17] They must work towards incentivising private-sector, bottom-led innovation to leverage the power of technology to plug systemic vulnerabilities fully.[18]

Figure 2: Regional shares in sales of industrial robots
(%)

Source: Overseas Development Institute[19]

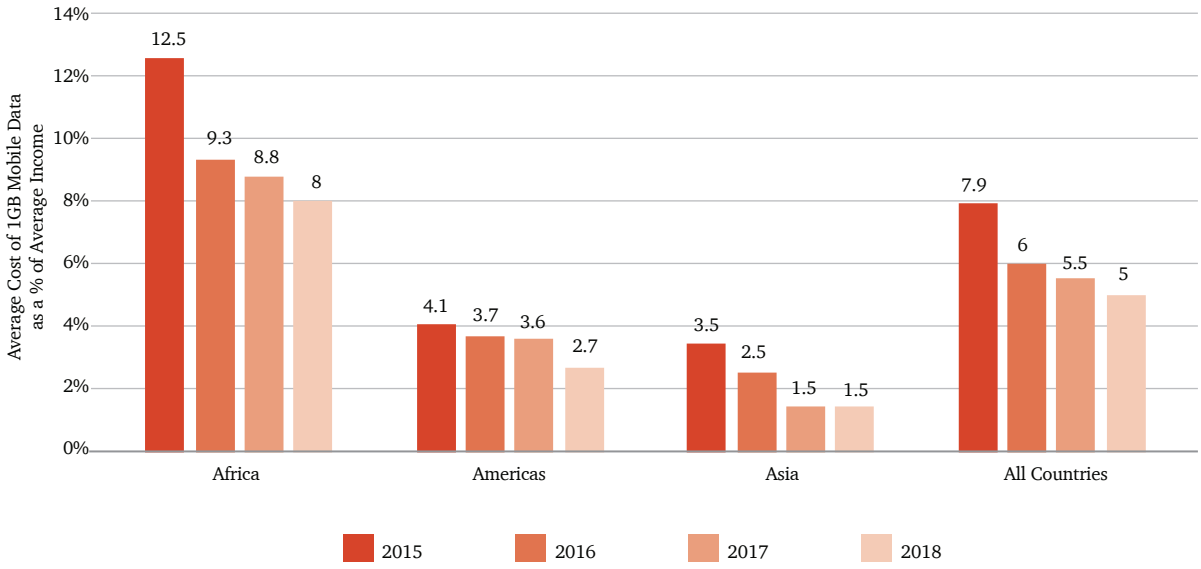
Constraints for Digitalisation

Digital divide

The most significant constraint in the context of Africa's digital transformation is access to technology. While there has been tremendous progress in the past decade,[20] Africa still contends with a vast digital divide due to a variety of reasons, including prohibitively high costs, low digital penetration, and gross inequalities and discrimination.

The biggest barrier to tele-communication is cost, with Africans being the hardest-hit in the world. The average cost of 1 GB internet access on the continent is 7.12 percent of the average income, with some countries paying as high as 20 percent.[21] Despite the cost of smartphones dropping to below US$100, they remain prohibitively expensive for the poorest (see Figure 3). Even as 4G networks now cover half of Sub-Saharan Africa, this accounts for only about 10 percent of connections because most people cannot afford 4G-enabled handsets.[23] Foundational systems for the continent should therefore be built on accessible and inexpensive technologies so that they do not exacerbate these inequalities further.

Figure 3: Regional comparison of mobile broadband affordability (1GB), 2015-2018



Source: World Wide Web Foundation[24]

Africa is home to the most number of countries with less than 10 percent internet penetration, echoing the low digital competitiveness that plagues least developed countries. There is also immense variation between African countries—Kenya has an 87.2 percent internet penetration rate, while Burundi has 9.7 percent.[25] But even those with access to the internet deal with significantly slower upload and download speeds, and low penetration coupled with low performance risks, excluding Africa from meaningfully participating in digital interactions and global networks. Public-private partnerships could help, by incentivising the private sector to look for new, remote markets, and crowding in investment and competition, which could drive down prices and encourage innovation.[26]

Significantly, the gaping digital divide disproportionately affects the poor, rural and women. Research has found traditional barriers of exclusion and inequality being reinforced in the digital realm in Sub-Saharan Africa, an outcome that will need deliberate redressal through state policy.[27] Having been systemically and traditionally denied participation, women as a group represent tremendous untapped potential for the continent. Only about 5 percent of CEO's of technology firms in Africa are women.[28] Technology thus needs to be consciously designed for inclusion.[29] Digital literacy programmes, subsidies and incentives at the secondary and high-school level to encourage pursuing careers in STEM, and an increased focus on changing social norms could be the starting point.

Technological capabilities

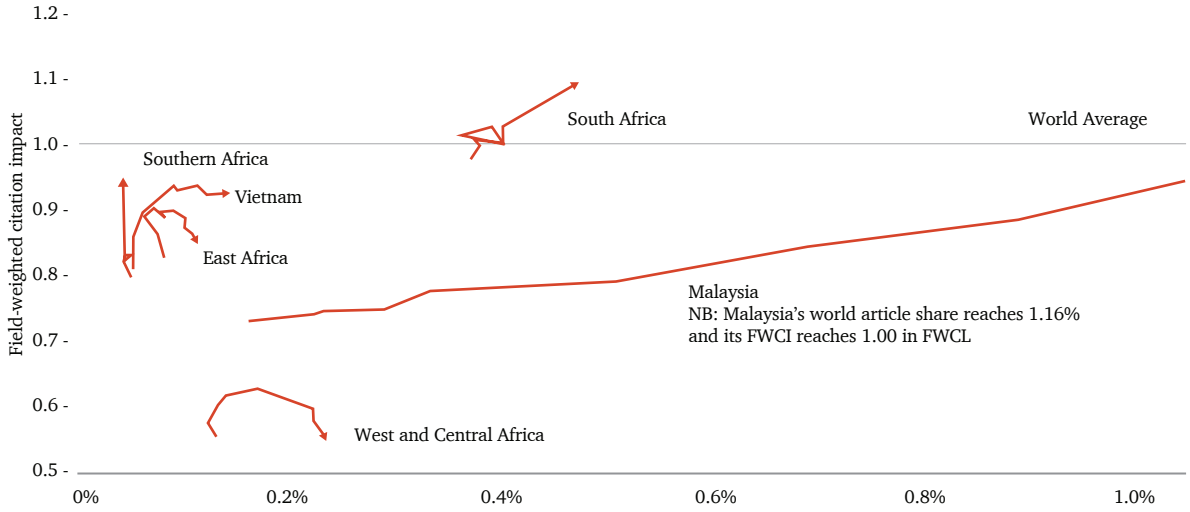
African countries face a particularly relevant barrier to informational access: information networks are 'non-neutral,' privileging some kinds of information over others. Platforms work with information that follows standard templates, which are often difficult for African firms to follow due to their lack of technological capabilities. Rwanda's tourism sector, for instance, has faced issues in linking up with travel agents globally as companies were unable to convey their work online in the required structured format.[30]

Africa may find it increasingly harder to converge with developed countries, as the rising levels of complexity of emerging technologies require higher-order skills and a higher level of tacit knowledge. Tacit knowledge requires firms to have higher absorptive capacities and requires governments and firms to invest in building technological and productive capabilities, often acquired on the job.[31]

Africa's working-age population is projected to grow by about 70 percent—or 450 million—between 2015-2035, making it the world's largest workforce.[32] The developmental capacity and innovation landscape of the continent is inextricably linked to the capabilities of its people. Currently, Africa has 198 researchers per million people, compared to India's 253 and the US' 4,000.[33] While a domain name is registered for every two internet users globally, the ratio for the Middle East and Africa is just one per 50 users.[34] Therefore, much of the information generated about Africa online comes from the core informational geographies located mainly in the West. The continent requires an additional million qualified researchers to meet the world average of researchers per capita.[35] Additionally, Africa has only 168 medical schools, with 24 countries having only one institution and 11 others having none.[36]

Automation and emerging technologies are transforming the world at a hectic pace, and the COVID-19 pandemic only appears to have accelerated this transformation. This will cause tremors in unprepared developing countries, which includes most of the African continent, as many routine automatable jobs vanish. Skilled labour will be in higher demand and provide for more resilient employment. Digital literacy and training, along with a focus on higher education, must therefore be a paramount priority of governments across the continent. A mere two percent of Kenyans presently use the internet to find and apply for jobs against a global average of 17 per-cent, and only four percent of Sudanese adults can copy and paste.[37] As the pace of technology outstrips the rate of digital literacy, the continent will lose out due to a vast skills mismatch.

Figure 4: Field-weighted citation impact vs. article share for the physical sciences and STEM for sub-Saharan African regions and comparator countries (2003-12)



Source: The World Bank[38]

To future-proof the workforce, African educational institutions need to reorient secondary education to incentivise and encourage students to pursue STEM disciplines, which currently average less than 25 percent of total graduates.[39] Amending the curricula to include subjects like coding, data analytics, and basic programming will help create a digitally enabled environment. Simultaneously, for unskilled youth, older learners and marginalised communities, technical and vocational education and training (TVET) can be adopted. Accredited courses that best align with employer needs are most effective, as has been seen in South Africa and Kenya.[40]

Government intervention to maintain subsidies for continued learning and lifelong upgrading of vocational skills could also be beneficial. Private sector investment in conducting apprenticeship programmes, soft skills training and on-the-job training will increase opportunities outside of formal education. An often-overlooked aspect is creating demand for skills. The government needs to create public-private partnerships to develop markets for the skills it is investing in so that they translate into employment and value creation. Government regulation and standard-setting are crucial for the certification of skills to be recognised favourably by employers.

Building resilient infrastructure and capacity

Technological resilience cannot be fostered in a vacuum; it requires a broad ecosystem of enabling tools. Among the prerequisites is robust infrastructure and capacity.

Africa suffers from a chronic lack of infrastructural capacity. The poor condition of infrastructure in Africa costs it two percentage points in economic growth every year and reduces productivity by about 40 percent.[41] The African Development Bank estimates that electricity costs three times more in Africa than in comparable developing regions,[42] which undercuts private sector development and the flow of foreign direct investment. The region lags 20 percent behind the average for low-income countries across all infrastructure indicators.[43]

Innovation can help bridge the infrastructural deficit in Africa. New, lower-cost satellites offer hope of helping bridge connectivity gaps in remote regions. Alphabet-owned Loon has partnered with Telekom Kenya to trial using high-altitude balloons and drones to increase internet penetration in the continent.[44] To address unequal access to power, entrepreneurs are also launching off-grid and solar energy startups, like Oolo in Senegal and Off-Grid Electric in Tanzania.[45] Africa needs to invest in building homegrown digital platforms, which can encourage entrepreneurship on the continent.[46]

Building digital ecosystems require government financial support to be extended to specific sectors along with "ecosystem enablers" that are needed for scalability, such as innovation hubs and data repositories like data centres and clouds.[47] About 60 percent of the top-performing companies in Africa currently use regional or international digital centres to standardise methods and centralise governance.[48] The pandemic has demonstrated the value of building an inclusive digital infrastructure by encouraging open data standards, civic application programming interfaces and interoperable systems.[49]

Investment

A lack of funds is the fundamental constraining factor for Africa, governing all others. It is estimated that about US$93 billion per annum is needed over a decade to upgrade infrastructure in Sub-Saharan Africa.[50] Where advanced economies spend 3.2 percent of their GDPs on digital investment, Africa spends just about 1.1 percent.[51]

Financing mechanisms in Africa are fragmented, and the continent suffers from market coordination failures. Lending is much more expensive in the continent—African firms pay about five-percent higher interest rates than East Asian firms.[52] Efforts, therefore, must be directed at creating investment funds and financing mechanisms that can attract global capital for local innovation. There is also a strong need to develop domestic and regional capital markets and boost public-private partnerships to get in a variety of investors. These markets are not yet well established in Africa apart from in South Africa. Better risk assessment must be enabled to attract foreign capital, which will require investing in gathering and analysing data more effectively. The ease of doing business must also be improved, by undertaking measures such as reforming labour laws and making it easier to register companies.[53]

Coordinated action across sectors and high levels of investment are needed to attract investment for critical areas like healthcare infrastructure. Governments must lead the charge and embark upon mission-oriented investment. This involves embracing and investing in bottom-up innovation, investing in promising businesses that can leverage emerging

technologies, and making space for experimentation and problem-solving. The investment must look at entire ecosystems and elicit coordination between multiple players in an economy and not just particular sectors in isolation.[54]

Regulation and security

The bewildering pace of technological change has rendered even developed countries unprepared to regulate the risks that inevitably follow in the wake of digital transformation. Cyber threats, digital monopolies and the lack of personal data protection could leave many in Africa excluded from development gains and increasingly insecure unless regulation and cybersecurity is deployed to ameliorate these risks.

At present, only two countries in Africa, Senegal and Tunisia, have any regulation for startups, and regulation of emerging technologies is virtually absent.[55] Governments will need to be flexible and agile, and keep tools such as regulatory sandboxes in their arsenal.[56] They should also build better relationships with the private sector to enable policy to be proactive and maintain pace with innovation. Regulatory frameworks must learn from best practices around the world but be careful not to adopt those blindly without contextualisation. Governments need to be especially careful to avoid stifling innovation with heavy-handed regulation. Zimbabwe's recent ban on EcoCash, a mobile money platform, was intended to wipe out black-market trade that had been using the platform to manipulate the Zimbabwean currency. However, a blanket ban on the platform ended up doing more harm than good, as it hit ordinary traders and citizens using mobile money to meet their daily needs during the lockdown.[57] Respect for rights and privacy must be paramount in designing regulation, and ethics must ideally be built into technological design rather than be an after-thought that regulations have to fix.

The international regulation of technological norms will be crucial. The rich world currently houses all the major tech firms and consequently tends to set standards for the rest of the world. Therefore, developing countries must be engaged with global governance and international institutions like the International Telecommunication Union to ensure regulation serves all needs.[58] Regional coordination and collaboration, such as through the African Continental Free Trade Area, will go a long way towards harmonising regulations and standards for the continent, as well as strengthening cybersecurity measures.

Conclusion

Technological resilience is not among the aspects that readily come to mind when thinking of building resilience to health crises. However, even the simplest technologies have demonstrated tremendous value in bolstering response and resilience, such as the use of WhatsApp chatbots in Senegal during the pandemic.[59] In times of crisis, ready access to information itself can spell the difference between life and death. In demonstrating the value of technology, the pandemic has offered an opportunity for Africa to reinvigorate its efforts towards building an inclusive digital-ised economy. It is now up to the continent to take the plunge.

Endnotes

(1) David W Bates, "The quality case for information technology in healthcare," *BMC Medical Informatics and Decision Making 2,* no. 7, (October 2002) https://doi.org/10.1186/1472-6947-2-7.

(2) BCG Global. 2020. 'Measuring Digital Maturity To Drive Superior Performance'. [online] Available at: <https://www.bcg.com/capabilities/technology-digital/digital-maturity.aspx>.

(3) Eleni Mourdoukoutas,"Africa's digital rise hooked on innovation," *Africa Renewal Magazine United Nations,* July, 2017, https://www.un.org/africarenewal/magazine/may-july-2017/africa%E2%80%99s-digital-rise-hooked-innovation.

(4) Unctad.org. 2020. 'Leapfrogging: Look Before You Leap'. [online] Available at: <https://unctad.org/en/PublicationsLibrary/presspb2018d8_en.pdf>.

(5) Global Innovation Index 2019", Cornell University, INSEAD and WIPO, 2019, [online] Available at: <https://www.wipo.int/global_innovation_index/en/2019/>.

(6) Kim Harrisberg, "Here's how Africans are using tech to combat the coronavirus pandemic.[online] *World Economic Forum,* April 5, 2020, https://www.weforum.org/agenda/2020/04/africa-technology-coronavirus-covid19-innovation-mobile-tech-pandemic/

(7) OECD. 2020. A Systemic Resilience Approach To Dealing With Covid-19 And Future Shocks. (online), April 28, 2020, http://www.oecd.org/coronavirus/policy-responses/a-systemic-resilience-approach-to-dealing-with-covid-19-and-future-shocks-36a5bdfb/.

(8) Inclusive and Trusted Digital ID Can Unlock Opportunities for the World's Most Vulnerable," *The World Bank News*, August 14, 2019, https://www.worldbank.org/en/news/immersive-story/2019/08/14/inclusive-and-trusted-digital-id-can-unlock-opportunities-for-the-worlds-most-vulnerable.

(9) Ibid.

(10) The Digital Roadmap: How developing countries can get ahead, *Pathways for Prosperity Commission, University of Oxford,* 2019, https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2019-11/the_digital_roadmap.pdf.

(11) Yomi Kazeem, "Mobile money crossed a key milestone last year—that's good news for Africa's coronavirus battle," *Quartz Africa,* March 26, 2020, https://qz.com/africa/1826042/how-many-mobile-money-users-are-in-africa

(12) Global Innovation Index 2019", Cornell University, INSEAD and WIPO, 2019, https://www.globalinnovationindex.org/userfiles/file/reportpdf/GII2019-keyfinding-E-Web3.pdf.

(13) David W Bates, "The quality case for information technology in healthcare," *BMC Medical Informatics and Decision Making 2*, no. 7, (October 2002) https://doi.org/10.1186/1472-6947-2-7 .

(14) World Health Organization. 2020. 'WHO Guideline: Recommendations On Digital Interventions For Health System Strengthening'. [online] Available at: <https://www.who.int/reproductivehealth/publications/digital-interventions-health-system-strengthening/en/>.

(15) Keith Bradsher, “China dominates the medical supplies in this outbreak and the next,” *The New York Times,* July 5, 2020, https://www.nytimes.com/2020/07/05/business/china-medical-supplies.html.

(16) Fran Blandy and Afp Africa Bureaus, “‘We can get it done here’: Africa’s tech scene tackles virus,” *Medical Express,* May 19, 2020, https://medicalxpress.com/news/2020-05-africa-tech-scene-tackles-virus.html.

(17) Oecd.org. 2020. *Africa’s Response To COVID-19: What Roles For Trade*, Manufacturing And Intellectual Property?. [online] Available at: <https://read.oecd-ilibrary.org/view/?ref=134_134617-5ewrwojglf&title=AFRICA-S-RESPONSE-TO-COVID-19-What-roles-for-trade-manufacturing-and-intellectual-property

(18) David Rotman, “Why tech didn’t save us from covid-19”, *MIT Technology Review,* June 17, 2020, https://www.technologyreview.com/2020/06/17/1003312/why-tech-didnt-save-us-from-covid-19/.

(19) Karishma Banga and Dirk Willem te Velde, *Digitalisation And The Future Of Manufacturing In Africa,* ODI and UKAid, 2018, https://set.odi.org/wp-content/uploads/2018/03/SET_Digitalisation-and-future-of-African-manufacturing_Final.pdf

(20) Mark Graham and Christopher Foster, “Geographies of Information Inequality in Sub-Saharan Africa,” *Oxford Internet Institute,* October 1, 2014, http://blogs.oii.ox.ac.uk/cii/wp-content/uploads/sites/38/2014/08/Graham-Foster_Geographies-of-Information-Inequality-in-Sub-Saharan-Africa.pdf.

(21) ”Africa is struggling to bridge the ‘digital divide’,” *How We Made it in Africa,* October 23 2019, https://www.howwemadeitinafrica.com/africa-is-struggling-to-bridge-the-digital-divide/63821/.

(22) GSMA. ‘The Mobile Gender Gap Report 2019’, https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2019/02/GSMA-The-Mobile-Gender-Gap-Report-2019.pdf.

(23) Inclusive and Trusted Digital ID Can Unlock Opportunities for the World’s Most Vulnerable,” *The World Bank News*, August 14, 2019, https://www.worldbank.org/en/news/immersive-story/2019/08/14/inclusive-and-trusted-digital-id-can-unlock-opportunities-for-the-worlds-most-vulnerable.

(24) “New mobile broadband pricing data shows uneven progress on affordability,”*World Wide Web Foundation Blogs,* March 21, 2019, https://webfoundation.org/2019/03/new-mobile-broadband-pricing-data-reveals-stalling-progress-on-affordability/.

(25) “Share of internet users in Africa as of March 2020, by country,” Demographics and Use, Statista, https://www.statista.com/statistics/1124283/internet-penetration-in-africa-by-country/

(26) Eleni Mourdoukoutas,“Africa’s digital rise hooked on innovation,” *Africa Renewal Magazine*, United Nations, July, 2017, https://www.un.org/africarenewal/magazine/may-july-2017/africa%E2%80%99s-digital-rise-hooked-innovation.

(27) Mark Graham and Christopher Foster, “Geographies of Information Inequality in Sub-Saharan Africa,” *Oxford Internet Institute,* October 1, 2014, http://blogs.oii.ox.ac.uk/cii/wp-content/uploads/sites/38/2014/08/Graham-Foster_Geographies-of-Information-Inequality-in-Sub-Saharan-Africa.pdf.

(28) Oluwanifemi Kolawole ,“How to raise women’s interest in tech; a long-term approach,” *Techpoint Africa*, June, 2020,https://techpoint.africa/2020/06/16/women-interest-tech-space/

(29) The Digital Roadmap: How developing countries can get ahead, Pathways for Prosperity Commission, University of Oxford, 2019, https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2019-11/the_digital_roadmap.pdf.

(30) Mark Graham and Christopher Foster, “Geographies of Information Inequality in Sub-Saharan Africa,” *Oxford Internet Institute,* October 1, 2014, http://blogs.oii.ox.ac.uk/cii/wp-content/uploads/sites/38/2014/08/Graham-Foster_Geographies-of-Information-Inequality-in-Sub-Saharan-Africa.pdf.

(31) Karishma Banga and Dirk Willem te Velde, *Digitalisation And The Future Of Manufacturing In Africa,* Only ODI and UKAid, 2018, https://set.odi.org/wp-content/uploads/2018/03/SET_Digitalisation-and-future-of-African-manufacturing_Final.pdf

(32) "Creating Jobs for Africa's Growing Population: Africa Competitiveness Report," *The World Bank Publications,* May 14, 2017, https://www.worldbank.org/en/topic/competitiveness/publication/creating-jobs-for-africas-growing-population

(33) Tom Kariuki and Simon Kay "There are not enough scientists in Africa. How can we turn this around?," *World Economic Forum,* May 03, 2017, https://www.weforum.org/agenda/2017/05/scientists-are-the-key-to-africas-future/

(34) Mark Graham and Christopher Foster, "Geographies of Information Inequality in Sub-Saharan Africa," *Oxford Internet Institute,* October 1, 2014, http://blogs.oii.ox.ac.uk/cii/wp-content/uploads/sites/38/2014/08/Graham-Foster_Geographies-of-Information-Inequality-in-Sub-Saharan-Africa.pdf.

(35) Alan Christoffels, "Africa needs another million PhD scientists to develop homegrown solutions," *Quartz Africa*, May 28, 2018, https://qz.com/africa/1290710/africa-needs-one-million-more-scientists/

(36) "What needs to be done to solve the shortage of health workers in the African Region," *WHO Regional Office for Africa News,* August 24, 2017,https://www.afro.who.int/news/what-needs-be-done-solve-shortage-health-workers-african-region

(37) Karishma Banga,"Why skills development is key for digital transformation in Africa," *Overseas Development Institute Blog,* November 15, 2019, https://www.odi.org/blogs/why-skills-development-key-digital-transformation-africa

(38) Andreas Blom, George Lan, and Mariam Adil. "Sub-Saharan African science, technology, engineering, and mathematics research: a decade of development". The World Bank, 2015. <https://openknowledge.worldbank.org/bitstream/handle/10986/23142/9781464807008.pdf?sequence=1>

(39) "Poor technological capability undermining Africa's growth potential," *African Development Bank Group News*, November 1, 2014, https://www.afdb.org/en/news-and-events/poor-technological-capability-undermining-africas-growth-potential-13684

(40) Karishma Banga,"Why skills development is key for digital transformation in Africa," *Overseas Development Institute Blog*, November 15, 2019, https://www.odi.org/blogs/why-skills-development-key-digital-transformation-africa

(41) Ibhrahim Mayaki, "Why infrastructure development in Africa matters," African Renewal United Nations, https://www.un.org/africarenewal/web-features/why-infrastructure-development-africa-matters

(42) Albert Mafusire, John Anyanwu, Zuzana Brixiova and Maurice Mubila "Infrastructure Deficit and Opportunities in Africa" *The African Development Bank Group Economic Brief 1* (September, 2010), https://www.afdb.org/fileadmin/uploads/afdb/Documents/Publications/ECON%20Brief_Infrastructure%20Deficit%20and%20Opportunities%20in%20Africa_Vol%201%20Issue%202.pdf.

(43) Ibid

(44) Darrel Etherington, "Alphabet's Loon deploys internet connectivity balloons to Kenya for first commer-cial service launch,"*Tech Crunch,* April 21, 2020, https://techcrunch.com/2020/04/21/alphabets-loon-deploys-internet-connectivity-balloons-to-kenya-for-first-commercial-service-launch/.

(45) Olanrewaju Odunowo, "Africa's Infrastructure Deficit & Its Impact On Innovation", *Techcabal*, July 19, 2018, https://techcabal.com/2018/07/19/africas-infrastructure-deficit-its-impact-on-innovation/.

(46) Hafez Ghanem, "Shooting for the moon: An agenda to bridge Africa's digital divide," *Brookings,* February 7, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/02/07/shooting-for-the-moon-an-agenda-to-bridge-africas-digital-divide/

(47) Karishma Banga and Dirk Willem te Velde, *Digitalisation And The Future Of Manufacturing In Africa,* ODI and UKAid, 2018, https://set.odi.org/wp-content/uploads/2018/03/SET_Digitalisation-and-future-of-African-manufacturing_Final.pdf

(48) Amane Dannouni, Hamid Maher, Jan Gildemeister, Patrick Dupoux, Lisa Ivers, Guy Ngambeket, and Ivan Vaganov, "The Race for Digital Advantage in Africa," *BCG Publications,* March 09, 2020, https://www.bcg.com/publications/2020/race-digital-advantage-in-africa.aspx.

(49) 'The Digital Roadmap: How developing countries can get ahead', *Pathways for Prosperity Commission, University of Oxford,* 2019, https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2019-11/the_digital_roadmap.pdf.

(50) Addressing Africa's Infrastructure Challenges, *Deloitte*, June 2, 2020, https://www2.deloitte.com/na/en/pages/energy-and-resources/articles/africas-infrastructure.html.

(51) Hafez Ghanem, "Shooting for the moon: An agenda to bridge Africa's digital divide," *Brookings*, February 7, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/02/07/shooting-for-the-moon-an-agenda-to-bridge-africas-digital-divide/

(52) Karishma Banga and Dirk Willem te Velde, *Digitalisation And The Future Of Manufacturing In Africa,* ODI and UKAid, 2018, https://set.odi.org/wp-content/uploads/2018/03/SET_Digitalisation-and-future-of-African-manufacturing_Final.pdf

(53) 'The Digital Roadmap: How developing countries can get ahead', Pathways for Prosperity Commission, *University of Oxford,* 2019, https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2019-11/the_digital_roadmap.pdf.

(54) Mariana Mazzucato , "Catch-up and Mission-oriented Innovation," in *How Nations Learn: Technological Learning, Industrial Policy, and Catch-up* (Oxford: Oxford Scholarship Online, 2019): 1-21, https://www.oxfordscholarship.com/view/10.1093/oso/9780198841760.001.0001/oso-9780198841760-chapter-4.

(55) Udoka Chiefe, "Why Africa needs to focus on technology for labour and infrastructure in this decade," *Techpoint,Africa*, January 21, 2020, https://techpoint.africa/2020/01/21/africa-technology-labour-infrastructure-decade/.

(56) 'The Digital Roadmap: How developing countries can get ahead', *Pathways for Prosperity Commission, University of Oxford,* 2019, https://pathwayscommission.bsg.ox.ac.uk/sites/default/files/2019-11/the_digital_roadmap.pdf.

(57) Joseph Cotterill, "Crackdown on mobile money hits Zimbabwe's poor," *The Financial Times*, July 16, 2020,https://www.ft.com/content/93a81f30-3618-4304-9515-ab8139b7ace4.

(58) Hafez Ghanem, "Shooting for the moon: An agenda to bridge Africa's digital divide," *Brookings*, February 7, 2020, https://www.brookings.edu/blog/africa-in-focus/2020/02/07/shooting-for-the-moon-an-agenda-to-bridge-africas-digital-divide/

(59) Sarah L Dalglish,"COVID-19 gives the lie to global health expertise," *The Lancet* 395, no. 10231 (April, 2020): 1189, DOI:https://doi.org/10.1016/S0140-6736(20)30739-X.

CONCLUSION

The COVID-19 pandemic has presented a moment of reckoning for the world, revealing the precarity of our current systems—eroded by a combination of a corrosive form of capitalism, neoliberal policies, factionalism and the breakdown of communities. History is testament to the power of crisis in inspiring a reordering of societies. The current crisis thus presents an opportunity to change the rules and rebuild better, more cohesive and resilient systems, with a place for everyone. This shall involve shedding complacency, and ensuring that the renewed awareness that follows in the wake of the crisis leads to concrete, sustainable progress.

We offer some key recommendations from this report for the African continent.

First, being prepared for crisis requires core resilience that can enable a system to absorb shocks and recover. This requires better forecasting and investment in early-awareness mechanisms, which in turn requires data. A paucity of reliable and comprehensive data is one of Africa's biggest constraints, which hurts the continent's efforts towards evidence-based decision-making and preparedness.

Second, to build back better, it is essential to draw the right lessons from the pandemic and build upon best practices and innovations acquired during the crisis. For example, the setting up of Presidential COVID-19 task forces in Africa was a useful innovation, enabling the mobilisation of expertise across sectors.

The role of the state is back in the limelight, and we expect this to be a legacy of COVID-19. Our third recommendation is that in the short term, states must endeavour to mobilise large-scale institutional response to the pandemic to mitigate damage. To enable recovery in the long term, the role of the state ought to involve collaboration with civil society and the private sector to proactively define pressing societal needs, and invest in directing innovation and efforts towards meeting those needs.

Fourth, the vulnerabilities that have been exposed by the pandemic, such as the precarious situation of essential workers and those in the informal sector, must not be forgotten in the wake of the crisis. There is a need for a moral reordering, to prevent the pandemic from entrenching structural and spatial injustices in Africa. Building resilience will require strengthening the social contract, and building an economy that works for all.

Fifth, this crisis should reinforce the need for greater transparency and trust in political systems. With the climate crisis and disruptive technological transformation beckoning in the future, fostering trust and honest, transparent communication is imperative if Africa is to avoid the fracturing of societies and a reversal of its hard-won development gains.

Finally, the COVID-19 pandemic has demonstrated just how inextricably linked the world is today. Even as there is talk of the reversal of globalisation, there is also an awareness of the necessity of international and regional coordination and collaboration to mitigate crises that know no borders, such as diseases and climate change. Africa has found great strength in its relationships within the region and with the rest of the world during this crisis. This crisis must therefore act as an impetus to strengthen those relationships and bring collective benefit to the world.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ANNEXE

Data Sources, Limitations and Notes

Indicator	Data Source	Data Limitations and Notes
Population density (people per sq. km.)	The World Bank	For Eritrea, data for 2011 is used due to unavailability of more recent data. Data for South Sudan and Sudan was not available.
Population aged 65 and above (% of total population)	The World Bank	Dara for Eritrea was not available.
Cause of death by NCDs (% of total)	The World Bank	Latest data available is for the year 2016.
Life expectancy at birth	The World Bank	
Mortality from CVD, cancer, diabetes or CRD between exact ages 30 and 70	The World Bank	Latest data available is for the year 2016.
Sustainable Development Index Scores and Ranks	Sustainable Development Report 2020	Data for Equatorial Guinea, Eritrea, Guinea-Bissau, Libya, Seychelles, Somalia and South Sudan was not available.
Access to water: People using at least basic drinking water services (%)	UNICEF: Water, sanitation & hygiene (WASH) data	
Prevalence of overweight persons (% of adults)	The World Bank	Data for South Sudan and Sudan was not available.
Global Health Security Index	2019 Global Health Security Index	
Hospital beds (per 10,000 population)	World Health Organization	
Nursing and midwifery personnel (per 10,000 population)	World Health Organization	For South Sudan, data for 2008 is used due to unavailability of more recent data.
Medical doctors (per 10,000 population)	World Health Organization	For South Sudan, data for 2008 is used due to unavailability of more recent data.
Number of ICU beds	The Center For Disease Dynamics, Economics & Policy: National estimates of critical care capacity in 54 African countries	Data for Benin, Comoros, Equatorial Guinea, Madagascar, Mozambique was not available.
Number of ventilators	The Center For Disease Dynamics, Economics & Policy: National estimates of critical care capacity in 54 African countries	Data for Benin, Comoros, Congo, Lesotho, Malawi, Mauritius, Seychelles was not available.
Domestic general government health expenditure (GGHE-D) as percentage of GDP	World Health Organization	For Libya, data for 2011 is used due to unavailability of more recent data. Data for Somalia was not available.

GDP growth (%, 2018 – 2021)	World Bank Global Economic Prospects June 2020	"Industrial-commodity exporters" represents oil and metal exporting countries. Aggregate growth rates calculated using GDP weights at 2010 prices and market exchange rates. "Industrial-commodity exporters" excludes Nigeria and South Africa.
GDP growth per capita (%, 2018 – 2021)	World Bank Global Economic Prospects June 2020	"Industrial-commodity exporters" represents oil and metal exporting countries. Aggregate growth rates calculated using GDP weights at 2010 prices and market exchange rates. "Industrial-commodity exporters" excludes Nigeria and South Africa.
Macroeconomic indicators	The World Bank	
Impact of industrial employment and output on growth	The World Bank	
External linkages of African countries	Macro Poverty Outlook Report April 2020, World Bank; State of Commodity Dependence, UNCTAD	
Poverty and labour market indicators	Macro Poverty Outlook Report April 2020, World Bank; State of Commodity Dependence, UNCTAD	
Fragility Index Rank	Fragile States Index 2020	
Fragile State Index and daily COVID-19 tests of select African countries	Fragile States Index; Our World In Data	Testing data was unavailable for Burundi.
Gross Domestic Expenditure on R&D as percentage of GDP	Africa Innovation Outlook III	Analysis of data available in 2013, 2014 and 2015.
Internet user gender gap (%), 2013 and 2016	International Telecommunication Union	Analysis of data available in 2013 and 2016.
Daily new confirmed COVID-19 cases	Our World In Data	Analysis of worldwide data from March 11 – July 11, 2020.
Total COVID-19 tests per million people	Worldometers	Analysis of data from Africa from March 11 – July 11, 2020. Data for Algeria, Democratic Republic of Congo, Somalia, Congo, Sierra Leone, Burkina Faso, Liberia, Chad, Tanzania, Comoros, Eritrea and Seychelles was not available.
Total tests conducted vs. total population	Worldometers	Analysis of data from Africa as on July 11, 2020. Data for Algeria, Democratic Republic of Congo, Somalia, Congo, Sierra Leone, Burkina Faso, Liberia, Chad, Tanzania, Comoros, Eritrea and Seychelles was not available.
Case fatality rate vs. tests per million population	Worldometers	Analysis of data from Africa as on July 11, 2020. Data for Algeria, Democratic Republic of Congo, Somalia, Congo, Sierra Leone, Burkina Faso, Liberia, Chad, Tanzania, Comoros, Eritrea, Seychelles and Uganda was not available.

Progression in number of cases	Our World In Data	Analysis of data from Africa from March 11 – July 11, 2020.
Progression in number of deaths	Our World In Data	Analysis of data from Africa from March 11 – July 11, 2020.
Vaccination trials in Africa	Africa Centres for Disease Control and Prevention	
Interventions being evaluated in Africa	Africa Centres for Disease Control and Prevention	
Fiscal responses of select Sub-Saharan African countries	International Monetary Fund	31 Sub-Saharan countries were selected for the analysis.
Fiscal measures instituted for ameliorating the impacts of COVID-19, by the select Sub Saharan African countries	International Monetary Fund	31 Sub-Saharan countries were selected for the analysis.
Tax policy responses of select Sub-Saharan African countries	International Monetary Fund	21 Sub-Saharan countries were selected for the analysis.
IMF approved emergency financing support to Sub-Saharan African countries	International Monetary Fund	
Sub-Saharan African Countries that received financial assistance	International Monetary Fund	This represents emergency financing from the IMF between March and July 2020.
Sub-Saharan African countries that received debt service relief from the Catastrophe Containment and Relief Trust (CCRT)	International Monetary Fund	This represents debt relief received from the IMF between March and July 2020.
African Development Bank COVID-19 emergency packages	African Development Bank	
Travel restrictions	Africa Centre for Disease Control and Prevention	As of July 14, 2020.
Restrictions on movement	Africa Centre for Disease Control and Prevention	As of July 12, 2020.
Physical distancing measures	Africa Centre for Disease Control and Prevention	As of July 12, 2020.
Type of political regime (Number of countries, %)	Economist Intelligence Unit's 2019 Democracy Index	Sao Tome and Principe, Seychelles, Somalia and South Sudan were excluded from the Economist Intelligence Unit's analysis.
Top 5 and bottom 5 performing countries in the African union by number of cases and type of political regime	Africa Centre for Disease Control and Prevention; Economist Intelligence Unit's 2019 Democracy Index	Seychelles was excluded from the Economist Intelligence Unit's analysis.
Global and regional trends in impoverishment due to out-of-pocket health spending at US$1.90 a day	WHO; IBRD; World Bank's Global Monitoring Report on Financial Protection in Health 2019	North America and Oceania had negligible figures and were not included in the analysis.
Electricity access rates in select Sub-Sahara African countries	The World Bank	Analysis of data available in 2015, 2016, 2017 and 2018.
Cooking fuel used in Kenya	KNBS Economic Survey 2020	
Comparison of energy investment between South Africa and Kenya	International Energy Agency; World Energy Investment 2020	
Estimated remaining debt service for 2020 by region	OECD	
Mobile money drives Ghana's increase in financial account ownership	CCAP	

Percentage of people in Africa who believe that citizens must obey the law	34 Country Afrobarometer Round 7 Survey (2016 – 2018)	
Trust in elected leaders vs. religious and traditional leaders in Africa	34 Country Afrobarometer Round 7 Survey (2016 – 18)	
The incidence of bribery in Africa's health care systems	34 Country Afrobarometer Round 7 Survey (2016 – 18)	
Percentage of Africans who think that most or all people in these groups or institutions are involved in corruption	Transparency International's Global Corruption Barometer 2019	
Sub-Saharan Africa driving global mobile money industry growth(2019)	Quartz Africa	
Regional shares in sales of industrial robots (%)	Overseas Development Institute	Analysis of data from 2000 to 2015.
Regional comparison of mobile broadband affordability (1GB), 2015-2018	World Wide Web Foundation	Analysis of data from 2015 to 2018.
Field-weighted citation impact vs. article share for the physical sciences and STEM for Sub-Saharan African regions and comparator countries (2003-12)	The World Bank	Analysis of data from 2003 to 2012.

The COVID-19 health crisis has had an impact on every aspect of life across the globe. Africa, home to nearly 17 percent of the world's population, is presented with a unique set of challenges in the face of this crisis. Since the World Health Organization declared COVID-19 a pandemic on 11 March 2020, Africa has accounted for one in every five of global infection cases. As the first wave of COVID-19 sweeps across Africa, *The Day After Tomorrow: Africa's Battle with Covid-19 and the Road Ahead* presents a comprehensive analysis of the first four months of the pandemic's spread across the continent. The report presents an examination across Africa of the risks and conditions that predated the pandemic and which heightened the population's vulnerability; the response measures taken by the different countries to combat the pandemic; and their capacity for building resilience to take on future challenges. The report breaks down its analyses of these Risks, Responses, and Resilience across four dimensions: healthcare, economics, politics, and technology. It offers specific policy recommendations for decision-makers as they devise targeted, large-scale crisis response measures to the pandemic.

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