

Analysing long-term socio-economic impacts of **COVID-19** across diverse African contexts



Table of Contents

Acknowledgements	3
List of acronyms and terms used in the report	4
Executive summary	5
Introduction	10
Structure of the report	10
1. Conceptual framework and background literature	13
Background overview	14
First-order – health effects	14
Second-order – domestic economic effects	14
Third-order – international flow effects	15
Trade	15
Remittances	16
Foreign direct investment	16
Foreign aid	16
2. Methodology	18
Country selection	18
Modelling the macroeconomic effect of COVID-19 with International Futures	19
Outcome indicators	21
Levels of analysis	21
3. Pre-COVID: Introducing our 10 case-study countries	23
Economy and trade	23
Population and human development	25
Governance	26

4. The near-term effects of COVID-19.....	28
First-order: Health effects.	28
Setting the stage: Mortality prior to COVID-19.....	28
Overview of the country-to-country health effects.....	30
COVID-19 mortality in the IFs model.....	31
Second-order: Domestic economy effects.	33
Setting the stage: Economic development prior to COVID-19.....	33
Varying impacts of COVID-19 on the domestic economy of countries.....	34
Third-order: International flow effects	38
Setting the stage: International patterns of trade prior to COVID-19.....	38
Impacts of COVID-19 on international trade across countries.....	42
Setting the stage: International patterns of foreign aid, remittances and FDI prior to COVID-19.....	45
Impacts of COVID-19 on international flows across countries.....	47
COVID-19: relative impact across international flows.....	47
5. Exploring long-term effects of COVID-19 in International Futures.....	50
First-order effects: Direct and indirect mortality.	52
Second-order effects: Domestic patterns of development	56
Third-order effects: Shifting international trade patterns	62
Trade shocks in the short, medium and long term.....	62
6. Main takeaways.....	69
7. Discussion and conclusion.....	73
References.....	76
Appendix 1 – Long-term effects of COVID-19 mortality on economic and human development.....	83

Acknowledgements

This report was prepared under the guidance of Ahunna Eziakonwa, Director of UNDP's Regional Bureau for Africa (RBA), and overall technical leadership of Raymond Gilpin, RBA UNDP, and Jide Okeke, UNDP's Regional Service Centre Africa (RSCA). It is the product of an extensive collaboration involving the African Union Commission Department of Economic Affairs (DEA), UNDP RBA, the Institute for Security Studies in South Africa, the Gordon Institute of Business Science, University of Pretoria, and the Frederick S. Pardee Center at the University of Denver.

Special appreciation to UNDP Resident Representatives in the 10 case study countries, who provided invaluable insights: Edo Stork (Angola), Tjark Egenhoff (Cabo Verde), Kamil Kamaluddeen (Chad), Dominic Sam (Democratic Republic of the Congo), Walid Badawi (Ethiopia), Turhan Saleh (Kenya), Jo Scheuer (Mali), Amanda Serumaga (Mauritius), Mohamed Yahaya (Nigeria) and Ayodele Olusola (South Africa). We are particularly grateful to Fatma Ahmed and Michelle Mendi Muita (RSCA) for exceptional leadership. Also notable for exceptional inputs and support are: Djeinaba Kane and Yeo Dossina (AU Economic Affairs); Ahmed E. Ogwell and Nfii Faith (Africa CDC); and Eunice Kamwendo, Angela Lusigi, El Hadji Fall and Maleele Choongo (RBA UNDP).

Key contributing authors were Willem Verhagen, David K. Bohl, Jakkie Cilliers, Barry B. Hughes, Stellah Kwasi, Kaylin McNeil, Marius Oosthuizen, Luca Picci, Mari-Lise du Preez, Yutang Xiong and Jonathan D. Moyer. We are also grateful to the following for their contributions and support: Taylor Hanna, Arhin Acheampong, Mallory Cannon, Cade Carter, Holden J. Fitzgerald, Caio Pereira, Andres Pulido, Melissa Shambach, Nicole Wright, José Solorzano Arevalo, Melissa Shambach, Zachel van Aswegen and Yeboua Kouassi.

Partnering institutions



List of acronyms and terms used in the report

AfCFTA	African Continental Free Trade Area	OECD	Organisation for Economic Co-operation and Development
Africa-10	Angola, Cabo Verde, Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Mali, Mauritius, Nigeria, South Africa	PM	Prime Minister
CGE	Computable General Equilibrium	PPP	purchasing power parity
COVID-19	The severe acute respiratory syndrome coronavirus 2, or SARS-CoV-2	SDG	(United Nations) Sustainable Development Goal
DRC	Democratic Republic of the Congo	SIR	Susceptible-Infectious-Recovered models
EU27+UK	European Union, composed of 27 countries, plus the UK	UK	United Kingdom
FDI	foreign direct investment	UNCTAD	United Nations Conference on Trade and Development
GDP	gross domestic product	UNICEF	United Nations Children's Fund
HDI	human development index	US or USA	United States of America
HIV and AIDS	human immunodeficiency virus and acquired immunodeficiency syndrome	USD or \$	United States dollar
ICT	information communication technologies	WTO	World Trade Organization
IFs	International Futures model		
IHME	Institute for Health Metrics and Evaluation		
IMF	International Monetary Fund		
IMF WEO	International Monetary Fund World Economic Outlook report		
IOM	International Organization for Migration		
JHU	Johns Hopkins University		
LDC	least developed country		
MER	market exchange rate		
No-COVID	A scenario describing a world without COVID-19, following a development pathway prior to the COVID-19 pandemic		

Executive summary

The spread of COVID-19 has been devastating for the millions of people who have been infected by the virus and lost their lives, and the tens of millions of people who have lost their work and livelihoods.

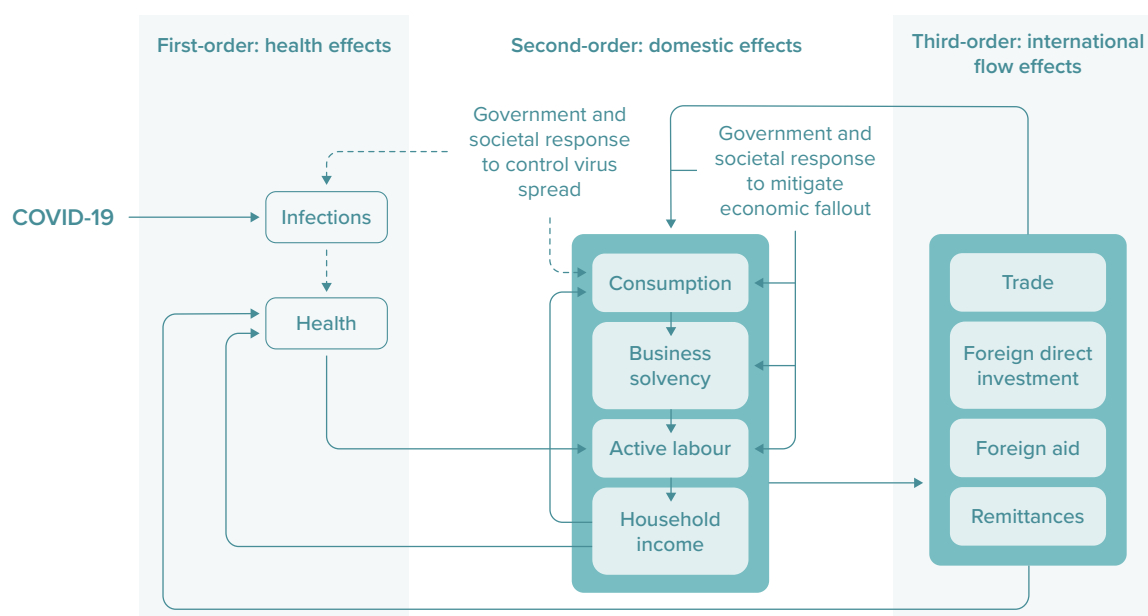
The spread of COVID-19 has been devastating for the millions of people who have been infected by the virus and lost their lives and the tens of millions of people who have lost their work and livelihoods. Governments and civil society have responded swiftly to the virus with policies that reduce human interaction and slow its spread. These policies have had the adverse effect of further reducing labour participation, productivity and capital utilization, reducing household consumption and increasing poverty across various thresholds, both in absolute and relative terms (Dabalen and Paci, 2020; International Monetary Fund [IMF], 2020b; Organisation for Economic Co-operation and Development [OECD], 2020a; Robertson et al., 2020; Verity et al., 2020; World Trade Organization [WTO], 2020). The COVID-19 pandemic has significantly reduced economic growth and altered patterns of international economic interaction. While we are still in the midst of the crisis, there is real concern that the majority of macroeconomic effects will not be temporary, but will disproportionately shift long-term development pathways in low- and middle-income countries, offsetting some of the gains

made towards achieving the Sustainable Development Goals (SDGs) in recent decades.

However, so far little is known about the long-term implications of COVID-19 across individual countries in the coming decades, their ability to recover from health and economic shocks, and the country characteristics that shape post-COVID recovery patterns.

In this report, we study the long-term dynamics of COVID-19 at the country level in Africa through a macroeconomic lens. Specifically, we analyse how today's effects on country-level mortality, gross domestic product (GDP) growth and international monetary flows of trade, aid, foreign direct investment (FDI) and remittances will shape long-term patterns of mortality, economic growth and international trade by 2030 and 2050. In addition, we unravel how these macroeconomic changes will affect socio-economic indicators and human development by quantifying the outcomes for child mortality and poverty over the coming decades.

Figure 1. Conceptual framework outlining the macroeconomic effects of COVID-19, through health effects, domestic effects and international flow effects



Note: While the framework outlines the effects as sequential, i.e. moving from left to right, many countries experienced disruption of the international flow effects prior to health and domestic effects. Solid lines depict pre-dominant positive feedback loops, whereas dotted lines depict negative feedback loops. As such, increased infections (+) negatively affect health (-), which reduces active labour (-).

This report presents a conceptual framework (see Figure 1) that conceptualizes the effects of COVID-19 on human development as cascading across three systems. First, COVID-19 directly effects human health systems, changing patterns of mortality and morbidity with differential distribution across countries. Second, these direct health effects are mitigated through government policy and civil society actions that reduce human interaction, slowing the spread of the virus and saving lives while also reducing economic activity and changing patterns of production and consumption. Finally, these changing economic effects ripple through the international economic system, changing patterns of trade, FDI, foreign aid and remittances. Some countries may have fewer direct health effects from COVID-19 – a finding particularly relevant for many countries in Africa – but may experience more direct effects from changing patterns of international economic interdependence.

We model these dynamics across 10 countries in sub-Saharan Africa: Angola, Cabo Verde, Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Mali, Mauritius, Nigeria and South Africa (referred to as the Africa-10). The countries were selected based on regional spread, differences in their domestic economic structure, and their dependency and interconnectedness with the global economic system. We use the International Futures (IFs) model to assess the immediate and long-term consequences of COVID-19 across these first-, second- and third-order effects. We built scenarios with diverging assumptions around the COVID-19 effect on mortality in 2020 and GDP growth and international trade in 2020 and 2021. We compare these scenarios with a No-COVID scenario, representing a world in which COVID-19 did not occur.

In the short term, we find that:

The first-order effects of COVID-19 on these countries have been relatively limited, with the exception of South Africa. The limited spread and mortality of COVID-19 could be driven by many factors, including poor levels of testing, policymakers and citizens with high levels of experience with communicable diseases, or unique immunity. More importantly, we also find that the range of uncertainty associated with direct COVID-19 mortality is considerable, with some countries projected to see between 800 and 60,500 deaths based on different approaches to modelling mortality. While there is great uncertainty around the direct mortality of COVID-19, even the high-end projections have little-to-no effect on long-term country-level development outcomes over the coming decades.

Second-order effects – those associated with government policies to slow the spread of the virus and economic activity while mitigating economic fallout – are the most consequential driver of impaired human development. The reductions in GDP growth range from -2.6 percent to -10.6 percent

across Africa-10 countries and are coupled with reductions in household income, reduced government revenues and increases in extreme poverty. In 2020, we project a 4 percent increase in people living in extreme poverty across the Africa-10 countries, or around 10 million people. The majority of increases in extreme poverty occur in Nigeria, which accounts for about seven out of 10 people moving into extreme poverty.

COVID-19 reduces international flows of trade, aid remittances and FDI. FDI inflows experience the sharpest reduction in 2020, with reductions in FDI between countries ranging between -35.1 percent and -72.5 percent. Oil producers experience the largest drop in FDI (Nigeria, Angola and to a lesser extent Chad). Reductions in exports range from -5.2 percent to -17.8 percent relative to a No-COVID scenario. The reduction in international trade is sharpest for the island economies of Cabo Verde and Mauritius, reducing their trade openness by -7.4 percent and -8.4 percent respectively compared with a No-COVID scenario.

While there are uniform negative effects of COVID-19 on mortality and GDP projections, the impact on international flows is non-uniform and depends on the country studied as well as the indicator used. International flows are a balance between incoming and outgoing flows. While both incoming and outgoing flows are negatively affected by COVID-19, this does not result in net negative outcomes across countries and across all indicators. Prior to the pandemic, Mauritius had a positive trade balance and was a net sender of remittances (international flows sent from migrant workers to friends and family living in their home country). COVID-19 resulted in a reduction of the positive trade balance, but also reduced the negative balance for remittances. On the contrary, prior to the pandemic Nigeria had a negative trade balance and was a net receiver of remittances. COVID-19 has resulted in a reduction of the negative trade balance, and a net negative effect on the flow of remittances.

In the long term, we find that:

The economic downturn identified above will drive an increase in 'indirect mortality', which is the measure of people who will die by 2030 who would not have died without the economic downturn. These people do not die as a direct consequence of COVID-19. Instead, they will die mostly from preventable communicable diseases that stem from poor access to food, clean water, sanitation and income, and are expected to rise as a consequence of the economic downturn.

Indirect mortality will be dominated by child mortality under five years. The COVID-19 pandemic primarily affects elderly people, with little consequences for direct child mortality in 2020. However, mortality of children under five years makes up 80 percent of the indirect mortality from COVID-19 in 2025 and 2030.

Countries with low levels of government capacity and low government investment in health systems prior to COVID-19 will bear the largest burden of indirect mortality. Our analysis projects that for these countries, the indirect mortality burden will be much higher than the direct COVID-19 mortality burden. For many of these countries, the increase in indirect mortality exceeds the direct mortality burden.

The economic downturn of the pandemic is relatively persistent across countries, with reductions in GDP relative to a No-COVID scenario still present in 2030 and 2050. Although some countries show recovery, measured as a smaller economic downturn in 2050 compared with the GDP shock in 2020, other countries show increasing economic downturns. For example, GDP in Mauritius is projected to decline by -10.2 percent in 2020 and by -6.9 percent in 2050, whereas GDP in Mali is projected to decline by -3.3 percent in 2020 and by -9.2 percent in 2050.

Countries with higher levels of government capacity and a smaller reliance on agriculture are showing a stronger recovery, following the economic shock. On the contrary, countries with lower government capacity and higher labour shares in the agricultural sector show continuing worsening economic declines to 2040 and 2050.

The long-term effect of the economic downturn will lead to an erosion of the gains made to human development over the previous decades by increasing mortality, increasing child mortality and pushing more people into poverty. While this will reduce the number of countries that achieve key SDGs, the trend across the Africa-10 in continued improvement in human development is expected to continue. The magnitude of the effect on human well-being will depend on the speed of economic recovery in a post-COVID world, with the most optimistic scenario showing convergence of poverty levels towards a No-COVID world.

Across the first- and second-order effects, we find that levels of government capacity and economic development are significant drivers of the long-term effect of this pandemic. Countries with fewer resources, poorer infrastructure and less government capacity today are more vulnerable to prolonged economic downturns, higher levels of indirect mortality and higher levels of child mortality. Importantly, these long-term effects do not correlate with the immediate economic shock of COVID-19. As such, the countries most impacted today might not be the countries bearing the largest share of the long-term effects. For some countries, this results in projected limited loss of human lives and economic loss in 2020, but larger aggravating losses towards 2030 and 2050. The opposite is true for countries with higher levels of government capacity, which show stronger recovery following the economic shock, with a stable economic impact over time and a smaller share of indirect mortality.

Patterns of international economic interdependence will experience a long-term shift, as the economic consequences of COVID-19 will negatively affect key trading partners for Africa (Europe, India, US) and have less effect on economic production in China. As a result, the Africa-10 economies will become more reliant on trade with China, at the expense of trade with the EU27+UK and India. The shift in intra-African trade is small.

The long-term effects of COVID-19 across countries and across indicators will multiply the development challenges these countries face. For many of the countries studied, the long-term effects of COVID-19 on increasing child mortality, indirect mortality and economic downturns by 2030 and 2050 might well exceed the extent of the initial shock. Differences in the long-term effects of COVID-19 across countries are explained by levels of government capacity, agricultural labour share and investments in the health sector prior to COVID-19. For international trade flows, COVID-19 results in a shift towards China, and away from EU and India. Together, these findings point to general policy priorities to build towards recovery for economies and populations beyond the pandemic. Many of these policy priorities are not new; rather, COVID-19 reinforces the need to focus on these policy priorities. The specific policy measures implemented to reach these policy priorities need to be tailored towards the individual countries. We recommend that policymakers:

- **Analyse and understand the effect of COVID-19 to be system-wide and that the response must be multidimensional.** This requires an analytical framework that does not focus on policies in isolation (such as health or economic policies) but as an integrated whole. Currently, many governments are organized across topical domains and ministries. Integral task forces have been enacted to combat COVID-19, acting across domains and ministries. We suggest that governments maintain a post-pandemic task force, working on economic recovery, sectoral diversification and a broad human development agenda in the immediate aftermath of the pandemic.
- **Countries that lack resilience may see more negative long-term effects from COVID-19 than short-term effects.** The least resilient countries are defined by indirect mortality exceeding direct mortality, and by economic downturns in 2030 and 2050 exceeding the initial economic shock. Building resilience should be a crucial focus of policymakers to guard against future shocks, whether they are health-, climate- or conflict-related. Economic resilience should focus on short-term resilience (the ability to minimize the initial economic shocks) and, more importantly, on building towards long-term resilience (the ability to recover following an economic shock).

- **Invest in children and youth to minimize the indirect economic and health impacts on future generations.** In the short term, this involves investing in health infrastructure and water, sanitation and hygiene (WASH) infrastructure to minimize the high level of indirect mortality among children. In the immediate term, it requires investing in youth education to minimize the effect of COVID-19 through school closures and education and investing in youth employment and jobs.
- **Our analysis suggests a couple of key policy priorities for minimizing long-term effects on indirect mortality and economic growth, which include investing in government capacity.** Studies on post-crisis recovery have previously highlighted the importance of improving governance and reducing corruption to benefit direct resilience to, and long-term recovery from, economic shocks (Caldera-Sánchez et al., 2016). Improving government capacity is multidimensional and should be achieved through increasing government revenue through an increase in the capacity of the taxation system; increasing accountability and transparency of governments and reducing corruption; improving the rule of law for individuals and businesses; and increasing regulatory quality regarding the domestic market, trade policies and other international flows.
- **Enact policies that minimize the costs and barriers associated with sending and receiving remittances and FDI.** Currently, COVID-19 threatens to result in a double-hit to households and business by reducing the domestic economy and by reducing flows of remittances and FDI. Currently, the costs for sending and receiving remittances in sub-Saharan Africa are among the highest globally. Governments should aim to reduce the cost of sending and receiving remittances and push for further digitization of banking and remittance flows.
- **Plan for an accelerated shift in economic interdependence to China and away from Europe, India and the US.** African leadership should use this opportunity to increase internal continental trade by increasing export diversification, reducing non-tariff barriers to trade and accelerating the adoption of the African Continental Free Trade Area (AfCFTA). This free trade area should not only result in a shift in trade between countries, but also the opportunity to shift the export profile of countries in Africa towards export diversification and higher value-added goods and services.



Introduction



Introduction

The spread of COVID-19 has affected millions of people who have been infected by the disease and lost their lives or loved ones, and tens of millions of people who have lost their work and livelihoods.

Governments and civil society have responded swiftly to the virus with policies that reduce human. Governments have responded swiftly to the virus using a range of policies that reduce human interaction and slow its spread.

These policies have been largely successful in flattening the curve, slowing the spread and saving countless lives from the disease.

However, they also have the effect of further reducing labour participation, productivity and capital utilization. The COVID-19 pandemic has significantly reduced economic growth and altered patterns of international economic interaction. While we are still in the midst of the crisis, there is real concern that this reduction in economic growth will negatively affect development pathways in low- and middle-income countries, offsetting some of the gains made towards achieving the Sustainable Development Goals (SDGs) in recent decades.

Researchers have quantified the effect of COVID-19 on country-level gross domestic product (GDP) growth, international exports, the tourism industry and patterns of global international investment (International Monetary Fund [IMF], 2020b; United Nations Conference on Trade and Development [UNCTAD], 2020d; World Trade Organization [WTO], 2020). In addition, there is an emerging body of research regarding the consequences of COVID-19 on poverty, child mortality, malnutrition and food security (Akiwumi, 2020; Kharas and Hamel, 2020; Roberton et al., 2020). A smaller set of studies attempts to understand the potential medium- and long-term consequences on economic activity and indicators of human development beyond the pandemic (Cilliers et al., 2020). This latter body of research can help us understand systemic effects of the COVID-19 pandemic, including the pathways and mechanisms through which COVID-19 might affect country-level resilience.

This report focuses on the macroeconomic effects of COVID-19 for 10 countries in sub-Saharan Africa: Angola, Cabo Verde, Chad, Democratic Republic of the Congo, Ethiopia, Kenya, Mali, Mauritius, Nigeria and South Africa (together referred to as the Africa-10). The countries were selected based on differences in their domestic economic structure, level of development, interconnectedness with the global economic

system and regional distribution. Our analysis focuses on the outcomes of COVID-19 for mortality, domestic economic growth and international economic flows between countries in 2020, 2030 and 2050. In addition, we quantify the effect of COVID-19 on poverty and child mortality.

A more complete understanding of both the immediate and longer-term outcomes of COVID-19 on macroeconomic development in these countries will assist policymakers in making more informed decisions about the future of development and SDG achievement within these countries and beyond.

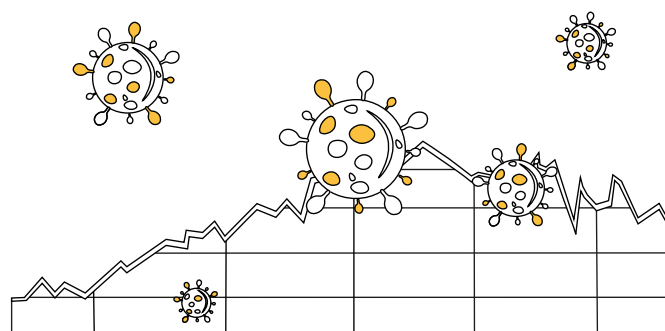
Structure of the report

This document includes six sections, outlined below.

1. The conceptual framework and background literature section presents a way of thinking about the consequences of the COVID-19 pandemic. We distinguish between three types of effect that are identified based on their proximity to the virus itself. These are:
 - i. **First-order effects:** Health effects concerned primarily with direct and indirect mortality associated with the pandemic.
 - ii. **Second-order effects:** Domestic economic effects, focusing on key socio-economic indicators related to the well-being of a country's economy and its population.
 - iii. **Third-order effects:** International economic effects, exploring the positions of countries and patterns of financial exchange within the global economy.

This section includes an extensive literature review to further contextualize this conceptual framework within a global development context.

2. The methodology section introduces the modelling approach taken in this analysis. It specifically focuses on the use of the International Futures (IFs) modelling platform and its key concepts in relation to this study. While the methodology introduces the general approach, the sections on near-term effects and long-term effects in IFs introduce how we input COVID-19 effects into IFs and the scenarios used to explore the long-term effects.
3. The pre-COVID section analyses the current level of socio-economic development across the 10 countries in this report. It lays a foundation for understanding the country-level effects of COVID-19 by describing the 2019 pre-COVID level of development in these countries, as well as some of the main differences across the countries.
4. The near-term effects of COVID-19 section quantifies the immediate effect of COVID-19 on the Africa-10 in 2020. It includes three subsections that draw upon the conceptual framework we have outlined. This section reviews the country-level characteristics prior to the COVID-19 pandemic both quantitatively and qualitatively.
5. In the section exploring long-term effects of COVID-19 in IFs, we use a scenario approach to quantify the consequences of COVID-19 to 2030 and 2050 in terms of mortality, economic activity and trade. This section starts by introducing sensitivity analysis aimed at framing some of the uncertainty around the most detrimental aspects of the pandemic, along with the recovery patterns of different countries. Here we focus on the direct and indirect health burdens, macroeconomic consequences and the pandemic's influence on global trade patterns.
6. The main takeaways section concludes the report by drawing together the analytical findings and making broad conclusions about their implications for decision makers both in the Africa-10 and beyond.



1. Conceptual framework and background literature



The conceptual framework that we deploy for this report separates the long-term effect of COVID-19 on socio-economic development into three broad areas.

of COVID-19 have not been as severe as in other parts of the world. A notable exception is South Africa, which has the highest levels of COVID-19 spread and mortality in sub-Saharan Africa.

Second-order – domestic effects: Governments and societies have responded swiftly to minimize the spread of the COVID-19 virus and limit first-order effects. Efforts to ‘flatten the curve’ have included lockdowns, travel restrictions and other policies that, in combination with changes in household and company behaviour, have led to a range of secondary effects on domestic economies. A second set of policies include those that aim to stimulate domestic economies and mitigate the negative effects of policies that have reduced human interaction. Combined, these set of policies are expected to result in an economic downturn, with both immediate and long-term consequences for socio-economic development.

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13

Third-order – international flow effects: First- and second-order effects drive changes at the global level, shifting the flows of trade, foreign aid, remittances and foreign direct investment (FDI). For countries highly dependent on the flow of goods and finance across borders, this could be disruptive. The magnitude of this effect will also be shaped by the COVID-19 effect on major trading partners, and the relative level of interdependencies between the Africa-10 countries and the outside world.

The sequence, character and magnitude of impacts in each country will depend on the severity of the immediate effects as well as country-specific vulnerabilities. For example, first-order effects in countries with high co-morbidities and relatively old population structures might be more severe. When considering second-order effects, household income prior to COVID-19 will influence the magnitude of the COVID-19 pandemic on increasing poverty levels in a country. Finally, on an international scale, countries particularly dependent on trade flows, tourism or remittances will likely experience more acute effects. Overall, the severity of COVID-19 at the country level, the impact on its major trading partners combined with the country-specific vulnerabilities and economic recovery will shape the medium- to long-term macroeconomic effects of COVID-19.

Background overview

First-order – health effects

The first-order effects of COVID-19 include disease spread, increased mortality, increased morbidity, reduced labour participation and reduced productivity. Several research groups are quantifying the spread, case count, mortality and the underlying causes driving mortality related to COVID-19 (Friedman et al., 2020; Johns Hopkins University, 2020; Walker et al., 2020). The mortality rate for the overall population based on initial data appears to be between 1.2 percent and 1.5 percent (Verity et al., 2020), but this rises to around 13 percent for those over 80 (with mortality estimates ranging from 8 percent to over 30 percent of measured cases) (Livingston and Bucher, 2020; Onder, Rezza, and Brusaferro, 2020; Verity et al., 2020). Co-morbidity has played a significant role in the overall mortality of COVID-19, with the presence of certain diseases including heart disease, diabetes and chronic respiratory disease increasing the likelihood of adverse impacts. There is limited research, however, on the correlation between co-morbidities that are common within parts of Africa (such as malaria and HIV and AIDS) and COVID-19 severity.

To date, COVID-19 mortality in Africa has been relatively low. However, the availability of testing and quality of reporting call into question the reliability of current mortality numbers (Katz, Lu, and Sanger-Katz, 2020). Lower spread and mortality in Africa may also be due to the fact that the virus

appeared in Africa later than in other parts of the world, that government response was relatively strong, that populations were compliant with requirements to wear masks and socially distance, and that immune responses may differ from other continents.

Second-order – domestic economic effects

Governments have responded swiftly and strongly to minimize the spread of the COVID-19 virus and limit the first-order health effects and the second-order (knock-on) effects of the associated economic contractions. We conceptualize second-order effects of the virus to be primarily driven by domestic government policy to (1) slow the spread of the virus and (2) mitigate the consequences of reduced economic activity globally. Differential development outcomes should be expected from these policy choices depending on the macroeconomic context in which they occur, the degree to which COVID-19 is spreading, the nature of the associated policies and the effectiveness of government action. The first set of policy choices – reducing human interactions to slow the spread of the virus – has notable effects on economic activity, labour participation and ultimately incomes and household consumption. Together, the economic consequences of COVID-19 and the effects of government-imposed lockdowns are projected to lead to a global recession in 2020 (IMF, 2020a; Organisation for Economic Co-operation and Development [OECD], 2020b), with immediate consequences for human development and poverty levels.

Changes in poverty levels will be driven by reductions in economic growth, as well as by changes in the distribution of household income across income levels. At the global level, for the first time in this century, extreme poverty (the number of individuals living on below < \$1.90 per day) is projected to rise, resulting in over 700 million people in extreme poverty in 2020, or a setback of five years in the global effort to reduce poverty and achieve SDG 1 (World Data Lab, 2020).

Much less work has been done on the distributional economic impact of this increase in poverty. Large-scale economic disruptions tend to disproportionately affect the most vulnerable people. Those in the informal sector often have no reserves or cushion, living hand to mouth. Persons active in the informal sector are also unable to work from home and do not qualify for unemployment benefits, should these be available. In an African context, the high level of informal employment combined with existing poverty levels may magnify the already disproportionate effects of COVID-19 on vulnerable groups.

The second set of policies enacted by governments are those that aim to stimulate domestic economies and mitigate the negative effects of policies that have reduced human interaction. Governments have done this in a variety of ways, but most often these interventions have come in the form of policies that either give cash directly to households and businesses to offset losses and mitigate social instability or that postpone loan and tax payments. These policies play a key role in countering economic disruption and fostering recovery. However, in the current context of high debt levels among a number of African countries, government spending programmes contribute to the growth of sovereign debt. This is particularly worrying during the COVID-19 crisis as government revenues will concurrently decline, underlining the importance of measures to stimulate economic growth as soon as practically feasible. For countries with already constrained fiscal and monetary space, inefficient tax systems and high levels of debt, the growth in sovereign debt will be particularly concerning. In emerging economies, government debt is anticipated to rise to around 63 percent of GDP by 2020, a 10 percentage point increase from 2019 levels (IMF, 2020b).

Third-order – international flow effects

COVID-19 affects the domestic economy of countries as well as the international system of economic interdependence. The immediate COVID-19 effects are those that directly alter the international flow of people, goods and money. These manifest through changes in trade, aid, FDI and remittances. The longer-term implications of COVID-19 will manifest both as changes to domestic development along with changing patterns of international relations.

Trade

Compared with most economic disturbances that the global economy has weathered in the past, COVID-19 is unique in that it results in both a supply and demand shock (Novy, 2020). Compared with the 2008/2009 financial crisis, trade is expected to take an even harder hit during the unfolding crises, as trade shocks will be exacerbated by government restrictions on the movement of people, money and goods across borders. For example, around 80 countries have introduced temporary export restrictions. These restrictions have the potential to seriously disrupt global supply chains and significantly affect import-dependent countries that lack the capacity to meet domestic demand (WTO, 2020). Certain African countries, for example, have already seen a COVID-19-related shortage in seed supply for important crops such as cowpea, groundnut, sorghum, millet and maize (Gakpo, 2020).

The effect of COVID-19 on trade is expected to vary across countries and sectors, with the difference driven by import dependencies prior to COVID-19. The anticipated downturn

in trade in 2020 is expected to disproportionately affect least developed countries (LDCs) (WTO, 2020) due to the lack of resources within LDCs to support an economic rebound, as well as their dependence on revenues from a limited number of exports to a small number of markets. For example, Angola, which was due to graduate from LDC to developing country status in 2021 (United Nations Department of Economic and Social Affairs [UN DESA], 2021), has been hit hard by the fall in oil prices to an 18-year low in March 2020. This shock will deepen the recession the country has been in since the 2014–2016 oil crash that halted more than a decade of economic growth (UNCTAD, 2020c).

Of immediate concern for many African countries is the trade in medical supplies. Germany, the US and Switzerland supply 35 percent of medical products, while China, Germany and the US export 40 percent of personal protective equipment. Therefore, disruptions in trade with these countries could influence countries' ability to effectively combat COVID-19 as well as other diseases. For example, the COVID-19 pandemic may severely threaten HIV and AIDS control in many African countries due to issues with the global supply chains for medicine, as well as domestic distribution due to lockdowns. Both immediate and longer-term AIDS-related deaths are expected to increase as a result (World Health Organization [WHO], 2020).

The services industry has also been severely affected by the pandemic. For example, tourism, transport, entertainment, hospitality and distribution services have all experienced significant disruptions due to COVID-19. While this is the case across countries, it is acutely felt in a country such as Mauritius which is highly dependent on tourism, financial services, manufacturing and food imports. The tourism sector currently accounts between 23 percent and 34 percent of Mauritius' GDP and employs 15 percent of the country's population. International travel restrictions, limited air travel and the lockdown of airports has decimated tourism revenues, making the Mauritius tourism industry one of the hardest hit by COVID-19 (Smit, 2020; Gopalakrishnan, Peters and Vanzetti, 2020).

On a positive note, COVID-19 and efforts to contain it have also fast-tracked digital transformation. Industries in the knowledge economy and ICT sectors have been less affected, in some cases even growing during this time. This includes e-commerce and digital logistics solutions and should result in an increased focus on rolling out ICT infrastructure and skills across Africa. Countries such as Kenya, Ethiopia and Nigeria are already prioritizing the digital economy to diversify from a reliance on agriculture (in Kenya and Ethiopia) and oil (in the case of Nigeria).

COVID-19 has also expanded efforts to improve food self-sufficiency in Africa and elsewhere. However, the reasoning behind these shifts varies from country to country. Some countries want to boost their agricultural sector and exports, such as Angola, Ethiopia and Chad (British Broadcasting Corporation [BBC] News, 2020; Maylie, 2020; Van Ravesteyn, 2020), partly as a means of diversifying away from their dependence on oil exports. Other countries, such as Mauritius, have high agricultural exports, but want to diversify their domestic agricultural production. Currently, Mauritius is a large producer and net exporter of sugar cane, but has high import dependence on other agricultural food products. The COVID-19 pandemic is laying bare some of the vulnerabilities around the global food system and high levels of import dependence, urging Mauritius to diversify its domestic production.

Remittances

Remittances are a significant international financial flow into sub-Saharan Africa. COVID-19 is projected to result in a sharp drop in global remittance flows, with sub-Saharan Africa showing a larger decline compared with the global average (World Bank, 2020b). Remittance flows are affected by two simultaneous processes driven by COVID-19: 1) falling demand for migrant labour and lower wages due to domestic lockdowns and economic declines, and 2) reduced ability to send and collect remittance flows through formal channels following economic lockdowns (Asare et al., 2020; Davar, 2020). The loss of remittances will further exacerbate the domestic economic shock felt by developing countries and is likely to affect progress towards SDG achievement as reduced international remittances may significantly reduce household consumption and increase poverty levels in countries that are particularly dependent on them (Hong and Knoll, 2016).

Foreign direct investment

As a result of the COVID-19 pandemic, FDI inflows are expected to decline, with global projections ranging from 30 percent to 40 percent (OECD, 2020c; UNCTAD, 2020a), but with sharper drops in African countries (UNCTAD, 2020c). Due to the harsh effects of the COVID-19 pandemic on export and commodity-oriented investments, developing economies will be disproportionately affected. Particularly, emerging markets and LDCs that depend on FDI may experience lasting consequences. Historically, FDI has played a crucial role in the construction of infrastructure and promotion of economic activity, driving long-term structural change. Africa is expected to suffer severe negative consequences as FDI drops, especially in relation to its attempts to diversify and industrialize the overall economy (UNCTAD, 2020c). As such, the intended push for economic diversification following decline in trade might be hampered by reductions in FDI.

Foreign aid

The COVID-19 pandemic has increased the need for foreign aid globally, both to support the direct health response and to minimize the domestic economic impact on vulnerable populations. However, the COVID-19 effect on foreign aid flows is complicated and diverse. On the one hand, humanitarian aid is threatened by reduced financial flows combined with restrictions on providing humanitarian aid. COVID-19 is affecting vulnerable communities throughout the world, including those in refugee camps, disaster displacement sites, border crossings and conflict zones (The New Humanitarian, 2020). The crisis has stretched aid resources, with many humanitarian aid programmes halting operations to shift support to COVID-19-specific needs. Health and aid workers have also faced movement restrictions due to lockdowns, with many returning to home nations without replacement (The New Humanitarian, 2020). In addition, the pandemic may force donor countries to choose between domestic spending needs and aid, thereby increasing demand for aid in recipient countries, which have less capacity to combat the spread of infections and mitigate other social and economic damages.

On the other hand, COVID-19 has resulted in additional pledges for foreign aid from some donor countries. Many international organizations have increased their support to countries. For example, the Kenyan Government received \$60 million from the World Bank. The World Bank also provided \$47 million to support the Democratic Republic of the Congo, while the US Government provided an additional \$6 million in humanitarian funding to the Democratic Republic of the Congo (Ozili, 2020). The pandemic may highlight increased demand for different aid packages, particularly in recipient countries that are struggling with both high spending needs and large deficits.

Combined, the net effect on foreign aid is difficult to decipher. Importantly, aggregate money flows might mask the possibility that changes in foreign aid might differ between countries and across their populations and operate across different timescales. How foreign aid will be affected by the pandemic will have implications for human development in countries that are currently heavily dependent on foreign aid.



2. Methodology



2. Methodology

We apply the conceptual framework to assess immediate and long-term COVID-19 effects on macroeconomic development in 10 African countries.

This section provides an overview of the general methodological approach. However, particular methodological assumptions, such as the scenarios framework, may be found in other sections of the report.

Country selection

This report will focus on the macroeconomic impact of COVID-19 in sub-Saharan Africa based on a sample of 10 African countries (Table 1). The selected countries aim to capture some level of the heterogeneity across African countries in terms of their domestic economy, international flows and the impact of COVID-19 thereon, and they represent a significant share of the economic activity in sub-Saharan Africa (67.2 percent in 2019). Specifically, countries were selected based on the following indicators: regional spread, main economic sectors and their COVID-19-induced GDP growth.



Table 1. Overview of the 10 case-study countries selected for the assessment of COVID-19 across sub-Saharan Africa

	Country	Main economic sectors	GDP growth	
			2020	2021
West Africa	Mali	Mining, agriculture	1.50%	4.10%
	Nigeria	Hydrocarbons	-5.40%	2.60%
Central Africa	Chad	Hydrocarbons	-0.20%	6.10%
	Democratic Republic of the Congo	Mining	-2.20%	3.50%
East Africa	Ethiopia	Agriculture, tourism	3.20%	4.30%
	Kenya	Agriculture, services	1.00%	6.10%
Southern Africa	Angola	Hydrocarbons	-1.40%	2.60%
	South Africa	Mining, services	-8.00%	3.50%
Islands	Cabo Verde	Tourism	-4.00%	5.50%
	Mauritius	Tourism, agriculture	-6.80%	5.90%

Note: Country selection aims to capture the heterogeneity of sub-Saharan countries in terms of their domestic economy, international flows and the impact of COVID-19 thereon, using criteria on regional spread, main economic sectors and COVID-impact on GDP growth based on IMF projections. The depicted GDP growth is based on the World Economic Outlook (WEO) release of June 2020 (IMF, 2020b).

Modelling the macroeconomic effect of COVID-19 with International Futures

We use the International Futures (IFs) integrated assessment modelling platform to simulate the effect of COVID-19 across domestic systems related to economic production, finance and human well-being, as well as the pandemic's impact on patterns of economic interdependence between countries. IFs models and projects more than 700 variables across human, social and biophysical systems for 186 countries to the year 2050 and beyond. It draws on multiple modelling techniques, expressing relationships within and across key systems related to demographics, health, agriculture, education, economics, infrastructure, energy and governance, with countries interacting through trade, aid, FDI, remittances and migration (Hughes, 2019).

IFs is a dynamic, recursive model system with single-year time steps. It draws on a vast historical database to identify trends and initialize forecast variables. The IFs model has been used in the academic literature and policy-science interface to explore alternative futures of economic and human development across countries (Cilliers et al., 2020; Hedden et al., 2016; Moyer et al., 2020; Moyer and Bohl, 2019; Moyer and Hedden, 2020). Scenarios are used to explore a set of alternative futures, based on differentiating assumptions around the consequences of today's events and policy decisions (such as COVID-19) on medium to long-term development across a wide set of indicators and topical domains.

As a near-term shock, COVID-19 presents some unique challenges to long-term forecasting using the IFs model. Recently the model has been adjusted to better represent the health and economic outcomes related to COVID-19. It has been applied to assess the pandemic's long-term effects on key developmental outcomes across multiple scales and issues, including impact assessments at the country and regional levels in Africa (Cilliers et al., 2020). Across all projects, we compare various COVID-19 scenarios with a No-COVID counterfactual scenario, which simulates how the world may have progressed if the COVID-19 pandemic had not occurred. Comparing these scenarios can help us explore the ways in which COVID-19 moves countries away from their prior developmental trajectory, both in 2020 (through direct representation of shocks) as well as towards the long-term (by leveraging the built-in understanding of longer-term dynamical systems in IFs).

Much of the modelling work exploring the effect of COVID-19 has focused on accurately assessing a subsystem around mortality, economic growth, poverty, child malnutrition or trade (Institute for Health Metrics and Evaluation [IHME], 2020; Robertson et al., 2020; World Data Lab, 2020; WTO, 2020). This report partly draws on these insights. A systems approach, similar to that adopted by integrated assessment models such as IFs, can represent some of these direct effects. It can trace these effects through indirect linkages between the systems that together drive longer-term indicators of economic and human development. For example, changes in present-day economic growth have consequences for government revenues, which partly drive investment in education and health. This in turn has consequences for long-term economic growth.

The significant uncertainty regarding the full effects of COVID-19 makes representing the full extent of COVID-19 impacts difficult. For example, the direct effects of COVID-19 on education and school closures may either represent a temporary disruption after which education is resumed, or they might result in significant school drop-outs, with longer-term implications for education levels and economic productivity.

In this study, we focus on some of the key dynamics and interactions around macroeconomic effects, while taking into account that there is still much to understand about COVID-19, its direct effects and its forward linkages to economic and human development over the coming decades.¹

We specifically focus on representing COVID-19 through first-order health effects and through second- and third-order domestic and international economic effects. Two subsystems of particular interest in IFs are the health module (Hughes et al., 2011) and the economics module (Hughes, 2015). The health module builds on the global burden of disease projections (Mathers and Loncar, 2006) by giving projections of 15 disease categories distributed over communicable disease, non-communicable disease and injuries. Projections of morbidity and mortality across 22 age/sex groupings are primarily driven by income, education and technology, and are supplemented by a wide variety of additional variables around topics such as undernutrition, access to safe water and sanitation or indoor air pollution. COVID-19 mortality is represented directly through an increase in a residual category of communicable disease. An important forward linkage of COVID-19 mortality is reduced labour participation and a reduced labour force in the coming years.

¹ The IFs tool, and its underlying documentation, are fully open-source and can be implemented by anyone interested in strategically exploring questions around alternative future pathways of economic and human development (<https://pardee.du.edu/access-ifs>).

The economic subsystem represents production, consumption and trade across the agriculture, energy, materials, manufacturing, services and information communication technologies (ICT) sectors. Supply and demand are governed by a Computable General Equilibrium (CGE)-like model, with physical and financial flows between households, firms and governments managed through a social accounting matrix (Hughes and Hossain, 2004). COVID-19 is mostly represented as a direct shock to GDP with ramifications for labour, capital stock, capital utilization and productivity in 2020 and beyond.

Changes in total economic production are important drivers of many outcomes throughout the system, with direct implications for indicators such as household income and government revenues, and indirect effects on poverty, investments in health and education, and other variables that drive important changes in socio-economic development outcomes.

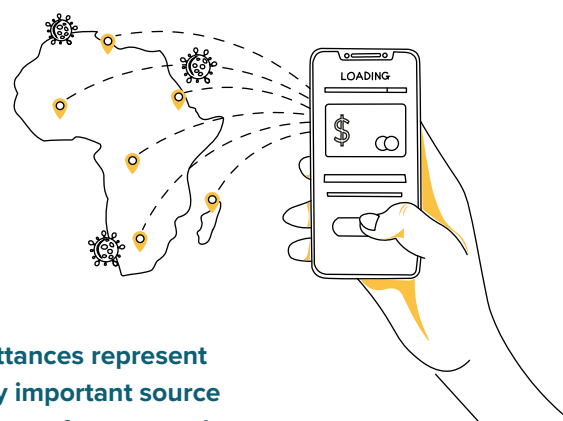
In addition, the economic model represents international flows such as trade, foreign aid, remittances and foreign direct investment (FDI). The IFs trade model represents the import demand and export capacity of a country for six capital sectors. These are then reconciled with a pooled estimate of global supply and demand through price equilibration in order to estimate country-level flows of goods and services. IFs then distributes these flows dyadically, using historical patterns and a gravity-based approach, resulting in bilateral flows of exports and imports by sector between all 186 countries. This allows our analysis to look at not only COVID-19's country-level trade impact from depressed production and consumption, but also the ways in which it might redirect trade between countries.

Foreign aid donations as a percentage of GDP are anchored in historical levels and distributed across recipient countries according to historical patterns and demand. Foreign aid receipt allocations are also initialized by historical data but are driven in part by changes in GDP per capita, with demand diminishing as a percentage of GDP when per capita income is higher. Recipient countries may eventually graduate to net donors once they reach a given level of per capita GDP. Comprised of both loans and donations, aid represents an important source of revenue for many less-developed countries but can also contribute to debt. As such, disruptions to aid inflows because of COVID-related shocks may undermine a government's ability to maintain delivery of public goods and services.

Remittances are international flows sent from migrant workers to friends and family living in their home country. In many cases, remittances represent a very important source of income for poor and vulnerable households. In IFs, remittance flows are initialized from data and driven as a function of net migrant stocks (the population of a country that is living abroad minus the foreign-born population living within the

country) and changes in GDP per capita. FDI also draws on a country-level pooled approach, which is based on historical patterns of inflows and driven towards a net-inflow target (as a percentage of GDP), resulting in a tendency towards net provider of investment. These flows represent an important source of capital for firms, and directly impact a country's growth prospects.

We update and adjust the IFs model by incorporating COVID-19 effects on mortality, GDP growth and international flows. The section on near-term effects describes how we updated the IFs model specifically for each of these components. This results in a single COVID-19 scenario, which we compare with the No-COVID world. All COVID-19 effects are implemented for 2020 and 2021, and all results in the near-term effects are only depicted for 2020. We are also interested in the long-term implications of COVID-19 towards 2030. In the section on long-term effects of COVID-19 in International Futures, we describe three scenarios with varying assumptions around COVID-19 effects in 2020, and the recovery in 2021. We compare these scenarios with a No-COVID world and quantify the COVID-19 effect in 2030 and 2050.



“

Remittances represent a very important source of income for poor and vulnerable households.

Outcome indicators

We assess both immediate and long-term effects of COVID-19 on mortality, the overall economy, poverty, international flows and interdependencies. ‘Immediate effects’ refer to changes in outcome indicators in 2020 and 2021, i.e. during the pandemic. ‘Long-term outcomes’ refer to changes in outcome indicators beyond the pandemic, i.e. between 2022 and 2050.

We report on indicators related to first-, second- and third-order effects. First, we report on increases in mortality, making a distinction between direct and indirect mortality. As the direct effects of COVID-19 are the spread of the disease and its effect on mortality and morbidity, we refer to mortality from COVID-19 as direct mortality. The indirect mortality effects are those that happen after, considering both government and market responses to the pandemic in the immediate and long term. These changes in mortality are not a direct consequence of mortality assumptions, but follow from policy changes that shift the structure of macroeconomic development beyond the immediate effect of the pandemic. As such we refer to these as indirect mortality effects. The section on near-term effects focuses purely on direct mortality, whereas the section on long-term effects of COVID-19 in International Futures focuses on both direct and indirect mortality. In addition, we break down mortality across disease categories and age, specifically focusing on long-term impacts on child mortality. We report mortality towards 2030.

For indicators on the domestic economy, we primarily focus on changes in economic output over time, measured as GDP in constant 2011 USD. Here we quantify both the immediate effect in 2020 of COVID-19 as well as the long-term changes in GDP to 2050. To assess the long-term economic decline, we specifically focus on a country’s resilience to the economic shock, by quantifying an economic recovery ratio. Resilience is the ability for something to return to its original state after experiencing some form of shock, distortion or disruption. Here we focus on economic resilience in the long-term, i.e. the ability to recover from the initial shock. To assess a country’s economic resilience, we compare the change in GDP relative to a No-COVID scenario over time with the change in GDP relative to a No-COVID scenario in 2020. With this approach, values above one suggest economic recovery relative to the initial shock and values below 1 suggest a worsening of the economic decline over time. Taken together, we can think of resilience as the rate of change of this measure. We identify countries as resilient if the GDP reduction over time is smaller than, or equivalent to, the initial GDP shock. We measure GDP in constant 2011 USD.

Last, a significant portion of the report focuses on changes in international flows. We quantify the immediate effect of COVID-19 on trade, foreign aid, FDI and remittances in 2020. These international flows are quantified at the monadic trade level, i.e. representing changes in total flows of a country, irrespective of changes in partner countries. We also quantify long-term changes in trade from the Africa-10 countries at the bilateral level, i.e. quantifying shifts in trade between countries.

Levels of analysis

We analyse all effects across three levels:



The Africa-10 level intends to highlight general trends and insights that may be applicable more broadly to countries in sub-Saharan Africa



The country typologies represent subsets of countries in order to explore variation between countries that share certain characteristics such as levels of economic and human development, domestic economic structure, and patterns of international dependence



The individual country level highlights similarities and differences in both the immediate and long-term outcomes of the pandemic across indicators and countries

The country typologies aim to distil initial general patterns that explain how and why COVID-19 effects differ across countries. These insights help policymakers think about policies to mitigate the effects of COVID-19 Based on shared country characteristics and to foster economic recovery following the COVID-19 pandemic. While the results in this report are specific to the Africa-10 countries, the country typologies also help countries not covered in this report to relate to the insights presented here.

3. Pre-COVID: Introducing our 10 case-study countries



3. Pre-COVID: Introducing our 10 case-study countries

The Africa-10 together represent 1.5 percent of world economic output and 67.2 percent of the economic output of sub-Saharan Africa in 2019.

Economy and trade

The economic output (measured as GDP at market exchange rate (MER) in billion 2011 USD) in 2019 across the Africa-10 varies widely, from the two largest economies in sub-Saharan Africa – Nigeria (\$514 billion) and South Africa (\$462 billion) – to smaller economies such as Mali (\$18 billion), Chad (\$15 billion) and the island economies of Mauritius (\$15 billion) and Cabo Verde (\$2 billion) (Figure 3). The Africa-10 together represent 1.5 percent of world economic output and 67.2 percent of the economic output of sub-Saharan Africa. Nigeria and South Africa together constitute 1.1 percent and 49.5 percent of the economic output for the world and sub-Saharan Africa respectively.

Trade openness, measured as the value of exports and imports relative to overall GDP, also varies significantly across

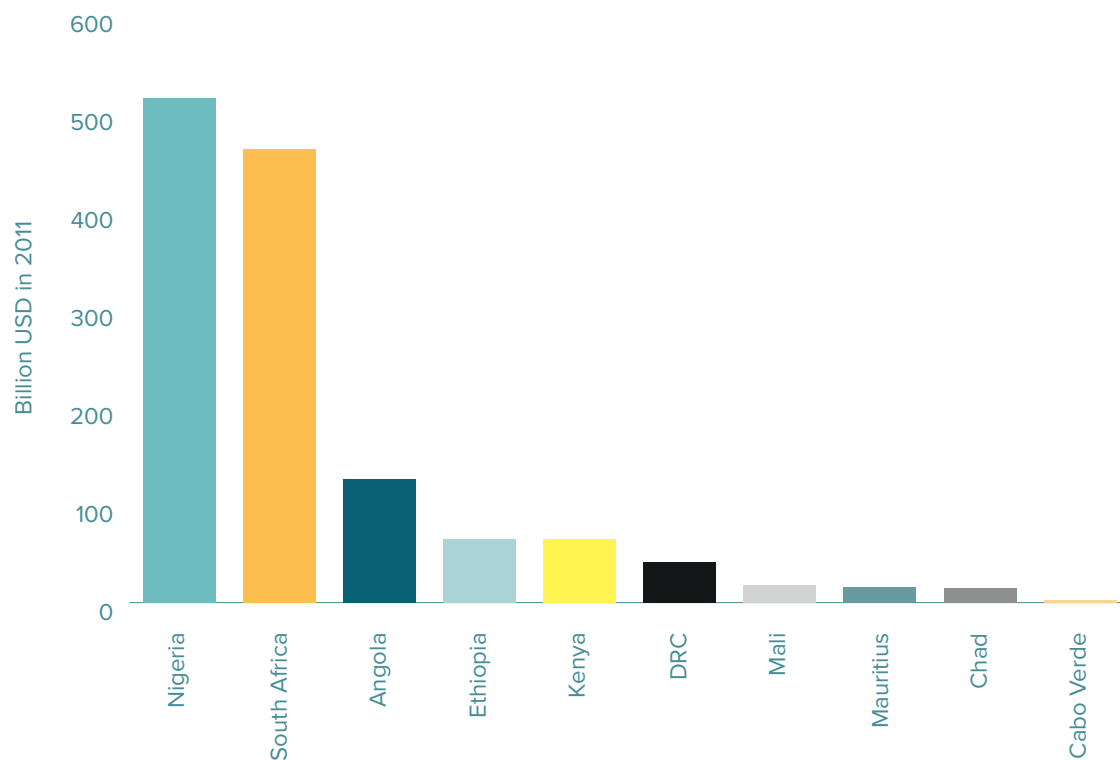
the Africa-10 (Table 2). The island economies of Cabo Verde (108.5 percent) and Mauritius (96.2 percent) are the most open, while Ethiopia (33.9 percent) and Nigeria (25.5 percent) are the least open economies. Most countries in the case study are more open to trade than the global average of 57 percent or the sub-Saharan average of 52 percent.

Nearly all the Africa-10 countries saw a trade deficit, measured as the difference between exports and imports, for 2019: Cabo Verde (-20.3 percent of GDP), Mali (-18.1 percent), Ethiopia (-16.6 percent), Democratic Republic of the Congo (-11.1 percent), Kenya (-10 percent), Chad (-9.3 percent), Nigeria (-7.3 percent), Angola (-3.4 percent) and South Africa (-0.6 percent). Only Mauritius had a trade surplus (+9.7 percent). Angola, Mauritius and South Africa have smaller trade deficits relative to the sub-Saharan African average of -6.6 percent.

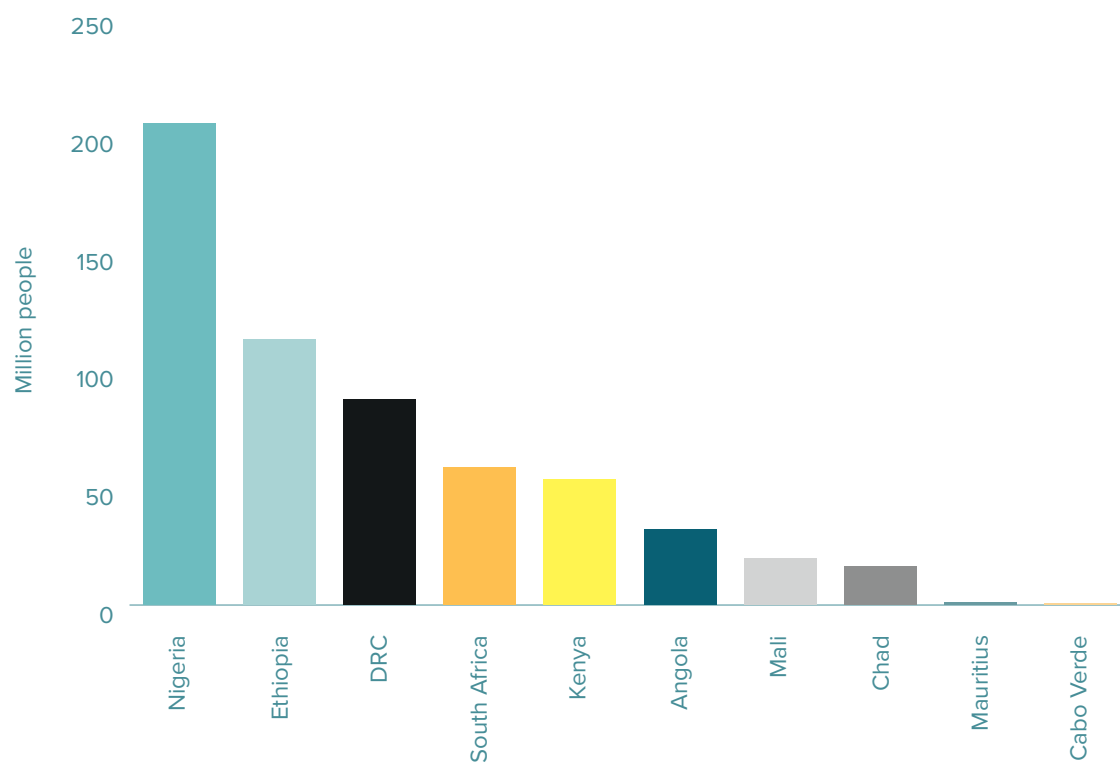
Table 2. Summary of trade indicators as a percent of GDP in 2019

	Total trade	Trade balance	Exports	Imports
	Pct. GDP	Pct. GDP	Pct. GDP	Pct. GDP
Africa-10	45.4	-5.3	20.1	25.3
Angola	60.0	-3.4	28.3	31.7
Cabo Verde	108.5	-20.3	44.1	64.4
Chad	65.5	-9.3	28.1	37.4
Democratic Republic of the Congo	72.5	-11.1	30.7	41.8
Ethiopia	33.9	-16.6	8.6	25.3
Kenya	39.7	-10.0	14.9	24.9
Mali	66.7	-18.1	24.3	42.4
Mauritius	96.2	9.7	53.0	43.3
Nigeria	25.5	-7.3	9.1	16.4
South Africa	60.1	-0.6	29.7	30.3

Note: Total trade represents the sum of exports plus imports. Trade balance is estimated as exports minus imports.

Figure 3. GDP at MER in 2019 for the Africa-10 countries

Note: GDP is measured in billion constant 2011 USD.

Figure 4. Population in 2019 of the Africa-10 countries in millions of people

Population and human development

The Africa-10 countries range in population size from the seventh most populous country in the world (Nigeria at 205 million) to Ethiopia (113 million), Democratic Republic of the Congo (87 million), South Africa (58 million), Kenya (53 million), Angola (32 million), Mali (20 million), Chad (16 million), Mauritius (1.3 million) and Cabo Verde (0.6 million) (Figure 4). These 10 countries represent 7.6 percent of the world's population and 52.6 percent of the sub-Saharan population.

The human development index (HDI) measures human development across time, taking into account health, education and standard of living from a scale of 0 to 1, with 1 being the highest level of development (Table 3).

The 10 countries explored vary considerably in their HDI level in 2019 – from a higher level of human development in Mauritius (0.79), South Africa (0.70), Cabo Verde (0.68), Nigeria (0.60), Angola (0.59) and Kenya (0.59), to a lower level of human development in Ethiopia (0.49), Democratic Republic of the Congo (0.45), Mali (0.46) and Chad (0.43). Angola, Cabo Verde, Kenya, Mauritius, Nigeria and South Africa exceed the average HDI level for sub-Saharan Africa of 0.53, while only Mauritius exceeds the world average HDI level of 0.71 for 2019. All other countries – Chad, Democratic Republic of the Congo, Ethiopia and Mali – fall below these averages.

Table 3. HDI for the Africa-10 countries, including variables related to HDI subcomponents, including average years of adult education, GDP per capita (at purchasing power parity – PPP), and life expectancy at birth

	HDI	Adult education	GDP per capita (PPP)	Life expectancy
	Index 0 to 1	Years	Thousand USD	Years
Africa-10	0.55	6.5	4.3	64.8
Angola	0.59	6.7	5.7	64
Cabo Verde	0.68	8	6.7	74.3
Chad	0.43	3.4	1.8	59.3
Democratic Republic of the Congo	0.45	4.5	0.9	62.5
Ethiopia	0.49	4	1.8	66.2
Kenya	0.59	6.6	3	68.5
Mali	0.46	3	2.1	64.7
Mauritius	0.79	9.5	20.6	75.2
Nigeria	0.6	8.2	5.3	64.9
South Africa	0.7	10	12.1	63

Governance

The level of governance is an important indicator of post-recession recovery (Caldera-Sánchez et al., 2016). Here we use an indicator on government capacity (index 0–1), with higher values indicating higher levels of government capacity (Kaufmann, Kraay and Mastruzzi, 2010). Government capacity is an aggregated indicator based on government effectiveness. It is largely determined by the level of government revenue and the level of government transparency (Table 4). Three countries exceed the average world government capacity level (0.46) for 2019, namely Mauritius (0.5), South Africa (0.58) and Cabo Verde (0.51). Kenya and Angola exceed the average government capacity level for sub-Saharan Africa (0.28), scoring 0.33 and 0.37 respectively. Other countries – Mali (0.26), Nigeria (0.21), Ethiopia (0.26), Chad (0.17) and Democratic Republic of the Congo (0.22) – fall below both the world and sub-Saharan African government capacity averages.

Table 4. A summary of governance-related indicators for the Africa-10 countries in 2019

	Governance capacity	Governance effectiveness	Gov't rev. net aid	Governance transparency
	Index 0-1	Index 0-5	% of GDP	Index 1-10
Africa-10	0.28	2	19.2	3.1
Angola	0.37	1.4	24.3	1.9
Cabo Verde	0.51	2.7	21	5.5
Chad	0.17	1	6.4	2
Democratic Republic of the Congo	0.22	0.9	10.5	2
Ethiopia	0.26	1.9	11.3	2.7
Kenya	0.33	2.3	19.1	2.3
Mali	0.26	1.6	10.4	2.8
Mauritius	0.5	3.6	20.7	5.3
Nigeria	0.21	1.5	7.8	2.4
South Africa	0.58	2.8	33.1	4.2

Note: Government capacity is a composite index estimated as the normalized average of government effectiveness and government revenue as a percentage of GDP. Governance effectiveness is based on the World Bank's Worldwide Governance Indicators. Government revenue net aid is the total government revenue excluding foreign aid (from the World Bank's World Development Indicators). Government transparency is a measure of corruption, where higher values indicate greater transparency, based on Transparency International's Corruption Perceptions Index.

4. The near-term effects of COVID-19



4. The near-term effects of COVID-19

Prior to the COVID-19 pandemic, the mortality rate of communicable diseases across the Africa-10 countries differed significantly (Figure 5).

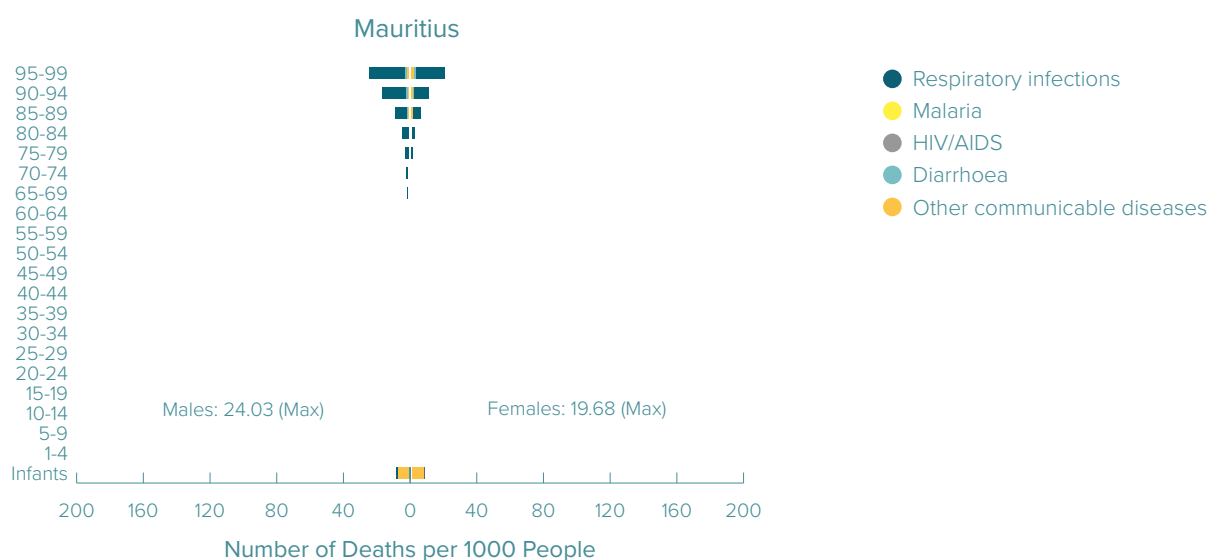
First-order: Health effects

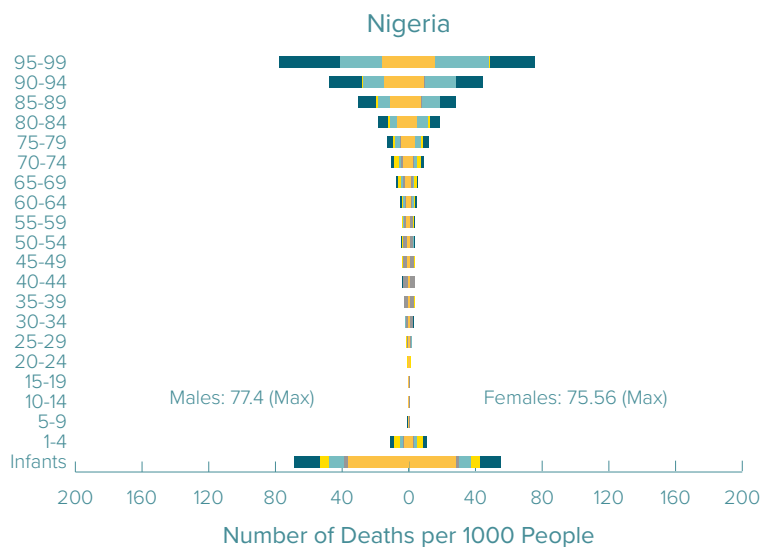
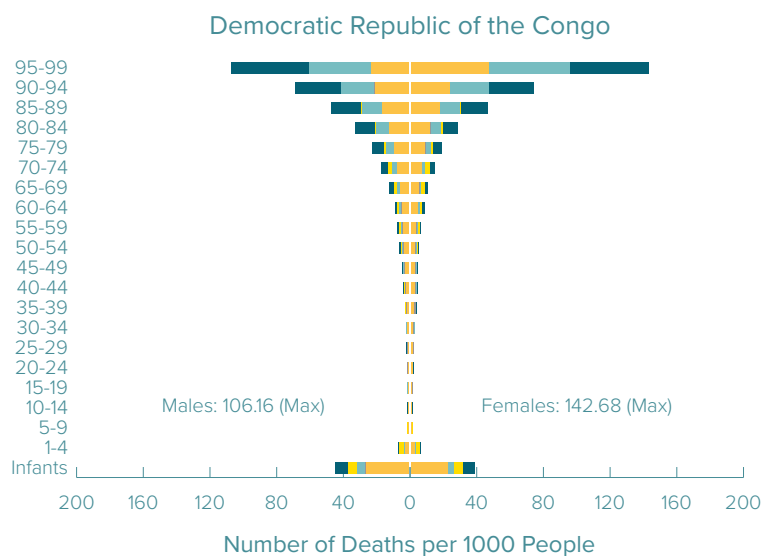
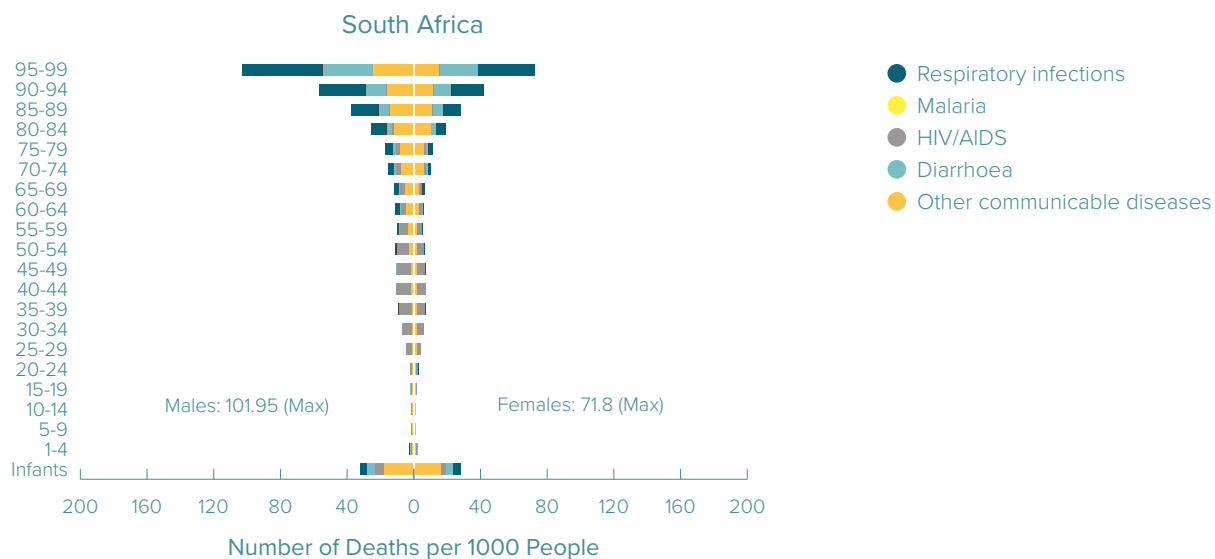
Setting the stage: Mortality prior to COVID-19

Mauritius had the lowest mortality rate, with most deaths being driven by the elderly population dying from respiratory infections. Communicable diseases deaths occurred infrequently in this island nation. This stood in stark contrast to South Africa, Democratic Republic of the Congo and Nigeria which had much higher mortality rates from communicable diseases. In South Africa, communicable disease mortality impacted younger populations and was largely driven by AIDS. In Nigeria and Democratic Republic of the Congo, mortality was driven by diarrhoea and to a lesser extent by AIDS and malaria. In Nigeria, the rate of infant mortality from communicable diseases was especially high, compared with the other countries.

As such, the differences in these countries in communicable disease deaths shows 1) a very different starting point and level of development prior to COVID-19, 2) a very different set of co-morbidities that interplay with COVID-19 and 3) a very different starting point for longer-term economic impacts on mortality and child mortality.

Figure 5. Distribution of mortality from communicable diseases per age group in 2019 and across four countries (Mauritius, South Africa, Democratic Republic of the Congo and Nigeria) from the IFs model



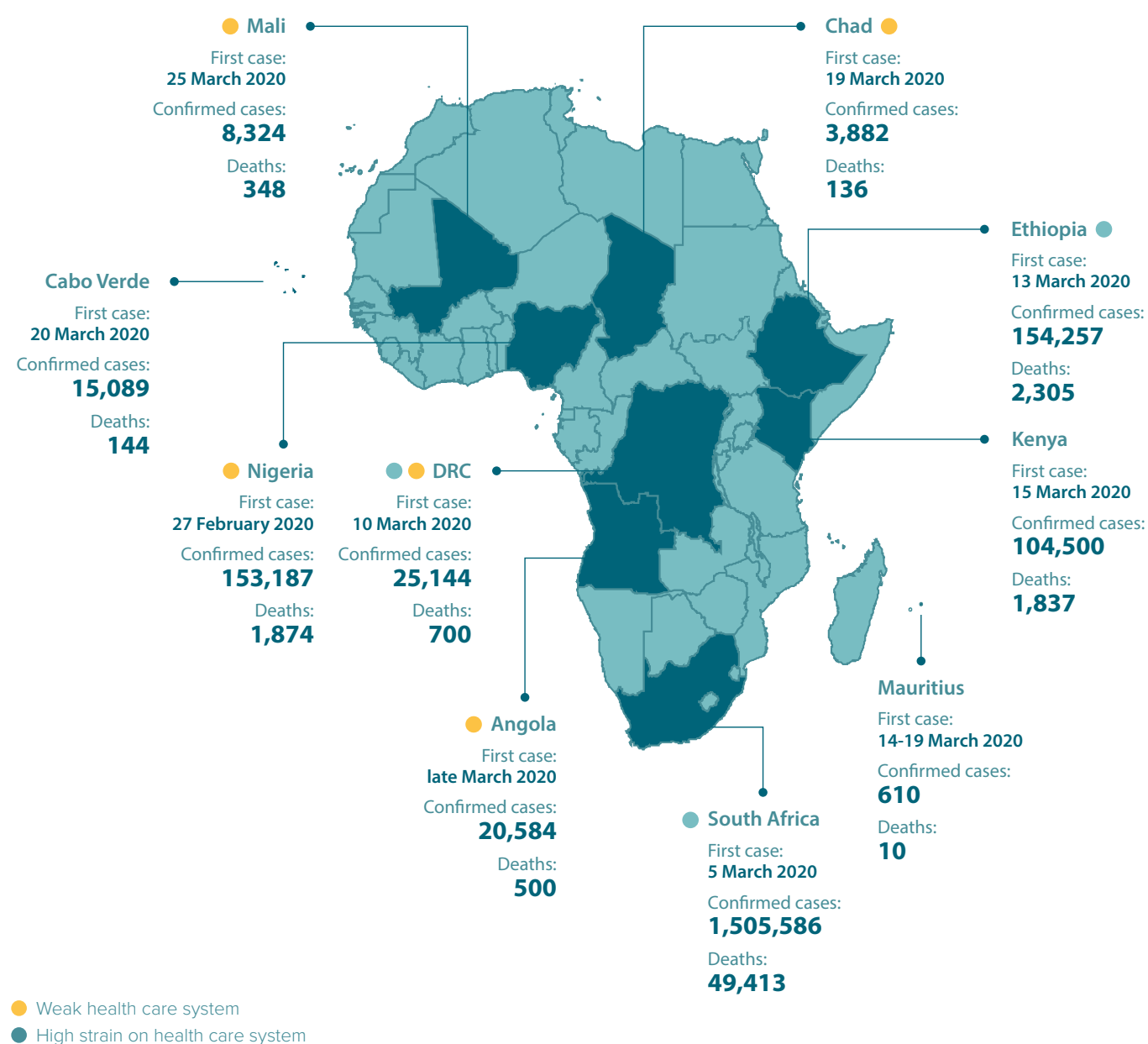


Overview of the country-to-country health effects

Overall, the spread of COVID-19 has not been as severe in Africa as in most other parts of the world. That said, many Africa-10 countries have had difficulty coping with the influx of COVID-19 patients due to already strained health systems. Additionally, there are concerns regarding the availability and effectiveness of testing and case tracking within these countries.

Country-specific health effects of COVID-19

Given the rapid developments of COVID-19, any overview of country-level impacts becomes quickly outdated. Nevertheless, understanding how the impact of COVID-19 differs across countries is valuable. The following summarizes key health effects of COVID-19 across the 10 case-study countries.



Source: Worldometer (2021).

Note: All numbers presented in this figure are updated to February 2021, and might not reflect current COVID-19 mortality and cases numbers per country.

COVID-19 mortality in the IFs model

The near-term forecast of COVID-19 mortality has been the focus of a variety of analytic efforts. There is considerable variation and uncertainty associated with these mortality projections (Friedman et al., 2020). Here we do not attempt to project a single-best mortality estimate, but instead choose to focus on the uncertainty associated with the different approaches. Most models share a common dependence on data (Dong, Du and Gardner 2020; Johns Hopkins University, 2020) and are based on Susceptible-Infectious-Recovered (SIR) models (Friedman et al., 2020; Srivastava, Xu and Prasanna, 2020). Some incorporate techniques such as machine learning, statistical learning, spatio-temporal and time-series models (Carnegie Mellon University, 2020). There are also models that combine multiple techniques. For example, the Institute for Health Metrics and Evaluation (IHME) implements a combination of curve-fitting and a mechanistic disease transmission model to predict the number of cases and deaths (IHME Forecasting Team and Hay, 2020).

Taking into consideration the two major factors that increase uncertainty in mortality projections – variations in projection methods and limited level of data, with potential under-reporting issues – this project uses a mixed approach to represent mortality projections at the country level to the end of 2020 in IFs. Each projection emphasizes a different approach and produces a unique estimate. In all, we create five estimates using our three approaches for each country in the Africa-10. We utilize three different methods to project mortality outcomes for the Africa-10 countries. First, we take IMHE projections at the end of 2020 (an SIR approach) that take several key drivers of transmission into account including mobility, mask use, testing and seasonality (Friedman et al., 2020; IHME Forecasting Team and Hay, 2020). IHME offers three sets of mortality estimates: 1) a more severe scenario where social distancing mandates stop; 2) a current projection that maintains the social distancing mandates; and 3) 95 percent mask usage in public spaces and mandates reimposed when daily-deaths reach eight per million.

For a second approach, we divide our assumptions about mortality into spread and severity. We draw differential age-based mortality rates to represent the severity (see Table 5). For spread, we make assumptions about COVID-19

prevalence. From literature, the spread of COVID-19 as a share of the population differs significantly. Across states in the US, incidence rates vary from 1 percent to 6.9 percent. Similarly in Spain, coastal areas have seen prevalence of 3 percent while areas such as Madrid are over 10 percent (Pollán et al., 2020; Stringhini et al., 2020; Sutton, Cieslak and Linder, 2020; Xu et al., 2020). We use this observed uncertainty band to estimate three different incidence rates of 1 percent, 3 percent and 8 percent.

Curve-fitting is the third method applied to the Africa-10 countries. With data of cumulative mortality from JHU (Johns Hopkins University, 2020), we fit two types of forms to mortality trajectories and use one month of latest recorded data as the benchmark for comparing performance between fitted curves. Sigmoid functions and non-decreasing polynomial functions are used to fit curves that are then extrapolated to the end of 2020.

The first approach (the IHME model) works well for countries that have good data reporting, but it is generally projecting significant increases in mortality for countries that have surging cases or are experiencing a second wave. For countries that are suffering potential data reporting issues or for places where the outbreak is in a very early stage, the second approach (approximation through age-specific mortality rates and incidence rates) produces reasonable estimates. Extrapolation using curve-fitting (the third approach) is good for countries where some data are available and infection cases are sparse or curves have been flattened out for a certain period.

We construct a total of five mortality estimates per country in IFs, to represent the uncertainty associated with mortality estimates. The first three estimates follow the same procedure and are named the Base, Minor and Major mortality estimates. We used a tiered approach for these three estimates. First, if estimates from the IHME model are available, we use those to represent three scenarios in IFs. Second, for countries that are not modelled by IHME but have data recorded in JHU's database, we use extrapolated values from the curve-fitting method. Third, the remaining countries are filled using incidence rates.

Table 5. Mortality assumptions by age structure in IFs for COVID-19

	0 to 9	10 to 19	20 to 29	30 to 39	40 to 49	50 to 59	60 to 69	70 to 79	80+
Deaths as a percentage of infections by age	0.02%	0.02%	0.30%	0.50%	0.50%	1.30%	4.00%	12.50%	22.00%

For the different estimates, we used current projections from IHME for the Base scenario in IFs, universal masks for the Minor scenario and easing of mandates for the Major scenario.

We use extrapolated values from the curve-fitting method to represent the Base scenario. The remaining countries are filled with mortality estimates using 1 percent to 3 percent incidence rates for their Minor, Base and Major scenarios respectively.

In addition, we implemented two extreme estimates, namely Low and High, to represent the best and worst situations. We use current recorded mortality numbers from JHU in the Low scenario to indicate the assumption of no further deaths. Countries not recorded in JHU are filled with estimates using a 1 percent incidence rate. On the other hand, for the High scenario we use the maximum value across the methods from IHME, curve-fitting and incidence rates to present the worst case. For most countries, the High scenario is based on the 8 percent incidence rate.

Last, we perform some sanity checks across all scenarios. In the Base scenario, if a country's projected value from either IHME model or curve-fitting extrapolation exceeds 10-fold of its current recorded mortality numbers, we replace it with the

estimated value using 2 percent incidence rate. Also, we make sure that the ranking across mortality estimates is correct, i.e. values from Base scenario are less or equal to those from the Major scenario.

In addition to the uncertainty of COVID-19 mortality forecasting due to potential under-testing and under-reporting issues and variation of methodologies, model-based projections are also time sensitive. The three mortality projection methods introduced above use data through 2 September 2020. As such, the resulting country-specific ranges of mortality forecast enable us to conduct an uncertainty analysis to assess the impact of different mortality projections (Table 6).

The immediate impact of mortality across countries varies depending on the method used. As such, the approach used to estimate mortality strongly affects the mortality estimates in 2020. Uncertainty is especially high in Ethiopia and Kenya, while uncertainty ranges are much smaller between approaches in for example Chad, Mali and Mauritius. The High estimate results in a clear outlier for almost all countries.

Table 6. COVID-19 projected deaths under five different scenario assumptions for the 10 case-study countries

	Low	Minor	Base	Major	High
Angola	110	153	230	230	13,420
Cabo Verde	41	41	84	444	742
Chad	77	77	82	82	6,720
Democratic Republic of the Congo	296	296	373	373	40,400
Ethiopia	800	3,647	15,070	29,780	60,500
Kenya	590	664	1,957	4,248	25,640
Mali	128	128	128	128	8,400
Mauritius	10	11	11	11	1,938
Nigeria	1,067	1,067	1,341	1,341	100,000
South Africa	14,550	17,110	19,120	19,120	48,460

Note: Most estimates are based on projections from the IHME models and JHU recorded mortality through 2 September 2020.

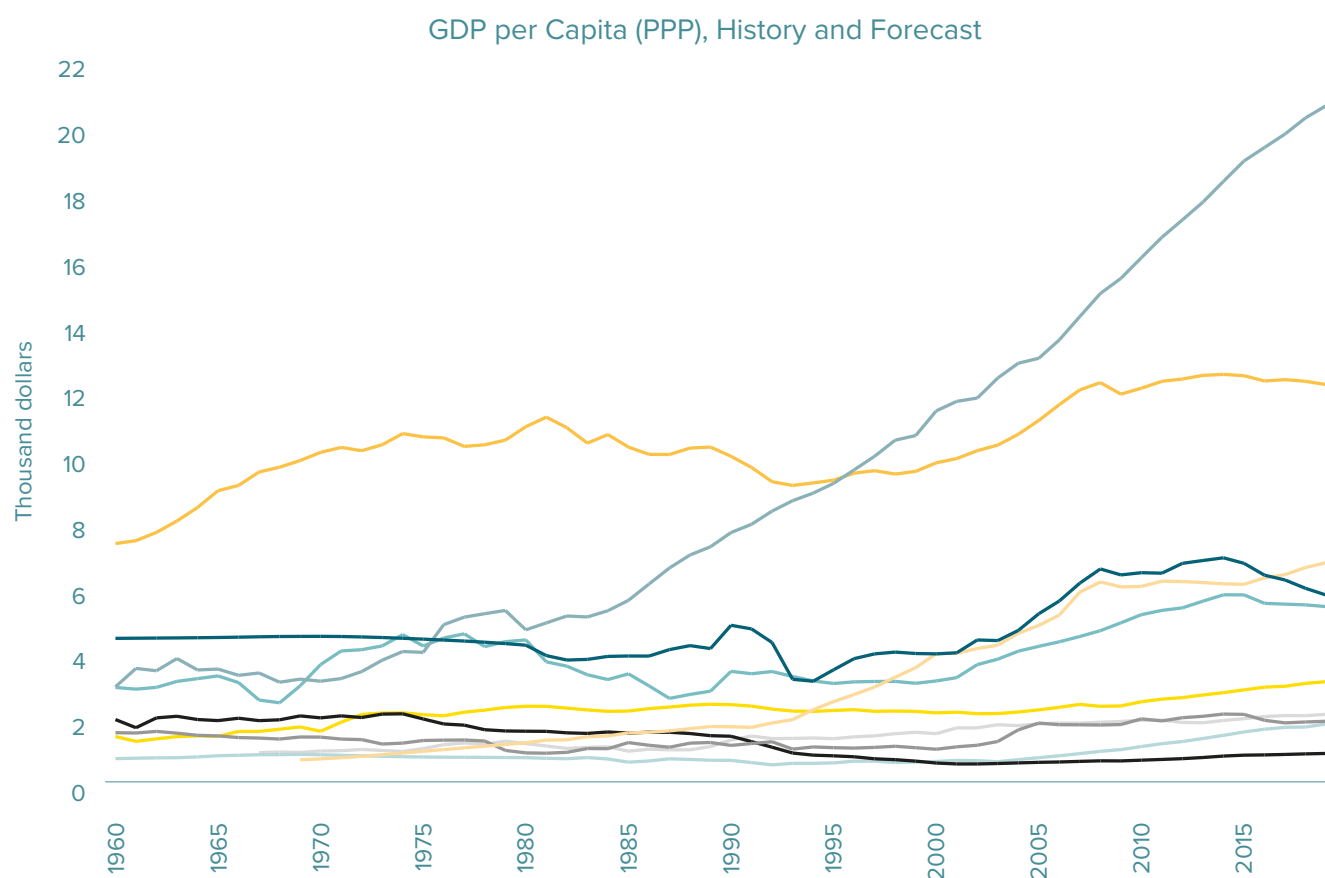
Second-order: Domestic economy effects

Setting the stage: Economic development prior to COVID-19

The Africa-10 represent a wide range of developmental levels and histories. Since 1980, average GDP per capita (at purchasing power parity – PPP) has grown by only \$400 (Figure 6). Between 1980 and 2000, the region experienced twice as many years of negative per capita growth as positive. These lost decades were primarily driven by larger economies such as Angola, Democratic Republic of the Congo and South Africa, which all struggled with conflict and social instability, as well as Nigeria, which struggled to recover from falling energy prices. Several countries have enjoyed strong and consistent economic growth. In 1980, Mauritius's GDP per capita was half that of South Africa. Today, it has nearly doubled. Between 1992 and 2008, Cabo Verde averaged over 8 percent annual growth in GDP per capita (PPP). Nigeria averaged nearly 5 percent annual per capita GDP growth between 2002 and 2012.

- Angola
- Cabo Verde
- Chad
- DRC
- Ethiopia
- Kenya
- Mali
- Mauritius
- Nigeria
- South Africa

Figure 6. GDP per capita over time at purchasing power parity



Today, four countries in the Africa-10 are classified as low-income economies (Chad, Democratic Republic of the Congo, Ethiopia and Mali), four as lower-middle income economies (Angola, Cabo Verde, Kenya and Nigeria), one as an upper-middle income economy (South Africa) and one as a high-income economy (Mauritius). These country classifications loosely correspond to economic structure. While all countries have a large services sector, low and lower-middle income economies are also largely dependent on the agricultural sector. Angola, and to a lesser extent Nigeria, also rely on energy as an important sector of their economies. Manufacturing plays an important role in South Africa (22 percent of GDP), which accounts for roughly 50 percent of the Africa-10's manufacturing production, as well as Democratic Republic of the Congo (22 percent of GDP), Mali (18 percent of GDP) and Mauritius (16 percent of GDP) (Table 7).

Varying impacts of COVID-19 on the domestic economy of countries

Governments around the world, and across the Africa-10, have adopted strategies to 1) limit the spread of the COVID-19 virus and 2) implement economic aid and stimulus packages in order to limit economic fallout related to COVID-19 and the containment measures employed to keep populations safe. Second-order effects have been measured through indicators

on the overall impact on the economy through GDP reductions, or the development of indicators that describe the stringency of the lockdowns or the extent of economic stimulus packages (Hale et al., 2020; IMF, 2020b). While helpful in understanding differences across countries, these aggregate indicators often miss specific impacts at the country level that are relevant to contextualize the COVID-19 domestic economic impact.

The Africa-10 have generally responded swiftly to the COVID-19 pandemic, with most closing borders, suspending travel and closing non-essential businesses and schools for a period of time. This has resulted in significant economic consequences, with large declines in GDP and growth in unemployment anticipated in 2020. Specific domestic sectors including tourism, various services, agriculture and transport are expected to be particularly hard-hit by COVID-19 restrictions. Government response to limit the economic consequences has varied by country, with many countries lacking sufficient resources to implement adequate relief programmes. Countries with large informal economies have seen a disproportionate impact as informal workers may be more affected by regulations to limit COVID-19 spread and are also more difficult to target with economic relief programmes. There is also concern that relief programmes will expand sovereign debt to unsustainable levels in certain countries.

Table 7. Value add by sector as a percentage of GDP in 2019

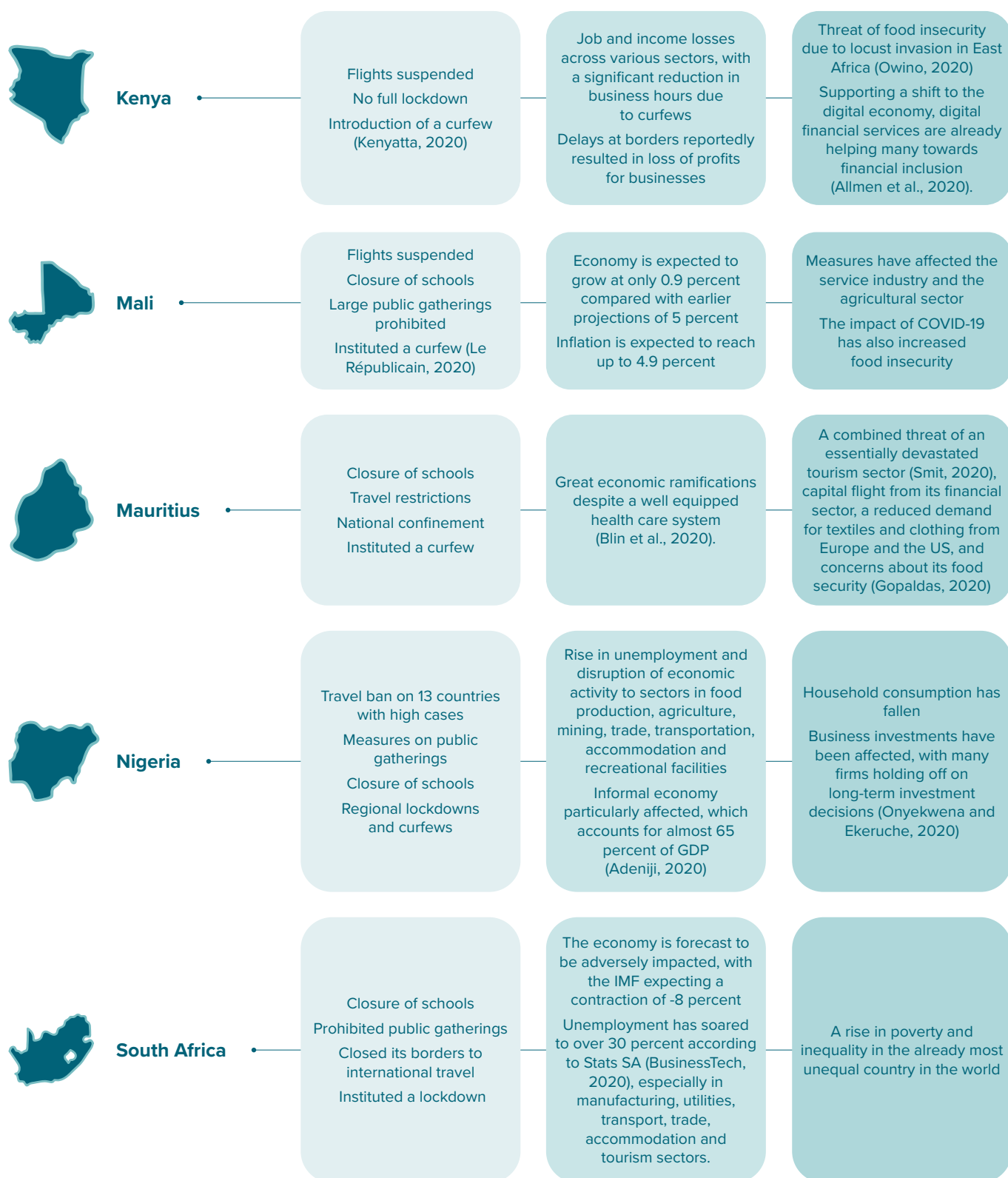
	Agriculture	Energy	ICT	Manufacturing	Materials	Services
Angola (L)	12.2	15.8	5.8	14.1	2.1	50
Cabo Verde (LM)	11.4	2.2	6.5	10.6	0.8	68.6
Chad (L)	43.8	5.4	2.5	6.2	1.3	40.7
Democratic Republic of the Congo (L)	30.2	1.8	2.9	21.7	11.9	31.5
Ethiopia (L)	33.3	3.2	4.5	9.1	0.9	49
Kenya (LM)	29.5	1.4	5.2	12.4	2.2	49.3
Mali (L)	31.9	2.1	4.2	17.7	1.3	42.8
Mauritius (H)	3.7	0.1	9	16.4	0.7	70.1
Nigeria (LM)	22.2	8.6	5	9.4	0.5	54.4
South Africa (UM)	2.1	5.8	5.6	21.9	5.6	59

Note: Letters in parentheses next to country names correspond to current World Bank Income Group classifications for low (L), lower-middle (LM), upper-middle (UM) and high (H) income economies.

Near-term country-specific domestic economic impacts of COVID-19

Given the rapid developments of COVID-19, any overview of country-level impacts becomes quickly outdated. Nevertheless, understanding how the impact of COVID-19 differs across countries is valuable. The following summarizes key domestic economic effects of COVID-19 across the 10 case-study countries.

		Initial measures to combat COVID-19	Effect on the economy and employment	Other effects
	Angola	Closed all borders, airports and ports for 15 days Closure of schools	70% of the population works in the informal economy which has been deeply affected by regulations	The plight of the population has been worsened by the lack of social safety nets (Columbo, 2020)
	Cabo Verde	Flights suspended (Government of Cabo Verde, 2020)	Job losses estimated at 20,000 (an unemployment rate of about 20%) A labour supply shock reduced economic productivity 6.3% loss in GDP (LUSA, 2020)	Tourism and service industry sectors have been affected
	Chad	Flights suspended (Olatunji, 2020)	Economy has so far been hit hard by the economic and social fallout	Measures have affected livelihoods, disrupted supply chains and limited access to food (World Food Programme [WFP], 2020b)
	DRC	Flights suspended Closure of schools, bars, restaurants and places of worship A state of emergency was imposed and borders were closed (France 24, 2020)	Restrictions around movement have impacted the domestic economy, with the largely informal economy taking the biggest hit	The informal sector has been highly affected
	Ethiopia	Declared a five-month state of emergency but allowed economic activity to carry on (Embassy of Ethiopia, London, 2020)	Economic growth expected to decrease by 2.9 percent (UNICEF, 2020) Increased risk of high debt and payment defaults High inflation and rising unemployment (United Nations Country Team in Ethiopia, 2020)	Decrease in demand for businesses products and services (Madden, 2020) Threat of food insecurity due to locust invasion in East Africa (Owino, 2020)



Source: Worldometer (2021).

Note: All information presented in this figure is updated to October 2020, and might not reflect current COVID-19 measures and economic effects.

For 2020, IFs projections of economic growth rates for all countries use estimates from the IMF WEO of June 2020. Compared with a No-COVID scenario, these differences will have far-reaching impacts on many other domestic economic outcomes such as household income, consumption, and government revenues, and will influence levels of global trade and trade patterns. According to IMF projections, the largest reductions in GDP growth compared to No-COVID scenario estimates occur in the two island economies of Mauritius (-10.6 percent) and Cabo Verde (-9.0 percent), whereas Angola (-2.6 percent) and Mali (-3.5 percent) experience the smallest changes in GDP growth. Though all countries show a decline in GDP growth, Kenya (1 percent), Mali (1.5 percent) and Ethiopia (3.2 percent) are still projected to have positive GDP growth compared with 2019. This contraction is reflected in household consumption and government expenditure patterns as well (Table 8), and will have further implications, most proximately in terms of impact on poverty, public goods and service provision.

With reduced consumption, COVID-19 threatens to reverse several years of progress made in the fight to eliminate extreme poverty. As a group, the Africa-10 countries are expected to see roughly 10 million people pushed into extreme poverty in 2020, or a 4 percent increase in the number of people living on less than \$1.90 per day relative to a No-COVID scenario. Because of the country's size, Nigerians are projected to make up 7 out of 10 of the people in this unfortunate position. However, Cabo Verde, Mauritius and South Africa also see an increase in extreme poverty of over 6 percent relative to a No-COVID scenario.

Table 8. Key macroeconomic estimates in 2020 for No-COVID (NC) and COVID interventions

	Annual GDP growth		GDP at MER		Household con.		Government expend.		Extreme poverty	
	Percentage		Billion USD		Billion USD		Billion USD		Million pop.	
	NC	COVID	NC	COVID	NC	COVID	NC	COVID	NC	COVID
Angola	1.2	-1.4	127.9	124.6	78.1	77.8	34.5	33.8	15.3	15.3
Cabo Verde	5	-4	2.5	2.2	1.7	1.6	0.9	0.8	0	0
Chad	5.4	-0.2	15.6	14.8	11.2	10.6	3.3	3	6.3	6.6
Democratic Republic of the Congo	3.9	-2.2	42.8	40.3	30.7	30.1	6.3	5.4	66.7	67.4
Ethiopia	7.2	3.2	69.9	67.3	40.9	40.3	12.5	11.1	34.1	34.9
Kenya	6	1	68.4	65.1	49.7	49.1	20.6	19	16.3	16.6
Mali	5	1.5	19.3	18.6	15	14.8	4	3.4	9.3	9.6
Mauritius	3.8	-6.8	15.9	14.3	8	7.8	2.9	2.5	0	0
Nigeria	2.5	-5.4	527.3	486.6	425.8	393.3	59	53.8	113	120.1
South Africa	1.1	-8	467.4	425.3	311.9	283.4	240.6	233.6	9.9	10.7

Note: GDP growth projections for 2020 in the COVID intervention are taken from the June 2020 IMF WEO (IMF, 2020b). 2020 GDP growth for the No-COVID scenario are taken from the 2019 IMF WEO (IMF, 2019). Household consumption, government expenditures and extreme poverty estimates for both scenarios are taken from the IFs model.

Third-order: International flow effects

Setting the stage: International patterns of trade prior to COVID-19

Patterns of trade are best understood by understanding a country's dependence on international trade for the full economy and at the sectoral level. We provide an overview of the country-level dependencies on international trade based on historical data series and projections from the IFs model. In 2019, there were large differences between countries with respect to their dependency on trade. The two island economies, Cabo Verde and Mauritius, were heavily reliant on international trade, with trade values in 2019 being close to 100 percent of GDP. The countries in Eastern Africa as well as Nigeria were far less dependent on trade, with trade as a share of GDP standing at 25.5 percent in Nigeria and 39.7 percent in Kenya (Table 9). As a group, the Africa-10 countries had net trade deficits in 2019. The two countries with the lowest trade deficits were South Africa and Mauritius, where imports were almost equivalent to exports. In contrast, the largest deficit between imports and exports were in Cabo Verde, Ethiopia and Mali.

There were significant differences in trade across sectors in 2019 (Table 10). In Cabo Verde, agriculture imports accounted for more than 10 percent of its GDP. For exports, all countries except South Africa primarily depend on one or two sectors of the economy. Angola and Nigeria heavily rely on energy exports, mainly oil. The combined downturn in oil exports coupled with lower oil prices will heavily affect these countries. On the other hand, oil importing countries, such as Mauritius, might benefit from lower oil prices. Cabo Verde and Mauritius mostly rely on the services sectors, driven by tourism, whereas Democratic Republic of the Congo exports mainly stem from the material sectors. Manufacturing is the largest export sector in South Africa, but its export profile is more diversified than any of the other countries. Reliance on a single sector could make countries particularly vulnerable to disruptions following economic crises.

Table 9. Overview of GDP and trade in 2019 for the 10 countries

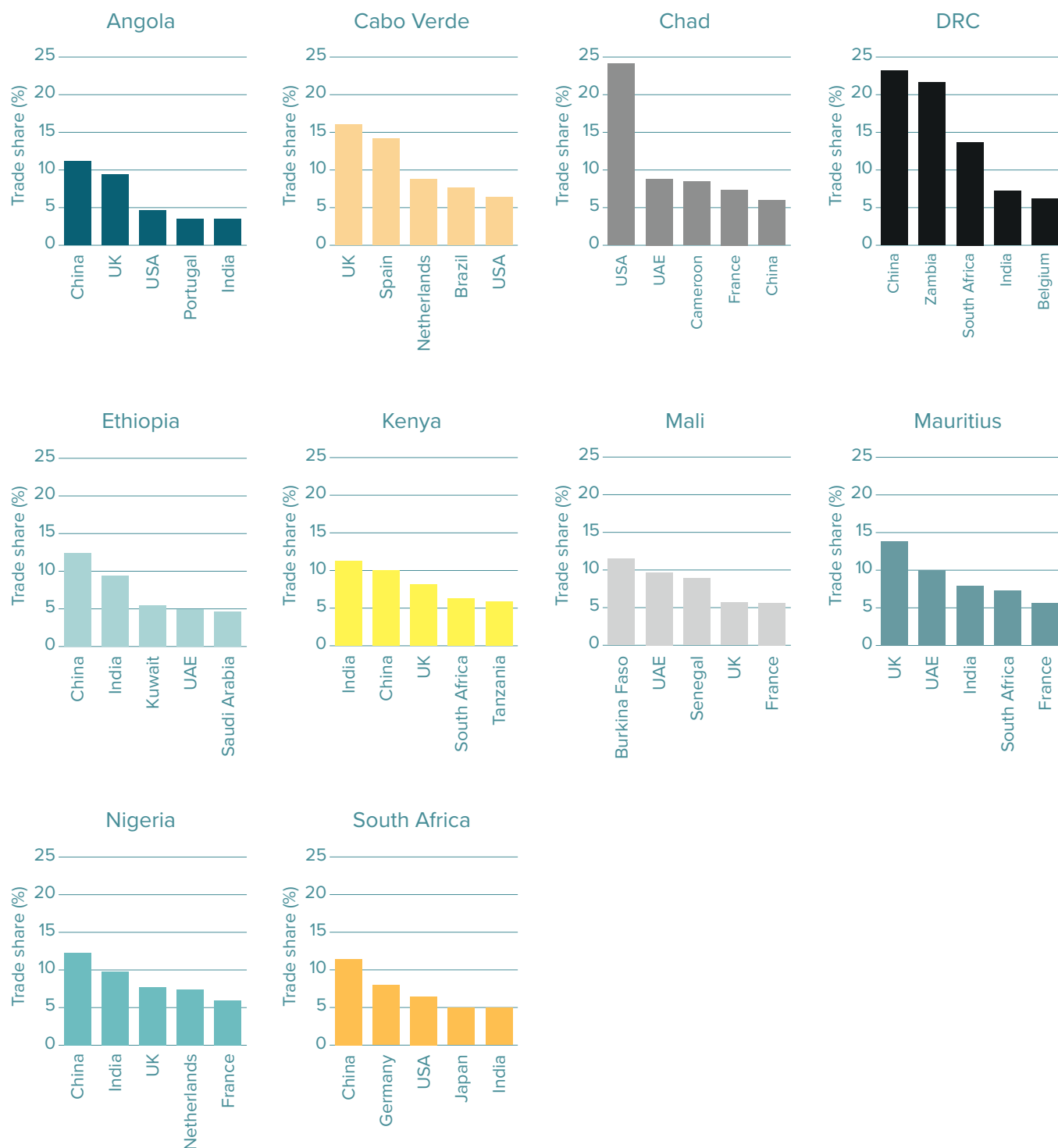
	GDP (2019)	Trade (2019)		Imports (2019)		Exports (2019)	
	billion USD	billion USD	%* of GDP	billion USD	% of GDP	billion USD	% of GDP
Angola	126.4	75.8	60.0	40.0	31.7	35.8	28.3
Cabo Verde	2.34	2.5	108.5	1.5	64.4	1.0	44.1
Chad	14.78	9.7	65.5	5.5	37.4	4.2	28.1
Democratic Republic of the Congo	41.2	29.9	72.5	17.2	41.8	12.7	30.7
Ethiopia	65.19	22.1	33.9	16.5	25.3	5.6	8.6
Kenya	64.49	25.6	39.7	16.0	24.9	9.6	14.9
Mali	18.36	12.3	66.7	7.8	42.4	4.5	24.3
Mauritius	15.33	14.8	96.2	6.6	43.3	8.1	53.0
Nigeria	514.4	131.1	25.5	84.2	16.4	46.9	9.1
South Africa	462.3	277.6	60.1	140.1	30.3	137.5	29.7

Note: Projections come from the IFs forecast values for 2019.*% signifies 'percentage'

Across the Africa-10, the dominant trading partners are China, India, the USA and European countries (Figure 7). China is the dominant trading partner for Angola, Democratic Republic of the Congo, Ethiopia, South Africa and Nigeria. Cabo Verde and Mauritius are somewhat more focused towards European countries. Kenya (with India), Chad (with USA) and Mali (with Senegal) have different main trading partners. The dependency of countries on a single dominant trade partner varies. For example, trade between the USA and Chad accounts for 24.2 percent of total trade volume for Chad, whereas countries such as Kenya, South Africa, Mali and Nigeria have a more even share of trade across their main trading partners.

Table 10. Imports and exports at the sectoral level for 2019 as a percentage of total GDP

	Agriculture		Energy		Materials		Manufacturing		ICT		Services	
	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports	Exports
Angola	6.2	0.0	1.2	18.5	0.1	0.8	9.7	7.0	0.8	1.5	13.6	0.6
Cabo Verde	10.5	3.8	0.3	0.4	0.3	0.0	31.1	3.9	2.6	0.2	19.5	35.8
Chad	1.8	0.0	0.0	0.8	0.4	0.2	32.8	25.2	0.8	1.1	1.6	0.7
DRC	7.9	0.1	2.1	0.5	0.3	14.7	21.3	13.6	0.7	0.8	9.5	1.1
Ethiopia	4.0	2.7	2.4	0.0	0.2	0.0	12.8	0.4	1.2	0.0	4.7	5.4
Kenya	5.3	3.9	2.6	0.0	0.2	0.6	12.1	3.5	1.0	0.1	3.6	6.8
Mali	6.0	0.3	1.1	0.3	0.2	0.2	20.2	20.0	1.4	0.0	13.4	3.4
Mauritius	7.8	5.9	3.7	0.0	0.3	0.1	17.1	15.3	4.1	7.6	10.2	23.9
Nigeria	3.7	0.1	0.7	6.2	0.1	0.0	7.3	2.1	0.4	0.0	4.2	0.6
South Africa	2.0	1.6	2.0	3.4	0.5	6.2	20.3	13.8	2.6	0.4	2.8	4.3

Figure 7. Bilateral trade share between the Africa-10 countries and their top five major trading partners

Note: The trade share is calculated as the percentage of trade (import + exports) with a specific country, relative to the total trade with all countries. These values are for 2019.

Mali and Democratic Republic of the Congo have high shares of intra-African trade, with 38.5 percent and 41.3 percent of their respective trade occurring within the continent (Table 11). The two largest oil producers, Angola and Nigeria, have the lowest shares of intra-African trade, at 6.5 percent and 8.0 percent respectively. Imports in Chad are highly dependent on other African countries (25.2 percent), whereas only 7.7 percent of the exports from Chad are to other African nations. On the other hand, Kenya (39.1 percent) and South Africa (30.4 percent) have a much higher share of exports going to other African nations, making them important trading partners for other African nations. Overall, trade with other African nations (16.5 percent) is an important component of total trade for the Africa-10 countries, but the main dependencies remain on trade with non-African partners such as China, India, Europe and, to a lesser extent, the USA.

Table 11. Percentage of trade from intra-African trade relative to the total trade of a country

	Percentage from intra-African trade		
	Exports	Imports	Trade
Africa-10	23.7	10.8	16.5
Angola	3.3	9.4	6.5
Cabo Verde	9.7	7.0	8.1
Chad	7.7	25.2	17.7
Democratic Republic of the Congo	39.8	42.5	41.3
Ethiopia	21.5	14.4	16.2
Kenya	39.1	21.0	27.7
Mali	41.1	37.0	38.5
Mauritius	24.5	13.5	19.6
Nigeria	12.2	5.6	8.0
South Africa	30.4	6.8	18.5

Note: The values are calculated as the percentage of exports to other African countries, relative to total exports, and the percentage of imports to other African countries, relative to total imports. Similarly, trade is calculated as the sum of intra-African exports and imports relative to the total value of exports and imports.

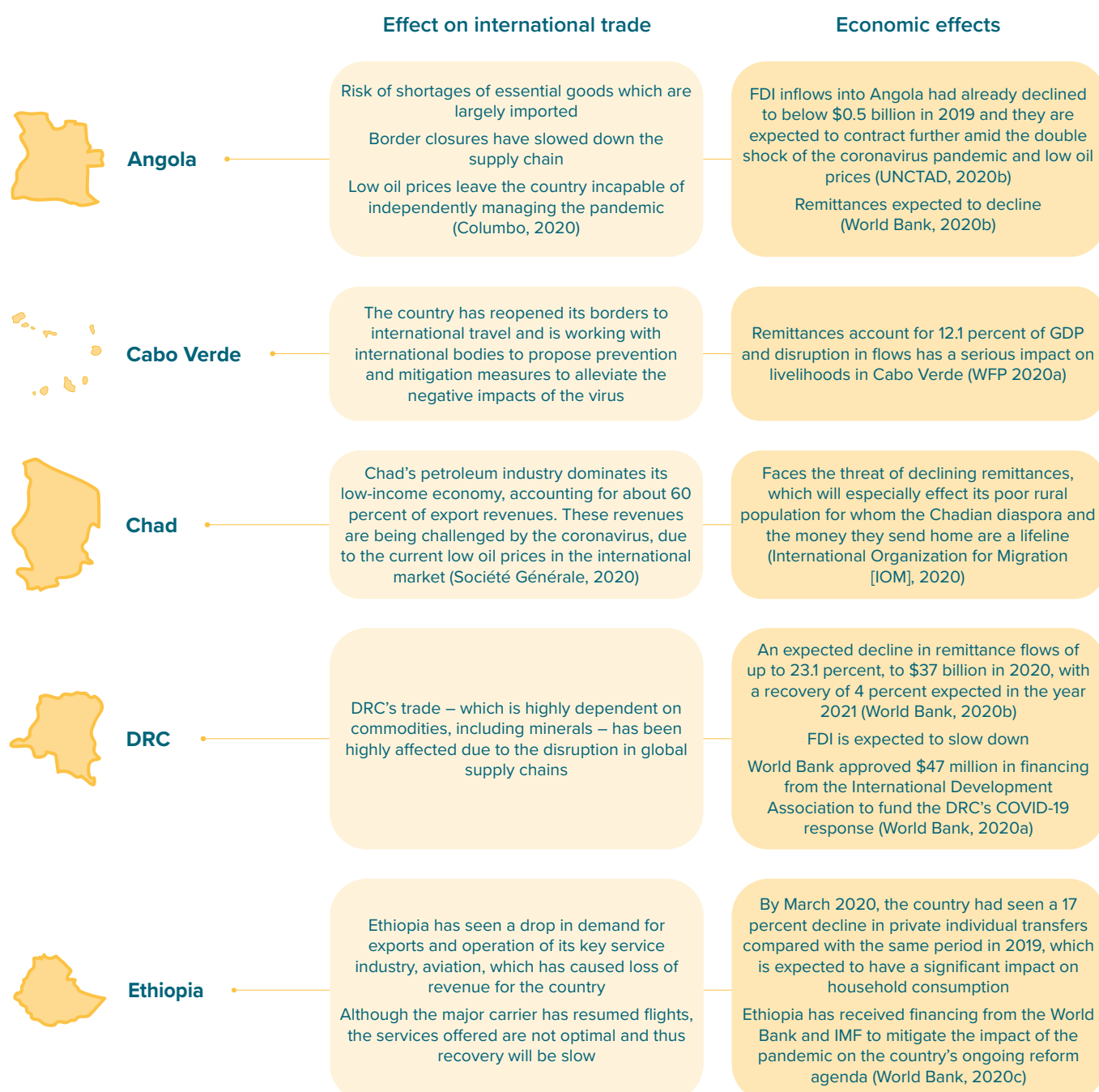
Impacts of COVID-19 on international trade across countries

When considering the impacts of COVID-19 on international flows for the Africa-10, the countries that are most reliant on foreign trade, tourism and/or remittances have experienced the most significant effects of changing patterns of economic interdependence. For countries dependent on imports, shortages of essential goods are becoming a greater risk, while countries that are dependent on exports are experiencing notable declines in revenues. Countries that rely on oil exports have been particularly impacted by the decline in oil prices as well as by an overall decline in trade. Remittances, which constitute a significant part of many of the Africa-10 international flows, have declined due to overall

declines in economic activity and restrictions on travel and movement. Many Africa-10 countries are seeking external support because of these changing patterns of economic interdependence. To date, half of the Africa-10 have requested or been approved for support from the World Bank or IMF and many will seek additional assistance in the form of aid.

Country-specific international flows during COVID-19

Given the rapid developments of COVID-19, any overview of country-level impacts becomes quickly outdated. Nevertheless, understanding how the impact of COVID-19 differs across countries is valuable. The following summarizes key domestic international flow effects of COVID-19 across the 10 case-study countries.





Several international organizations have provided estimates of the impact of COVID-19 on trade. For 2020, the World Trade Organization (WTO) projects a decrease in trade volume of between 13 percent and 32 percent, depending on the scenario and the approach, whereas UNCTAD projects a 20 percent reduction in trade (UNCTAD, 2020a). These studies look at the impact of global trade across all countries.

While much uncertainty remains about trade impacts beyond 2020, two initial insights can be drawn from studies so far: 1) restrictions on international travel and trade following COVID-19 are mostly impacting countries that had more liberal trade policies prior to the pandemic and 2) trade policies that are currently being implemented as a response to the pandemic tend to be 'sticky policies', i.e. they tend to be implemented for a period longer than the pandemic per se (Benz, Gonzales and Mourougane, 2020; Novy, 2020).

Although these studies do not yet provide insight into long-term impacts, they start to shape a discussion on how current

COVID-19 impacts as well as changes in policy will shape the future beyond the pandemic.

Drawing upon previous research, a COVID-19 trade shock was imposed on IFs (WTO, 2020). For 2020, WTO finds a global elasticity of trade to GDP of 1.8 percent. We use this elasticity at the global level, and uniform across sectors in IFs, on both imports and exports to capture the COVID-19 impact on international trade flows. Importantly, while much discussion has centred around sectoral differences in trade impact, we are currently not aware of estimates across all countries on sector-specific trade shocks. Therefore, we can only implement a similar trade shock across all sectors into the IFs model.

Both exports and imports decrease in 2020 because of COVID-19. In absolute terms, exports from South Africa decrease by the largest amount (\$22.2 billion), followed by Nigeria, with a \$6.7 billion reduction in exports (Table 12). Prior to COVID-19, trade openness was highest in Mauritius and Cabo Verde. As a result, the impact on trade openness is highest for the two island economies, with a 8.4 percentage point reduction in Mauritius and a 7.4 percentage point reduction in Cabo Verde.

Table 12. Changes in exports and trade openness projected for 2020 following the implementation of a COVID-19 trade shock in the IFs model

	Change in exports		Change in trade openness
	Billion USD	Percentage change	Percentage of GDP
Angola	-1.9	-5.2	-1.2
Cabo Verde	-0.2	-14.3	-7.4
Chad	-0.4	-9.7	-2.8
Democratic Republic of the Congo	-1.4	-10.4	-4.1
Ethiopia	-0.4	-6.8	-1.1
Kenya	-0.9	-8.5	-1.4
Mali	-0.3	-6.1	-1.7
Mauritius	-1.6	-17.8	-8.4
Nigeria	-6.7	-14.6	-1.3
South Africa	-22.2	-16.1	-4.7

Note: The numbers on exports depict the change in absolute value, as well as the relative change. The change in trade openness for Cabo Verde is calculated as the difference in trade openness between a No-COVID (110.9) and a COVID-19 (103.5) intervention, equivalent to -7.4.

Setting the stage: International patterns of foreign aid, remittances and FDI prior to COVID-19

We discuss the other international flows besides trade jointly. FDI is largest for Nigeria, Angola and South Africa (Table 13). Relative to total GDP, FDI is most important for the economies of Cabo Verde (8.8 percent), Democratic Republic of the Congo (4.6 percent) and Mali (3.4 percent). While data on bilateral FDI are limited, data from 2012 suggest that many countries received the most FDI inflows from China, with Ethiopia, Mali, Democratic Republic of the Congo and Chad receiving over 90 percent of their FDI inflows from China alone. Angola, Mauritius and South Africa primarily received FDI inflows from European countries.

In terms of foreign aid, the largest receivers are Nigeria (\$7.2 billion), Ethiopia (\$3.9 billion) and Democratic Republic of the Congo (\$3.1 billion). As a share of GDP, Mali (10.6 percent) and Chad (8.6 percent) have the largest dependence on foreign aid. The US is the most important aid partner for eight of the 10 countries analysed here. Only Mauritius and Cabo Verde are more dependent on France and Portugal than on the US. The dependence on a single partner country for foreign aid also differs across the countries. Mauritius receives 81.1 percent of its total aid from France, whereas Nigeria receives 52.1 percent of its foreign aid from the US. The Democratic Republic of the Congo receives only around 29.5 percent of its total aid from the US, while Belgium, the UK and France each contribute over 10 percent of its foreign aid.

Remittances are an important addition to household income. The relative importance of remittances for individual countries, however, varies. In absolute amounts, the largest receiver of remittances is Nigeria (\$25.2 billion). Relative to GDP, remittances are the most important for Cabo Verde (10.0 percent) and Mali (5.7 percent). Other countries have very limited remittance flows, and remittances are either close to zero or make up less than 1 percent of GDP, such as in Angola and Chad.



Table 13. Inflows of remittances, FDI and foreign aid in 2019, both in absolute value and as a percentage of GDP

		Remittances, FDI and foreign aid	
		Billion USD	Percentage of GDP
Remittances received	Angola	0.0	0.0
	Cabo Verde	0.2	10.0
	Chad	0.0	0.0
	Democratic Republic of the Congo	1.1	2.7
	Ethiopia	1.8	2.7
	Kenya	2.3	3.5
	Mali	1.0	5.7
	Mauritius	0.2	1.0
	Nigeria	25.2	4.9
	South Africa	0.7	0.2
FDI inflows	Angola	2.9	2.3
	Cabo Verde	0.2	8.8
	Chad	0.4	2.7
	Democratic Republic of the Congo	1.9	4.6
	Ethiopia	1.7	2.6
	Kenya	1.0	1.6
	Mali	0.6	3.4
	Mauritius	0.4	2.9
	Nigeria	8.9	1.7
	South Africa	7.1	1.5
Aid received	Angola	1.6	1.3
	Cabo Verde	0.2	7.9
	Chad	1.3	8.6
	Democratic Republic of the Congo	3.1	7.5
	Ethiopia	3.9	6.0
	Kenya	2.4	3.8
	Mali	1.9	10.6
	Mauritius	0.1	0.4
	Nigeria	7.2	1.4
	South Africa	2.6	0.6

Impacts of COVID-19 on international flows across countries

COVID-19 is projected to result in drops in FDI, remittances and foreign aid. FDI is expected to show the most pronounced decline. This is in line with projections from other groups of larger drops in FDI globally (between 30 percent and 40 percent) and in African countries (between 25 percent and 45 percent) relative to drops in remittances globally (20 percent) and in African countries (23.1 percent) (OECD, 2020c; UNCTAD, 2020a; World Bank, 2020b). Projections on the reduction in foreign aid are largely absent, making comparisons difficult.

While the relative order of magnitude aligns with other projections, there are some differences between the magnitude of the drop projected in IFs and other projections. IFs project a drop in remittances of 7.5 percent for the Africa-10. Although a different set of countries, this is considerably lower than the 23.1 percent projected by others for African countries. However, an update to previous analysis now projects a 7 percent drop in remittances, much more in line with projections from IFs (Ratha et al., 2020b). These updated projections highlight the considerable uncertainty surrounding COVID-19 effects on remittances. Projections of FDI reductions are at the high end, with a projected drop of 59.5 percent, while others project a drop ranging between 25 percent and 45 percent. There are also similarities between the projections. Oil producers, with a large energy sector, are expected to be hardest hit by the drop in FDI (UNCTAD, 2020d). Similarly, in IFs we observe that the countries with the largest energy sectors (Nigeria, Angola, South Africa and Chad) are the countries experiencing the largest drop in FDI, of on average -67.1 percent. This is in stark contrast to countries with smaller energy sectors only experiencing a drop of -42.2 percent. There is great uncertainty associated with any COVID-19 projections for the year 2020. For example, projections of COVID-19 impact on FDI were adjusted downward to between -30 percent and -40 percent from a previous projection of -5 percent to -15 percent (UNCTAD, 2020a). This underscores the high uncertainties associated with projecting COVID-19 impacts in 2020.

COVID-19: relative impact across international flows

Importantly, whereas the impact of COVID-19 on first- and second-order effects is negative across all countries, this is not necessarily the case for international flows. COVID-19 negatively affects incoming and outgoing international flows. However, the net effect on balance of trade, aid, remittances and FDI is not necessarily negative across indicators and across countries (Figure 8). Figure 8 depicts the relative contribution of trade balance, remittance balance, foreign aid balance and FDI balance to the total change in international flows. Values above zero indicate an improvement in the

balance of that indicator. For example, changes in exports and imports in Cabo Verde following COVID-19 result in an improvement of the trade balance. In addition, the length of the bars indicates the relative importance of a drop in that specific international flow for a country. As an example, total changes in international flows in Angola are dominated by changes in FDI, whereas remittances are much more important in Nigeria.

There are some important uniform effects in this figure.

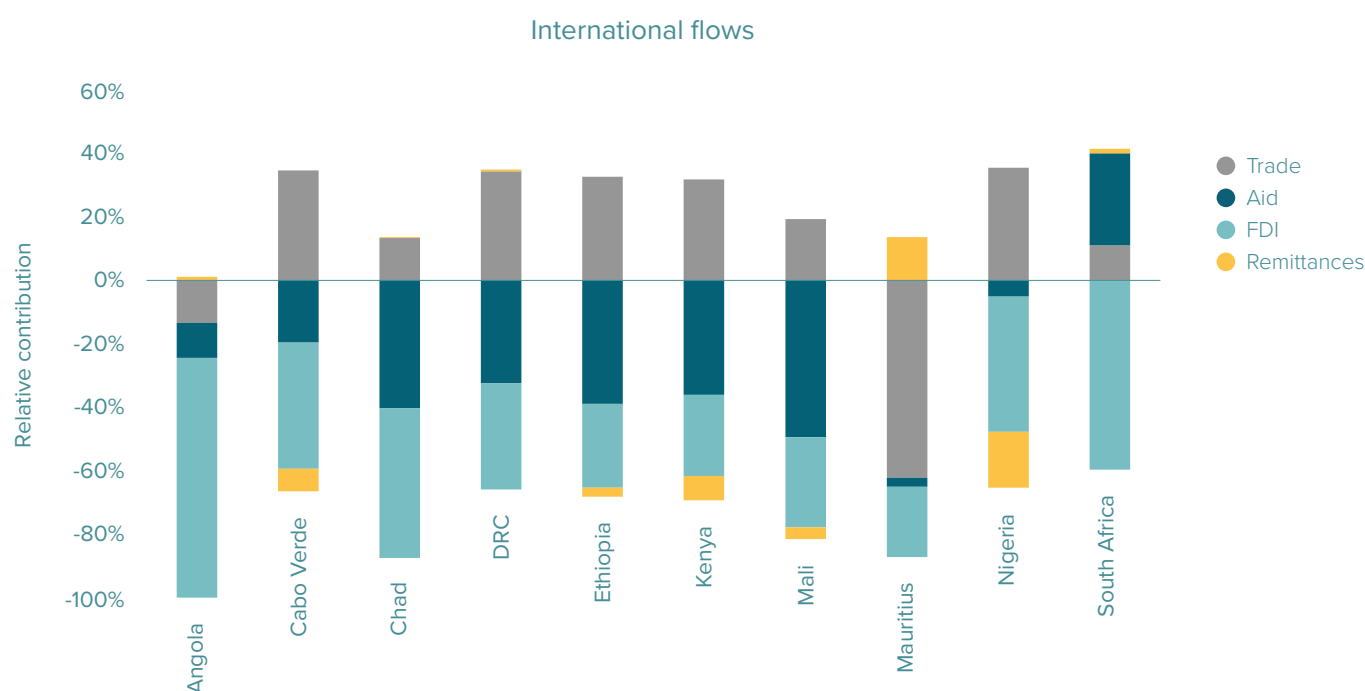
Across all countries, reductions in FDI negatively affect international flows and are relatively important compared with drops in other international flows. As such, policies aimed at lowering barriers for FDI within these countries are likely to be beneficial across the Africa-10.

Foreign aid is also an important contributor to total drops in international flows, especially so for Chad, Democratic Republic of the Congo, Ethiopia, Kenya and Mali. The international community should try to uphold foreign aid for these countries, to limit the economic impact of COVID-19, although this observation does not hold for all countries. On the contrary, COVID-19 is projected to result in an increase in foreign aid in South Africa. Foreign aid is a function of GDP per capita, previously received foreign aid and importantly a threshold value on GDP per capita, after which foreign aid significantly drops. COVID-19 is expected to push South Africa below this threshold value, significantly increasing foreign aid for the country. This is partly a model artefact, but also relates to the significant economic downturn in South Africa combined with its central economic role for sub-Saharan Africa, increasing the significance of providing aid to South Africa from many partner countries.

The impact on trade balance and remittances is dependent on the conditions of a country in 2019. Mauritius was the only country with a positive trade balance in 2019, and COVID-19 is projected to result in a reduction. On the contrary, countries such as Cabo Verde, Ethiopia, Kenya and Democratic Republic of the Congo have a negative trade balance in 2019, and simultaneous reductions in exports and imports actually reduce that negative trade balance prior to a No-COVID scenario. For remittances, roughly the same dynamics hold. Mauritius as well as South Africa are net senders of remittances, and as such a simultaneous reduction results in a positive impact on the remittance balance. On the contrary, Nigeria, Cabo Verde, Kenya and Mali are net remittance recipients and COVID-19 is expected to negatively affect remittance flows for these countries. Currently, costs of sending remittances are highest in countries in sub-Saharan Africa. Countries that prior to the pandemic relied on remittance inflows could enact policies aimed at reducing these costs (Ratha et al., 2020a).

These results highlight the complexity in analysing the impact of COVID-19 across international flows. Estimated effects depend on the country, the type of international flow and the indicator used to describe this flow. While these results might suggest some general macroeconomic positive impacts, the reality is far more complex. For remittances, the households sending remittances abroad are not necessarily the same households receiving remittances. As such, net aggregated positive effects on remittance flows might result in additional differences between incomes of households. Similarly, net changes in trade do not necessarily distribute evenly across sectors, and can still lay bare import dependencies on crucial agricultural or medical products. Nonetheless, our results provide an important insight into how COVID-19 effects differ across countries, how policymakers might respond to these across countries, and long-term macroeconomic consequences for mortality, economic growth and international trade specific to these countries.

Figure 8. Relative change in international flows between countries in 2020



Note: The differences depicted are between a scenario with and without COVID-19. The larger the relative contribution, the larger the specific contribution of that international flow to the total change. All results are depicted as a net effect, i.e. the combined effect of COVID-19 on exports and imports (trade). Positive effects suggest that COVID-19 might reduce outgoing flows more than incoming flows, compared with a No-COVID world.

5. Exploring long-term effects of COVID-19 in International Futures



5. Exploring long-term effects of COVID-19 in International Futures

We use scenarios to frame uncertainty around the impacts of COVID-19 in 2020 and 2021 on mortality, GDP and trade, and to explore how these assumptions affect long-term development by 2030 and 2050.

Table 14 provides an overview of the four different scenarios used in this study. First, there is a No-COVID scenario describing a world without COVID-19, with no additional mortality, no COVID-19 trade shock and using IMF growth projections for 2020 and 2021 that were made prior to the pandemic.

We then develop a set of three COVID-19 scenarios around diverging assumptions on mortality in 2020, the GDP shock and rebound in 2020 and 2021 and the COVID-19 trade shock. The COVID-19 Base is the scenario that follows current projections on mortality, GDP and trade from other institutes (Table 14). In a previous section, we showed the high level of uncertainty around mortality projections in 2020. However, while direct mortality at the country level is highly uncertain, this has little consequence for long-term macroeconomic development. In Appendix 1, we compare scenarios with diverging mortality assumptions coupled with similar GDP and trade assumptions and quantify the variation in mortality, GDP, poverty and levels of international flows by 2050. Overall, the long-term forward impacts of varying rates of mortality are limited. For the COVID-19 Base scenario, we select the mortality projections from the Base mortality estimate, closely resembling the IHME current mortality projection. In addition, we use the IMF WEO June 2020 GDP growth rates and the WTO COVID-19 trade elasticities. All scenario assumptions are implemented across all countries globally, to not only represent the domestic effects of COVID-19 in the Africa-10 countries but also the consequences for international flows between countries.

We developed two additional scenarios: 1) Relief & Rebound, describing a world in which the COVID-19 impacts in 2020 are less severe than anticipated in the COVID-19 Base, and the economic recovery in 2021 is stronger and 2) Global Suffering, describing a world in which the COVID-19 impacts in 2020 are more severe than anticipated, and the economic rebound in 2021 is smaller. Specifically, in the Relief & Rebound scenario, we use the Minor mortality estimates, largely based on IHME projections around strict virus containment, and an upward adjustment in GDP growth of +1.5 percent in both 2020 and 2021 compared with the COVID-19 Base.

The Global Suffering scenario uses the Major mortality estimates, largely based on IHME projections with limited virus containment, and a downward adjustment of GDP growth by -1.5 percent in both 2020 and 2021. The trade elasticities remain the same across scenarios, but changes in GDP growth rates drive changes in trade across scenarios. After 2021, the scenario interventions cease, and all indicators are calculated endogenously in IFs.

We quantify the effect of COVID-19 across the scenarios for mortality to 2030, for economic growth to 2050 and for trade to 2050. It is important to note that in the international trade section, most results focus on a comparison of the No-COVID scenario with the COVID-19 Base scenario.



Table 14. Overview of scenario assumptions around mortality, GDP growth and trade for the different COVID-19 scenarios used in this study

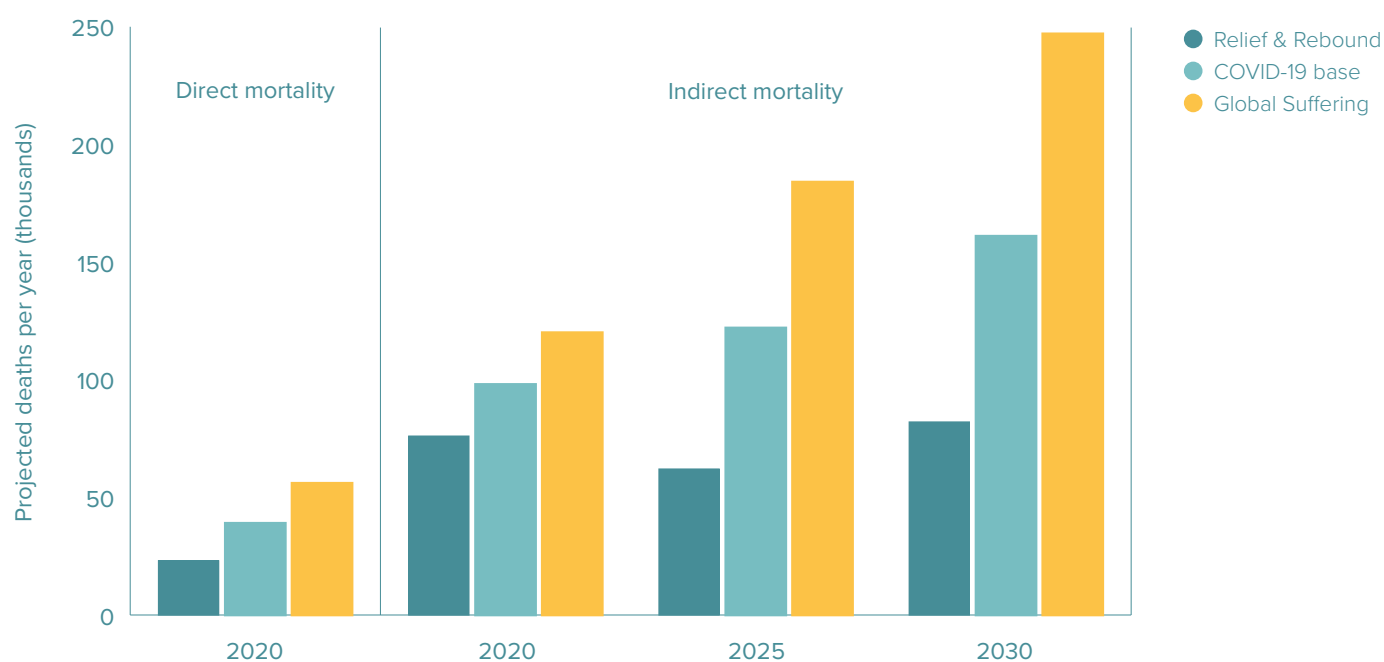
	Mortality	GDP growth	Trade
No-COVID	No COVID-19 mortality	Pre-COVID IMF growth rates	No COVID-19 shock to trade
COVID-19 Base	Mortality in 2020 is based on Base mortality projection, largely following IHME current projection	Growth rates for 2020 and 2021 from IMF WEO of June 2020	WTO GDP-to-trade elasticity of 1.8 in 2020 and 1.64 in 2021
Relief & Rebound	Mortality in 2020 is adjusted downward based on the Minor mortality largely following an IHME scenario with stricter virus control	IMF growth rates are increased by +1.5 percent in 2020 and 2021	Same assumption as COVID-19 Base, but different effect due to changes in GDP
Global Suffering	Mortality in 2020 is adjusted upward based on the Major mortality estimate, largely following IHME scenario with looser virus control	IMF growth rates are decreased by -1.5 percent in 2020 and 2021	Same assumption as COVID-19 Base, but different effect due to changes in GDP

First-order effects: Direct and indirect mortality

Following the economic decline, COVID-19 is expected to result in increased indirect mortality to 2030, which will far surpass the initial direct mortality of COVID-19 in 2020 (Figure 9).

In 2020, direct mortality from COVID-19 for the Africa-10 ranges between 23,000 deaths in the Relief & Rebound scenario to 56,000 in the Global Suffering scenario. Towards 2030, indirect mortality is expected to range between just over 82,000 (Relief & Rebound) to over 247,000 (Global Suffering). The more significant the economic decline following the COVID-19 pandemic, the greater the increase in indirect mortality in absolute numbers and rate relative to the direct mortality counts from COVID-19.

Figure 9. Direct and indirect mortality for the Africa-10 countries following the COVID-19 pandemic across the three scenarios

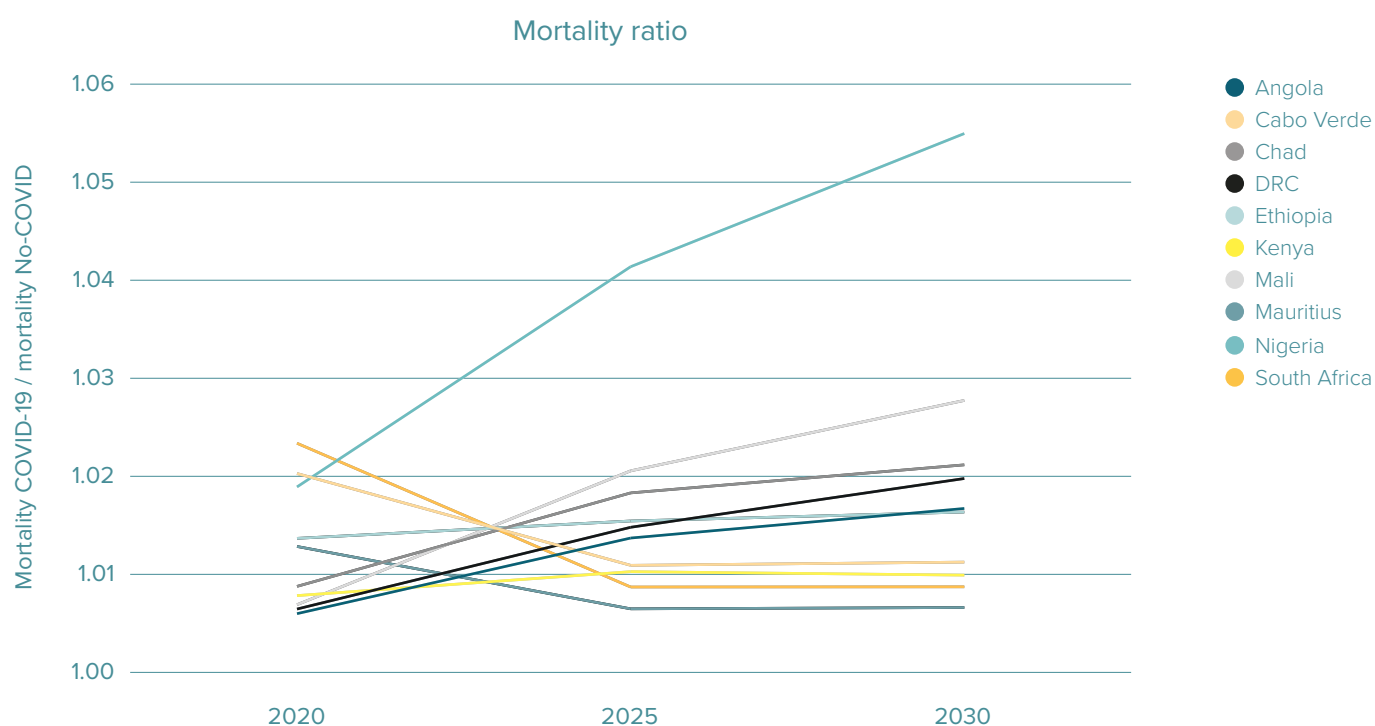


Note: Mortality projections are relative to a No-COVID scenario.

There is considerable country-to-country variation in the relative importance of direct and indirect mortality (Figure 10). For each country, we calculated the mortality ratio and the relative increase between the mortality in a COVID-19 scenario (COVID-19 Base) and No-COVID mortality in 2020, 2025 and 2030. For all countries the mortality ratio is above 1 by 2030, indicating that all countries suffer from increased indirect mortality. However, there are some important and remarkable differences. Cabo Verde and South Africa are primarily affected by direct COVID-19 mortality, with declining mortality ratios over time. The opposite is true for many other countries, most notably Nigeria and Mali, where indirect mortality by far exceeds direct mortality from COVID-19. Without sustained economic growth and government action, these countries are projected to suffer significant increases in indirect mortality, following the economic decline.

The majority of indirect COVID-19 deaths are of children under five years, who account for around 80 percent of indirect COVID-19 mortality by 2025 and 2030. In 2020, child mortality under five years accounts for less than 1 percent of total direct COVID-19 mortality. On the contrary, across all scenarios, child mortality accounts for 82 percent of indirect mortality by 2030. These increases in indirect child mortality are driven by increases in preventable communicable diseases. By 2030, in the Relief & Rebound scenario, increased mortality occurs as a consequence of diarrhoea (+4.0 percent), malaria (+5.4 percent) and respiratory infections (4.0 percent). In the Global Suffering scenario, a larger economic downturn further drives increased mortality due to diarrhoea (+12.7 percent), malaria (15.8 percent) and respiratory infections (+12.0 percent). Over time, young children might present the largest share of COVID-19-related mortality.

Figure 10. Mortality ratio for the Africa-10 countries in 2020, 2025 and 2030

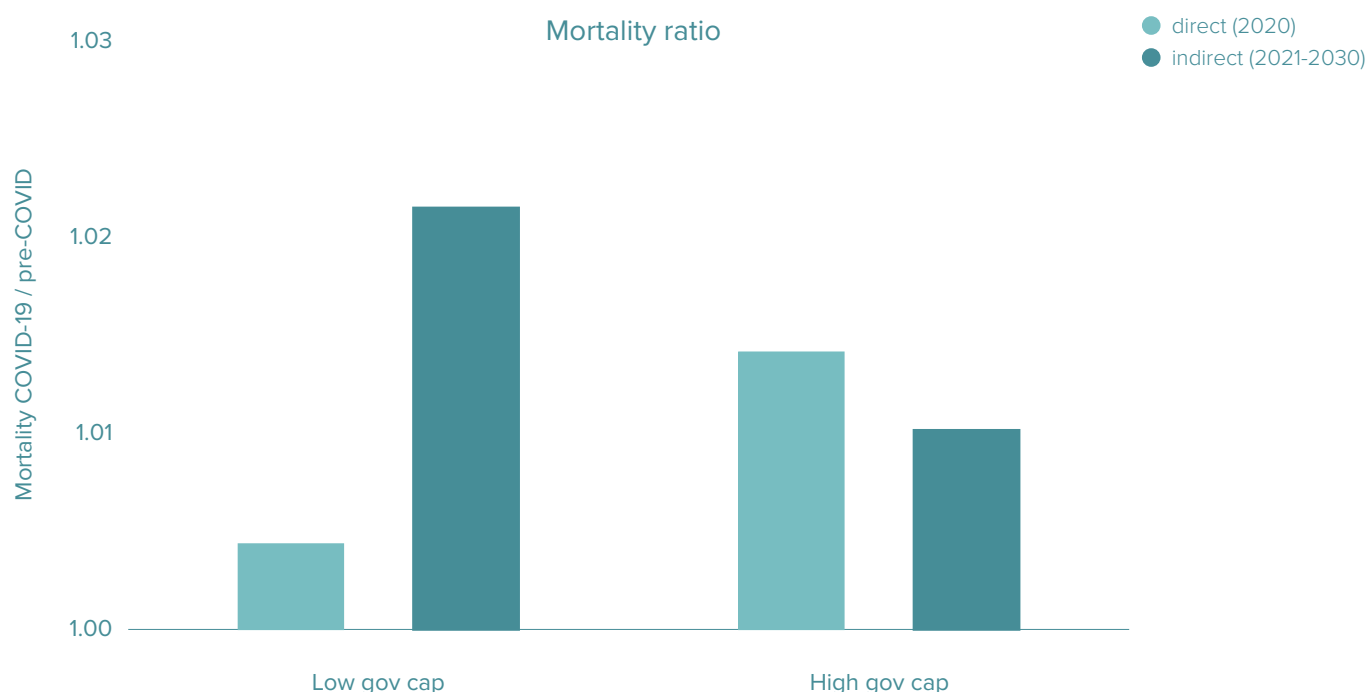


Note: Mortality is calculated as the increase in mortality between a COVID-19 Base scenario and a No-COVID scenario. The mortality ratio is calculated for 2020, 2025 and 2030. The dotted lines are not data points but are intended to describe the direction of the trend in the individual countries.

Study of post-crises recovery suggests that the quality of government institutions helps in 1) minimizing the economic shock and 2) furthering economic growth post-recession. As such, better government institutions with lower levels of corruption, higher government effectiveness and higher levels of political stability could be an important indicator of post-COVID recovery. Here we use government capacity (0–1) which is an aggregate index measuring the quality of government institutions across these domains. We identify two different country sets: countries with a government capacity below 0.3 and countries with a government capacity above 0.3.

The burden of increasing indirect COVID-19 mortality primarily falls to countries with low government capacity (Figure 11). These countries have much higher levels of indirect mortality, coupled with relatively low levels of direct mortality. On the contrary, countries with higher government capacity have higher levels of direct mortality, coupled with a lower level of indirect mortality. Thus, countries with low government capacity might be less resilient, and will experience the biggest hit of COVID-19 on mortality numbers not today, but over the next decade. This increased mortality primarily consists of child mortality under five years.

Figure 11. Direct and indirect mortality in countries with low and high government capacity



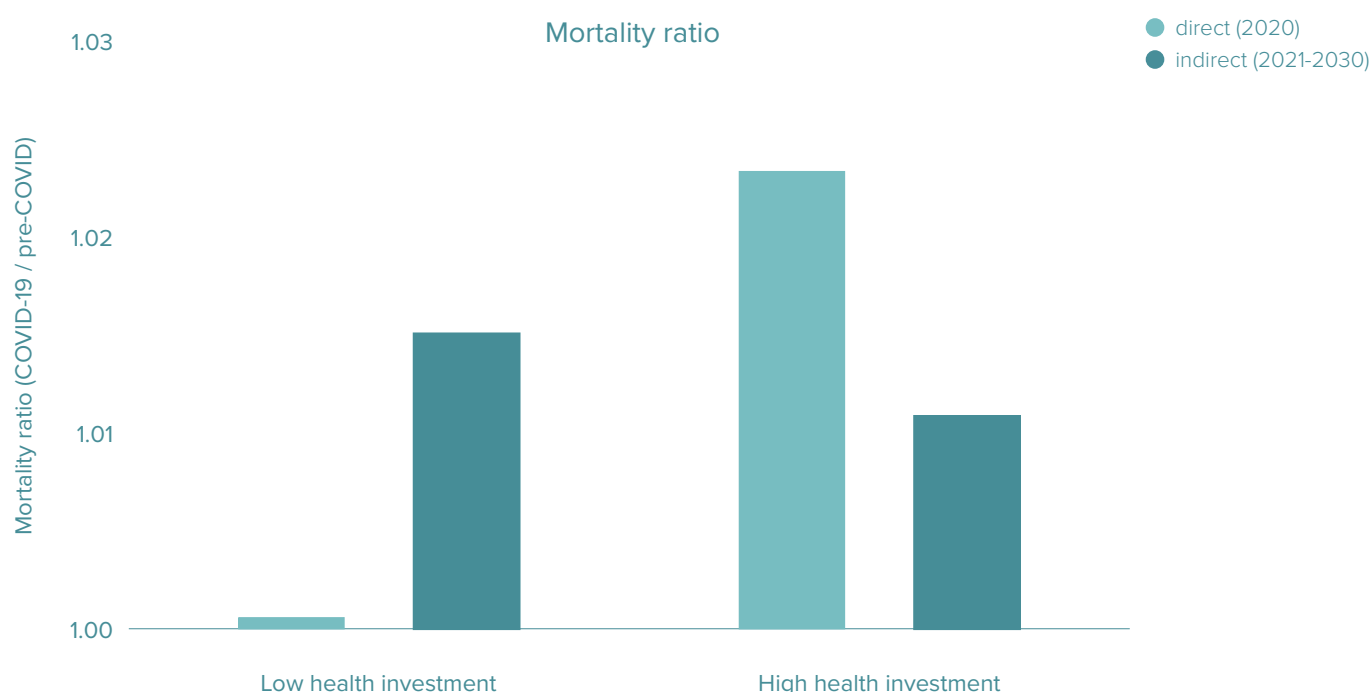
Note: We distributed the countries into two groups: countries with a government capacity below 0.3 and countries with a government capacity above this value.

Related to both government capacity and mortality following the COVID-19 pandemic are government expenditures on the health system. Based on the sample, we divided countries into two groups: one with investment below 2 percent of GDP in the health sector prior to COVID-19 and second a group with investments above 2 percent of GDP in the health sector.

Indirect mortality in countries with low levels of government investments in health is even more pronounced (Figure 12). Initially, these countries have relatively low levels of increased direct COVID-19 mortality. However, this relief is temporary as these countries experience an increase in indirect mortality.

Together, these results highlight an important pattern. For many countries, COVID-19 mortality is not over after the pandemic. On the contrary, for many countries indirect mortality driven by the economic downturn will far exceed direct COVID-19 mortality over the next decade. This indirect mortality disproportionately falls to children and countries with low levels of government capacity and investment in the health system prior to the pandemic. Thus, COVID-19 might result in increased mortality and especially increased child mortality for many African countries over the next decade.

Figure 12. Direct and indirect mortality on countries with low and high health investment in 2019



Note: We distributed the countries into two groups: countries with a health investment in 2019 below 2 percent of GDP, and countries with a health investment in 2019 above this value.

Second-order effects: Domestic patterns of development

Model results for GDP in 2020 and 2021 follow IMF WEO projections. For the Africa-10, average GDP growth in 2020 was -3.3 percent in the Relief & Rebound scenario, -4.8 percent in the COVID-19 Base scenario and -6.3 percent in the Global Suffering scenario (Figure 13). From 2021 onward, GDP growth projections are positive. In 2021, both the COVID-19 Base (+3.3 percent) and the Relief & Rebound (+4.8 percent) scenarios predict an economic rebound, with higher GDP growth than the No-COVID scenario (+2.7 percent).

However, this rebound will be short-lived, with all scenarios projecting GDP growth to drop slightly below the No-COVID scenario by 2022.

In the Relief & Rebound scenario, GDP is expected to drop by \$77.8 billion following the negative GDP growth in 2020, reaching \$117.5 billion in the Global Suffering scenario relative to the No-COVID scenario (Figure 14). The projected drop in GDP is larger than the size of the Kenyan economy (\$64.5 billion) prior to COVID-19. While GDP growth is expected to rebound, absolute GDP will remain below the No-COVID scenario. By 2021, GDP across the Africa-10 in the No-COVID scenario is projected to be \$1,393 billion, with the Relief & Rebound scenario showing a slight recovery (-77.8 in 2020 compared with -52.5 in 2021), the COVID-19 Base scenario showing stabilization (-97.6 in 2020 compared with -92.2 in 2021) and the Global Suffering scenario showing a worsening economic impact (-117.5 in 2020 compared with -131.3 in 2021). The most optimistic Relief & Rebound scenario reaches 2019 GDP levels by 2021, whereas the COVID-19 Base and Global Suffering scenarios take an additional one to two years, respectively.

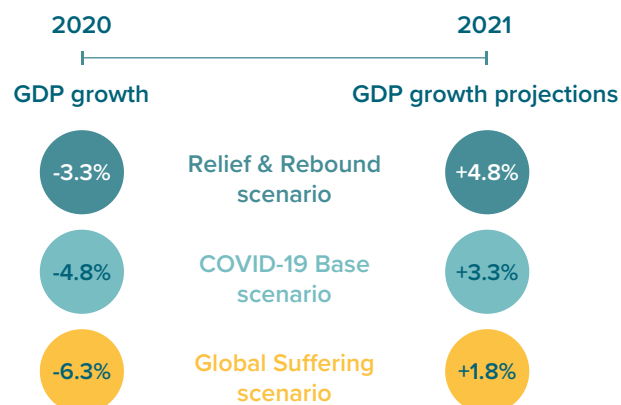
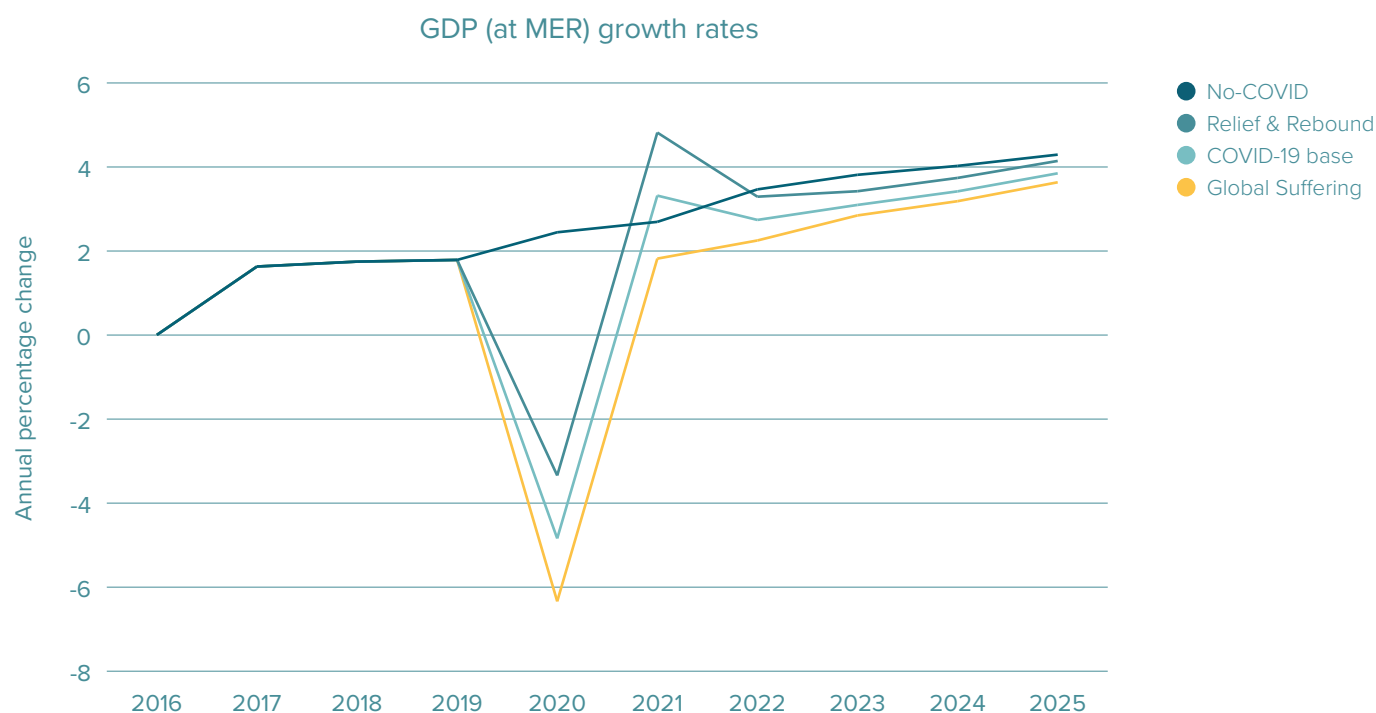
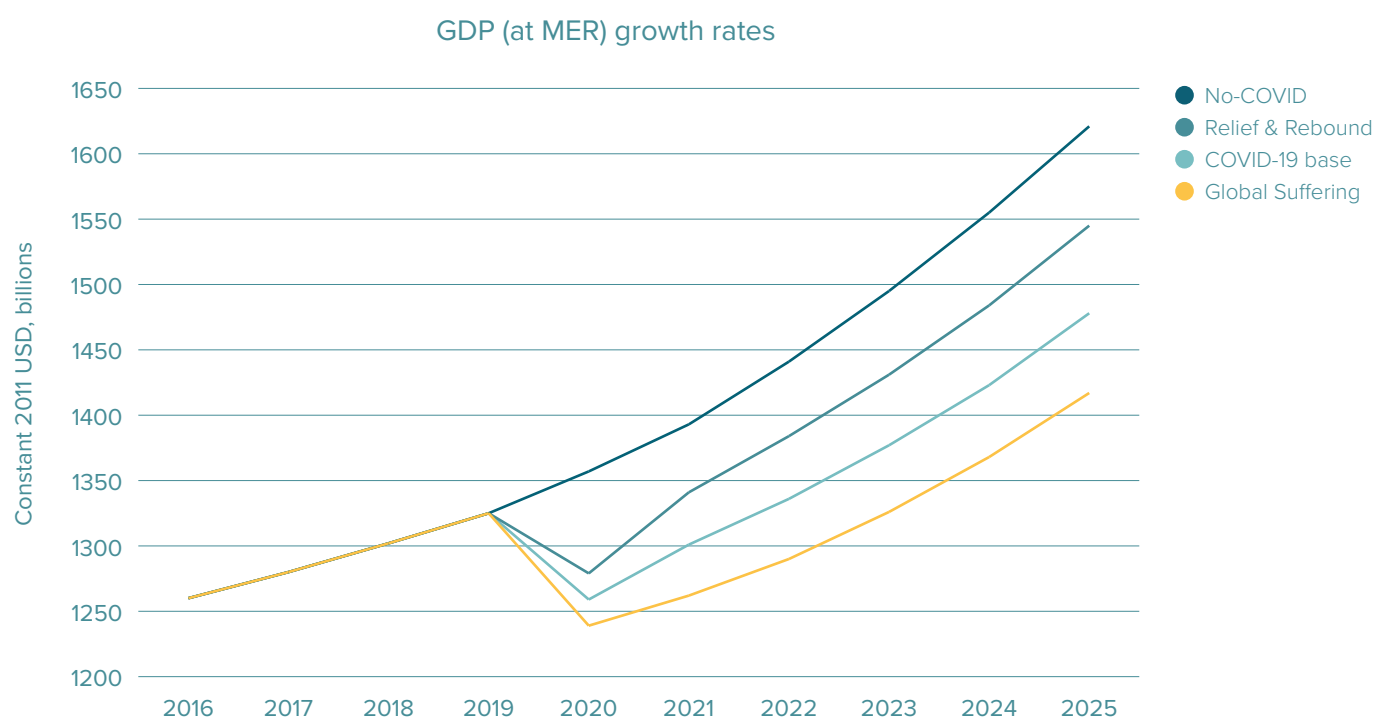


Figure 13. GDP growth rates across scenarios to 2025

Note: GDP growth rates for 2015–2021 are based on IMF growth rates for the Africa-10 countries.

Figure 14. GDP growth rates across scenarios to 2025 in constant 2011 USD

The reductions in GDP due to the initial COVID-19 shock will continue to 2030 and 2050. However, there are differences in the economic recovery following the pandemic (Table 15). We calculated the percentage reduction in GDP in 2020, 2030 and 2050 between the three COVID-19 scenarios and the No-COVID scenario. In the COVID-19 Base scenario, all countries show GDP reductions in 2020, 2030 and 2050 compared with the pre-COVID-19 scenario. This means that no country is capable of fully recovering from the economic shock of the COVID-19 pandemic, with GDP reductions projected to 2050.

Table 15. GDP impact by country in 2020, 2030 and 2050, measured as the percentage change in GDP between the No-COVID scenario and the three COVID-19 scenarios

	Relief & Rebound			COVID-19 Base			Global Suffering		
	2020	2030	2050	2020	2030	2050	2020	2030	2050
Angola	-1.1	0.1	3.2	-2.6	-4.5	-0.7	-4.1	-8.7	-4.5
Cabo Verde	-7.1	-6.6	-6.6	-8.5	-11.3	-11.8	-10.0	-15.5	-12.2
Chad	-3.9	-0.2	-0.3	-5.3	-5.0	-6.5	-6.7	-9.5	-12.3
Democratic Republic of the Congo	-4.4	-2.3	-0.6	-5.9	-6.8	-5.1	-7.3	-11.5	-10.1
Ethiopia	-2.3	-4.2	-6.5	-3.7	-8.3	-11.9	-5.1	-12.3	-17.4
Kenya	-3.3	-0.5	-0.9	-4.7	-5.7	-7.6	-6.1	-10.5	-14.3
Mali	-1.9	-0.6	-2.2	-3.3	-5.6	-9.2	-4.8	-10.7	-16.3
Mauritius	-8.8	-2.6	-3.2	-10.2	-6.3	-6.9	-11.7	-9.9	-10.5
Nigeria	-6.2	-8.2	-7.9	-7.7	-13.4	-14.2	-9.2	-18.7	-20.9
South Africa	-7.5	-5.0	-6.9	-9.0	-9.0	-11.2	-10.5	-12.2	-14.8

There are important differences in the direction of the prolonged economic reduction in 2030 and 2050, with some countries showing a partial recovery (GDP decline in 2030/2050 < GDP decline in 2020) and others showing further deterioration over time (GDP decline in 2020 > GDP decline in 2030/2050).

First, across all scenarios, Mauritius is the only country showing a partial recovery following the pandemic. In the COVID-19 Base scenario, Mauritius recovers from the 2020 GDP reduction of -10.2 percent to a reduction of -6.9 percent by 2050. Angola also shows a partial recovery following COVID-19, though this finding depends on the magnitude of the COVID-19 shock and differs per scenario. In the Global Suffering scenario, Angola shows no recovery in the decades following the pandemic. As such, Mauritius is the only country to show economic recovery and long-term resilience across all scenarios irrespective of the 2020 GDP shock.

A second group of countries show a relative worsening of GDP over time. For these countries, the initial economic impact of COVID-19 results in a downward pressure, causing economic conditions to worsen relative to their No-COVID trajectory. This group comprises Ethiopia, Mali and Nigeria. For Nigeria, the COVID-19-related initial GDP reduction of -7.2 percent is expected to almost double to -14.2 percent in 2050. For Ethiopia and Mali, the GDP reduction projections more than double over time, with the initial reduction in Ethiopia set to worsen from -3.7 percent to -11.9 percent in 2050, and in Mali from -3.3 percent to -9.2 percent in 2050.

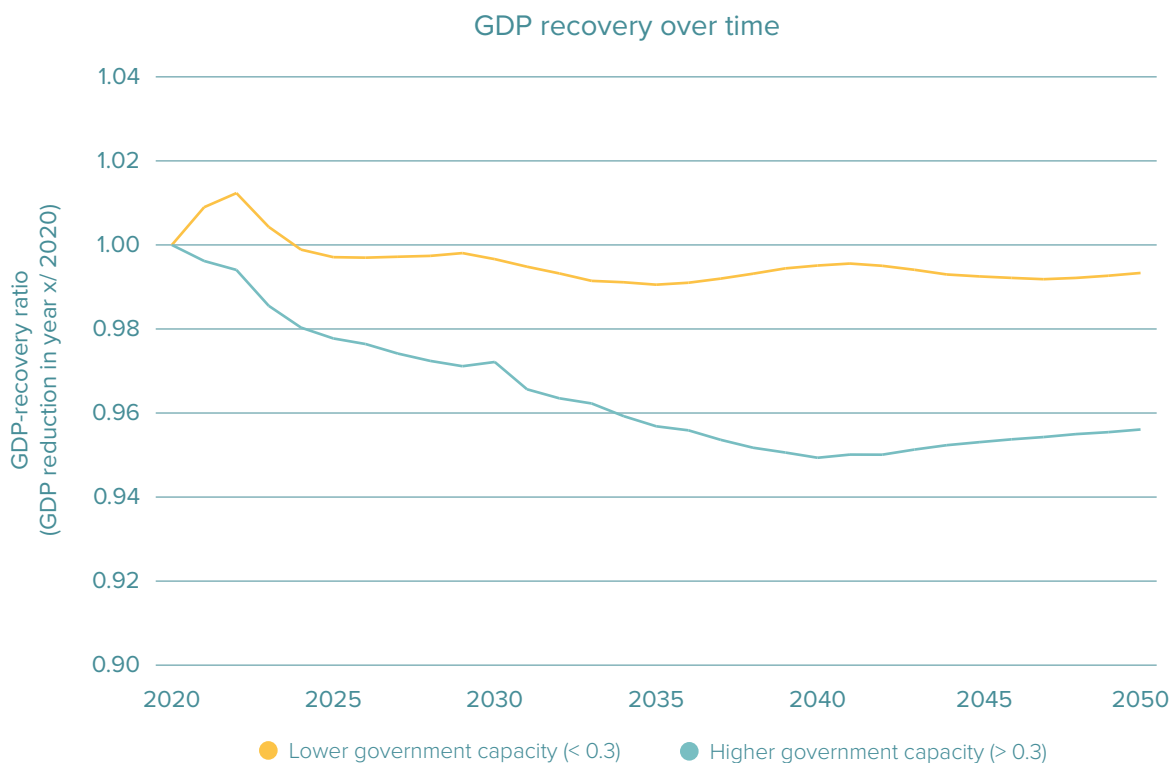
Last, there is a third group of countries which either show some slight recovery or deterioration over time. This includes Cabo Verde, Chad, the Democratic Republic of the Congo, Kenya and South Africa. With the exception of the Democratic Republic of the Congo, all of these countries show worsening GDP reductions over time in the COVID-19 Base scenario, with the largest impact seen in Cabo Verde (-8.5 percent in 2020 and -11.8 percent in 2050).

To this point, we have shown that there are differing recovery patterns across the Africa-10 following the economic shock, though we have not yet explained why these patterns differ. Similar to the results on direct and indirect mortality, there is a wide range of interconnected indicators at play that explain a country's economic recovery. Here we highlight some key indicators and country typologies that explain these differences, using the outcomes of the COVID-19 Base scenario to calculate differences between country groupings. To control for the pandemic's initial GDP reduction, we have calculated a recovery ratio, which is the GDP reduction in 2020 relative to the GDP reduction over time. As such, countries with a recovery ratio of 1 have an equivalent drop in 2020 and 2030 GDP, countries with a recovery ratio above 1 are capable of partially recovering from the economic shock, and countries with a recovery ratio below 1 suffer from increasing economic declines over time.

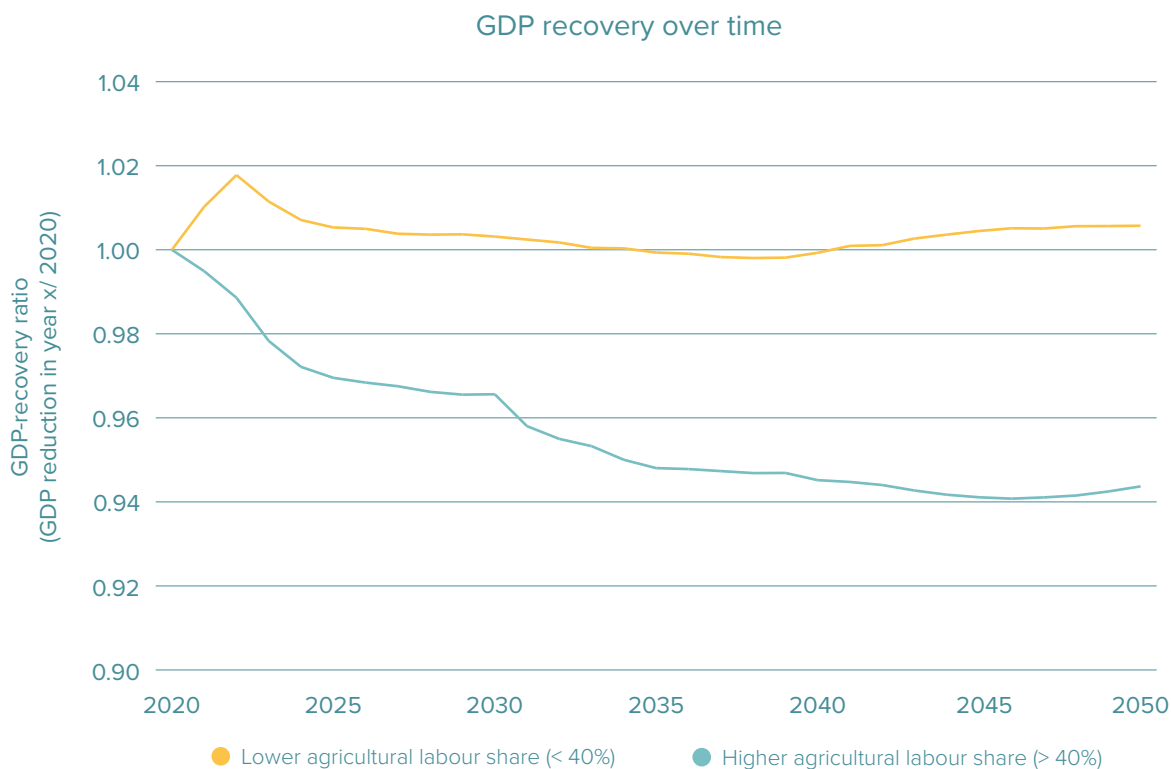
Countries with high government capacity show stronger long-term resilience to the COVID-19 economic shock (Figure 15). Similar to the analysis on mortality, we aggregated the Africa-10 into two groups: countries with low government capacity below 0.3 and countries with high government capacity above 0.3. The countries with high government capacity show a stronger immediate rebound in 2021 and 2022, and a stabilization of the economic shock by 2050 (-0.0 percent reduction in GDP), whereas those with lower government capacity show a smaller immediate rebound in 2021 and 2022, and, more importantly, increasing economic declines until 2040, resulting in an average additional reduction of around 5 percent. These results highlight the importance of government capacity. In general, countries with higher government capacity will be more resilient to the economic shock following the pandemic, while those with lower government capacity will suffer similar initial losses, before suffering more losses due to worsening economic declines in the next decades.

Agricultural-based economies are likely to have less economic recovery following the COVID-19 economic recession (Figure 16). Countries with high agricultural labour shares (> 40 percent) will be less resilient to the COVID-19 economic recession, with continued economic declines expected until 2050. In contrast, countries with much smaller agricultural labour shares show recovery following the COVID-19 pandemic and have an average economic ratio that remains above 1 until 2050. The economic decline following the COVID-19 pandemic will slow the transition from a more agricultural-focused economy to a more diversified domestic economic structure, with more labour in higher value-added sectors (services, ICT). Countries that currently have the highest shares of agricultural labour are expected to experience the biggest offset. As such, COVID-19 is projected to postpone this shift in economic structure across the Africa-10, resulting in an economic decline that will still be apparent in 2030 and 2050.

The previous analysis on country groupings and indirect mortality, or economic recovery, highlights the importance of investments in health, the level of government capacity and the structure of an economy prior to COVID-19. However, it is important not to oversimplify this finding to individual countries. Although the level of government capacity may explain economic recovery across countries, it is unlikely to reflect each country's individual situation. In fact, translating these findings into country-level policies requires an understanding of the specific economic, development and policy context of each country. Nonetheless, our analysis shows the importance of health investment, government capacity and agricultural labour in explaining differences in recovery patterns (both economic and indirect mortality) across countries, and more generally highlights that countries with lower levels of economic development, human development and governance are likely to experience the strongest long-term negative effects of COVID-19.

Figure 15. GDP effect over time by level of government capacity

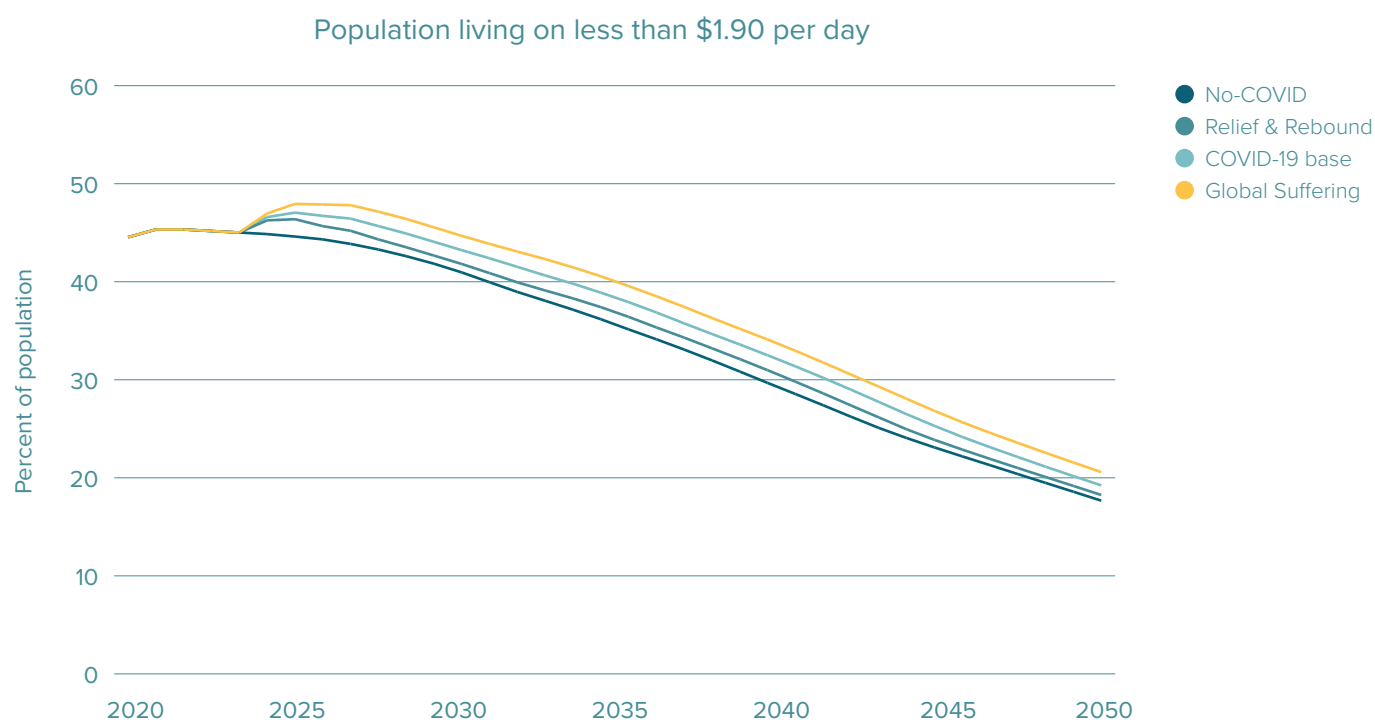
Note: The GDP effect is calculated as the difference in GDP between the COVID-19 Base and No-COVID scenarios, and then normalized relative to the initial 2020 GDP reduction. Values above 1 indicate a partial recovery, with values below 1 suggesting a worsening economic impact over time.

Figure 16. GDP effect over time by share of agricultural labour

Note: The GDP effect is calculated as the difference in GDP between the COVID-19 Base and No-COVID scenarios, and then normalized relative to the initial 2020 GDP reduction. Values above 1 indicate a partial recovery, with values below 1 suggesting a worsening economic impact over time.

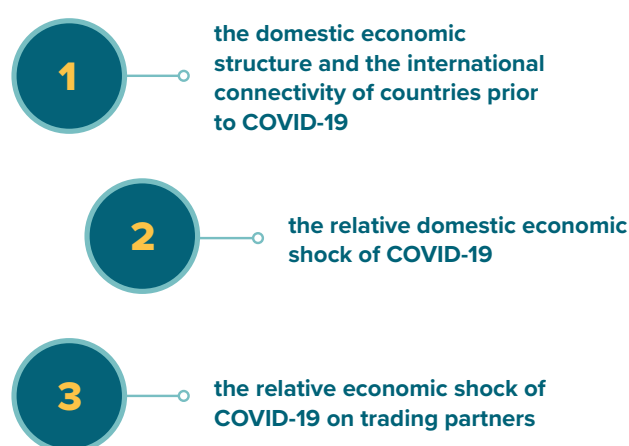
The COVID-19 economic shock is directly reducing household income and increasing poverty levels across the Africa-10, with poverty levels set to increase towards 2050 (Figure 17). In the No-COVID scenario, poverty levels across the Africa-10 will drop from 45.0 percent of the population (2019) to 17.7 percent in 2050. In 2020, COVID-19 increased poverty levels by an additional 1–2 percent of the population, pushing the total to 46.3 percent in the Relief & Rebound scenario and 47.0 percent in the Global Suffering scenario. The increase in poverty levels across all scenarios will continue, with COVID-19 scenarios showing higher poverty levels by 2050 than the No-COVID scenario. In the most optimistic scenario, an additional 0.6 percent of the population are expected to live in extreme poverty by 2050, compared with the initial increase of 1.4 percent in 2020. The Global Suffering scenario shows a diverging trend, however, with an additional 2.9 percent of the population expected to be living in extreme poverty by 2050, compared with a 2.1 percent increase in 2020.

Figure 17. Percentage of the population living in extreme poverty by scenario



Third-order effects: Shifting international trade patterns

Historically, global economic shocks have led to significant changes in international integration, specifically in terms of redistributing a country's prominence in the global economy and rewiring trade networks (Gomez, Torgler and Ortega, 2013). The new position that (African) countries may come to have in the global economy will depend on the macroeconomic impacts to their domestic economy (second order) as well as that of their key trading partners (Figure 18). Importantly, despite causing a global shock, the impact of COVID-19 is uneven across countries, with bilateral trade patterns likely to gravitate towards large economies that are well positioned to capture a greater share of global trade. This repositioning will likely depend on:



This holds true for African countries, which are expected to become more aligned with countries that have weathered or recovered well from COVID-19, and away from the major players that struggled more with the pandemic and lost ground in the global economy as a result.

Trade shocks in the short, medium and long term

In the short term, trade shocks are expected to arise from the economic impact of COVID-19 through depressed consumption (leading to lower import demand), as well as from weak export capacity resulting from slower production rates due to pandemic control measures, supply chain disruptions and lower levels of investment (foreign and domestic). Countries will also incur demand-side shocks due to the economic contraction of key trading partners for the same reasons.

Given the swift recovery of household consumption and production (IFs projects that household consumption and GDP for the Africa-10 will return to pre-COVID 2020 estimates in roughly three years), longer-term changes in aggregate trade and trade patterns will be increasingly dominated by the recovery of their traditional trading partners.

Figure 18. Conceptual framework highlighting the effect of COVID-19 on bilateral trade between two countries

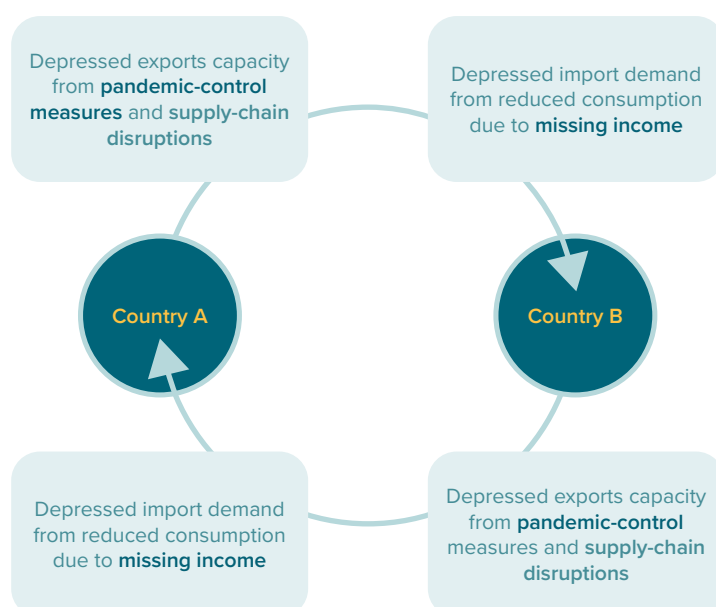
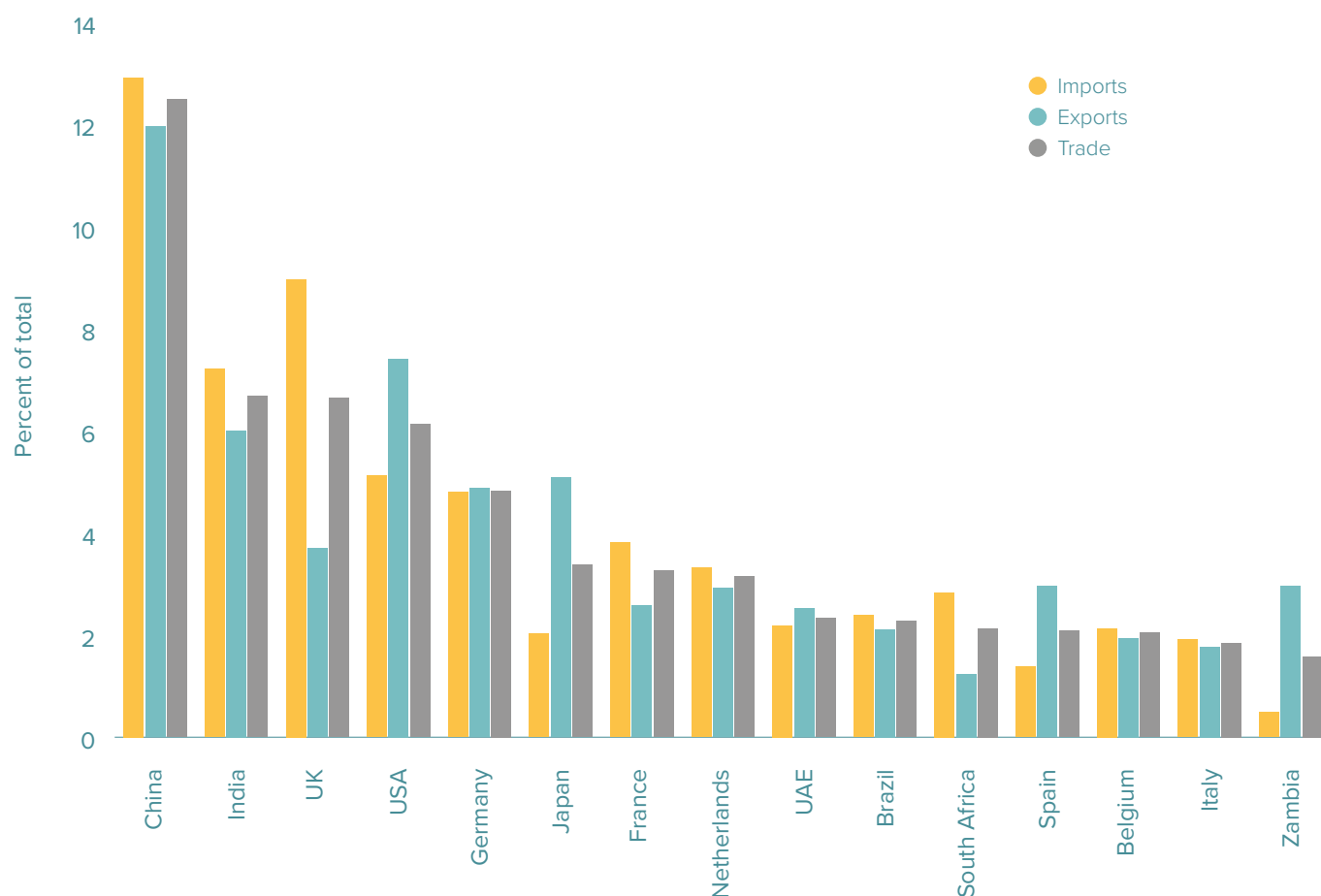


Figure 19 shows the top trading partners of the Africa-10 in 2019, ranked according to their trade as a percentage of total trade. In 2019, these countries represented nearly 60 percent of total Africa-10 trade.

Although trade with China represented nearly twice that of the next largest trade partner (India), the country still only accounted for just over 12 percent of total regional trade (ranging from nearly 20 percent in Angola and the Democratic Republic of the Congo to just over 5 percent in Mali).

In 2019, nearly all countries relied more heavily on trade with Europe, ranging from nearly 60 percent of total trade with the EU27+UK for Cabo Verde, to nearly 20 percent for Ethiopia. The Democratic Republic of the Congo is the only country where trade with China (19 percent of total trade) surpassed trade with the EU27+UK (14 percent).

Figure 19. Top trading partners of the Africa-10 countries in 2019, pre-COVID-19



While no country has been left untouched by the pandemic, the economic impact is expected to be unevenly distributed. Unfortunately, some of the countries projected to be most severely economically impacted by the pandemic are among the Africa-10's top trading partners. France, India, Spain, the United Kingdom and the United States of America are all expected to experience a reduction of between 17 and 26 percent in both imports and exports in 2020, relative to the No-COVID scenario.

Many of these countries are also expected to struggle with a longer recovery period. Table 16 summarizes the recovery of some trading partners by estimating the number of years required to return to pre-COVID-19 estimates of GDP and trade in 2019, alongside the share of the Africa-10's total trade in 2019. It also highlights that Europe is expected to have a much slower recovery than many other, particularly developing, economies.

Table 16. Recovery of trading partners in terms of GDP and trade levels

	Share of Africa-10 trade in 2019	Years to reach 2019 levels of	
		GDP	Trade
China	12.5	1	2
India	6.7	2	2
UK	6.6	9	11
USA	6.1	6	5
Germany	4.8	5	6
Japan	3.4	8	6
France	3.3	11	14
Netherlands	3.1	10	14
UAE	2.3	3	2
Brazil	2.3	13	18
South Africa	2.1	8	10
Spain	2.1	20	19
Belgium	2.1	4	9
Italy	1.8	13	16
Zambia	1.6	3	3

Recovery patterns will be somewhat determined by growth potentials linked to longer-term dynamics, such as their current product sophistication profile (higher levels of growth are often available to economies starting from lower value-added production bases) and demographics (Europe is an older and aging population with low – sometimes negative – labour contributions to growth, whereas India's labour force is still rapidly growing).

In general, this means that trading partners in Europe will experience a much slower recovery than those in Asia or Africa.

This uneven recovery means that the larger economies that are relatively less affected or able to better manage recovery will be better positioned to assume a larger portion of global trade by filling unmet import demand and absorbing surplus export capacity. Of the Africa-10's largest trading partners, China, Japan, and to a lesser extent the United Arab Emirates, are the only countries positioned to capture larger shares of global trade. Europe, India, South Africa and the United States of America are all expected to recover from the pandemic with less of a global presence than they would have enjoyed otherwise. Figure 20 illustrates this shift away from the United States of America and Europe and towards China, with colours indicating the absolute change in global trade shares. Relative to the No-COVID scenario, China absorbs roughly 0.7 percentage points more of global trade at the expense of 0.3 percentage points from the United States of America, and more than 1 percentage point from Europe (top). Smaller countries and regions have a less noticeable change in their global presence. However, relative to the pre-COVID-19 scenario, the Africa-10 countries experience around a 3 percent increase in global trade shares, with some southern African countries experiencing a slight reduction (with only South Africa experiencing a drop between -0.6 and -1.6 percent) (bottom).

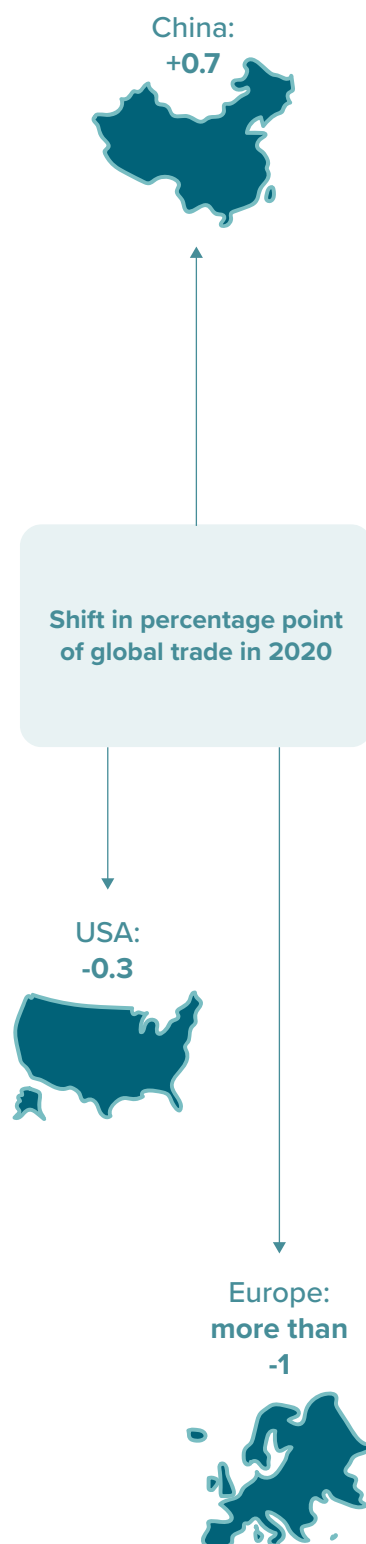
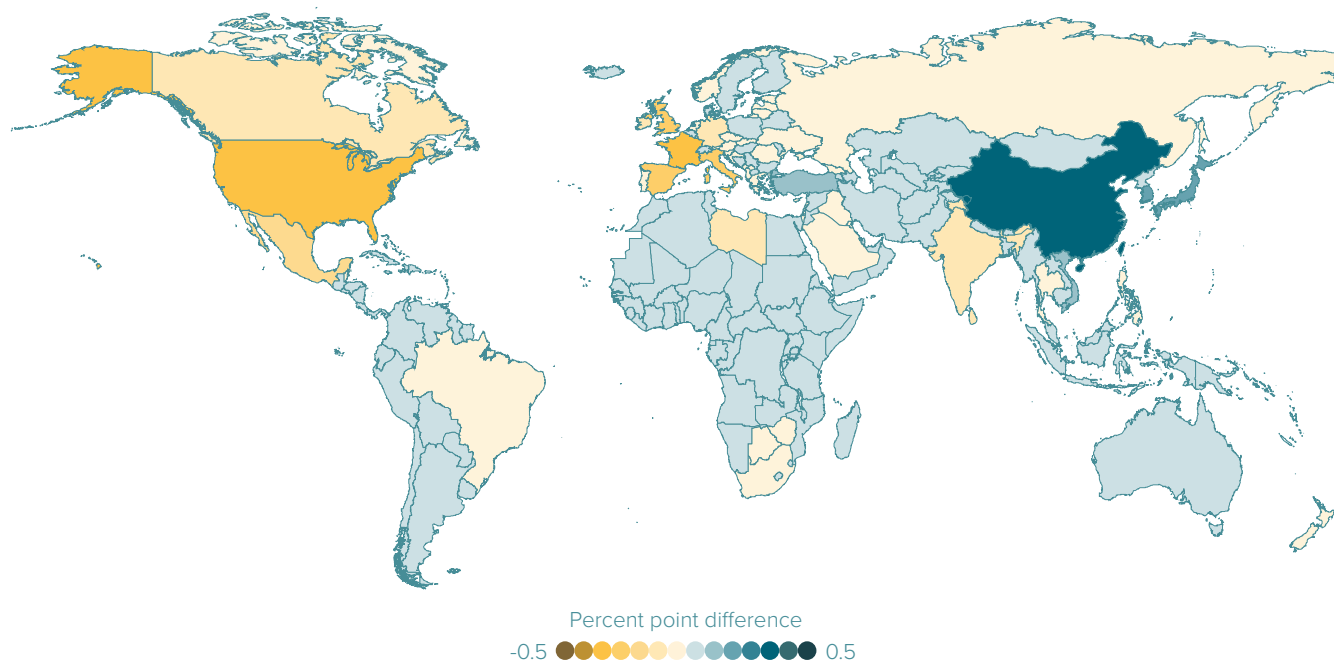
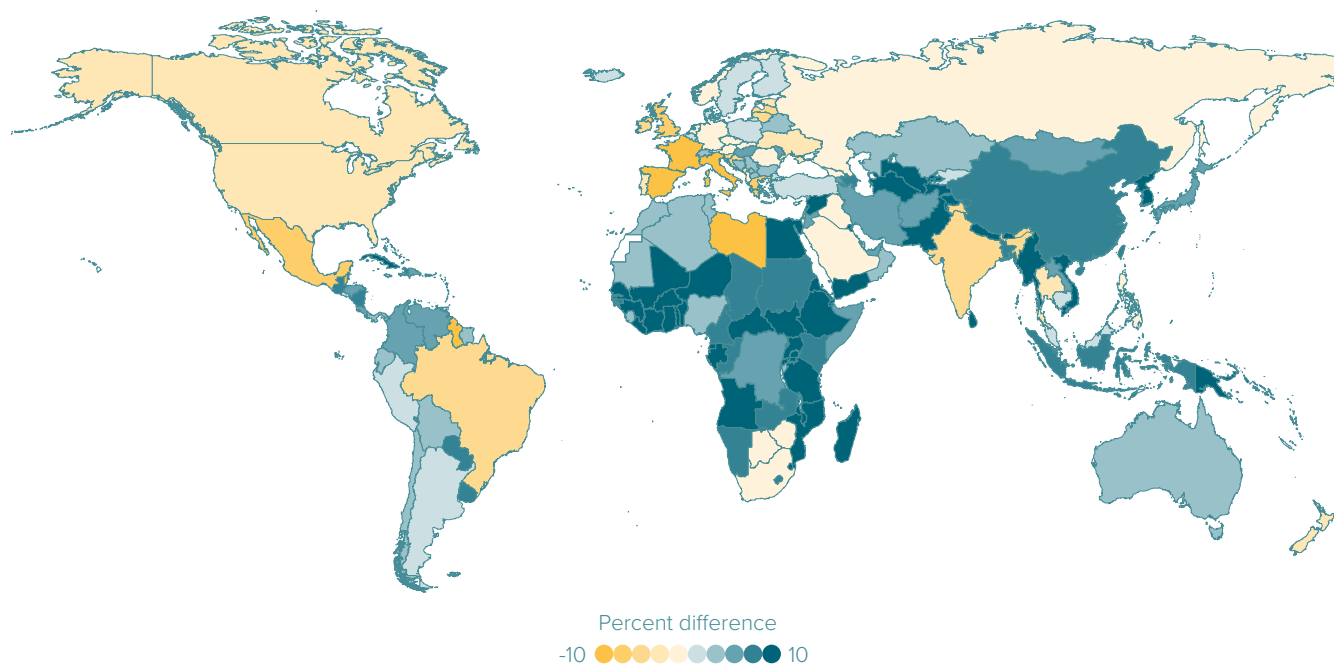


Figure 20. Percentage point change in global trade shares following COVID-19, all countries (top); Percentage change in global trade shares following COVID-19 (bottom)

Percentage point change in global trade shares in 2020 relative to the No-COVID scenario



Percentage change in global trade shares relative to the No-COVID scenario



As China and other large economies with expected stronger recoveries begin to play a more central role in global trade, their relationships with the Africa-10 are also expected to strengthen. Figure 21 illustrates the shift in Africa-10 trade away from the EU27+UK and towards China.

There are some country-level differences in how these long-term shifts play out (Figure 22). All countries are expected to increase trade with China, compared with India, the United States of America and the EU27+UK, with declines projected in

trade with India and the EU27+UK.² The shift in trade patterns with the United States of America is set to be smaller, given the relatively smaller dependency on trade with this partner. An exception to these patterns is Chad, which is expected to have an initial decline in trade with the United States of America, before increasing again by 2050. In terms of country specifics, Angola, the Democratic Republic of the Congo, Ethiopia, Nigeria and South Africa all grow closer to China than other regions, whereas Cabo Verde, Chad, Kenya, Mali and Mauritius experience a greater relative increase in intra-African trade.

Figure 21. Long-term changes in the relative share of trade between the Africa-10 and major trading partners

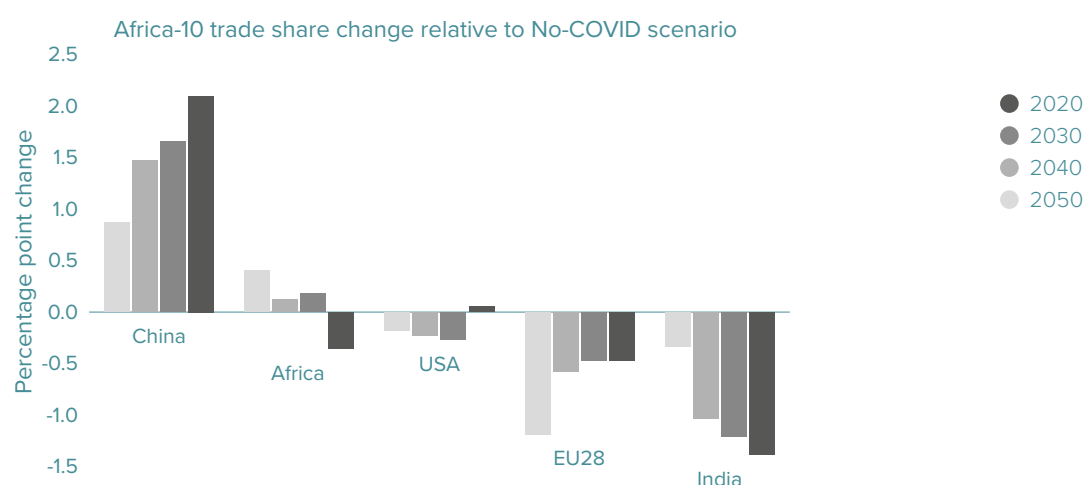


Figure 22. Relative shifts in the trade balance between the Africa-10 and major trading partners in 2020 (20), 2030 (30), 2040 (40) and 2050 (50)

	China				Africa				USA				EU27+UK				India			
	20	30	40	50	20	30	40	50	20	30	40	50	20	30	40	50	20	30	40	50
Africa-10																				
Angola																				
Cabo Verde																				
Chad																				
Democratic Republic of the Congo																				
Ethiopia																				
Kenya																				
Mali																				
Mauritius																				
Nigeria																				
South Africa																				

Note: Dark blue means a strong increase in relative trade compared with the No-COVID scenario. Dark yellow means a strong decrease in trade compared with the No-COVID scenario. For reference, the largest positive change (Nigeria–China in 2050) represents a 2.6 percentage point shift, and the largest negative change (Kenya–India in 2040) represents a 2.5 percentage point shift.

² Although India is expected to make a swift recovery to pre-COVID-19 levels (2019), the country's foregone growth and trade relative to the No-COVID scenario is one of the largest among the Africa-10's top trading partners.

6. Main takeaways



6. Main takeaways

COVID-19 has shifted from health and economic crises to a system-wide crisis, with potentially long-lasting effects on country-level domestic development and international trade relations.

COVID-19 started as a health crisis in China and quickly became a global economic crisis. However, this analysis shows that COVID-19 is changing the broad macroeconomic and human development trajectories of countries, with knock-on long-term effects set to exacerbate countries' existing vulnerabilities.

The effects of COVID-19 on macroeconomic development moved far beyond mortality in 2020 and largely flowed from GDP reductions in Africa and its trading partners. We show that COVID-19 reduces international flows of trade, foreign aid, remittances and FDI, drives up poverty (in 2020 and to 2050), increases mortality over the next decade (mostly from communicable diseases), increases child mortality and drives a shift in trade towards China and away from Europe and India.

Although COVID-19 is having a negative impact on human lives and the economy, the changes to international flows are much more complex. We show how COVID-19 has immediate and diverging impacts on trade balances at the country level, measured as the difference between exports and imports relative to GDP. Prior to COVID-19, most of the Africa-10 had negative trade balances (higher imports than exports). This pandemic has caused simultaneous reductions in imports and exports, which has led to almost no net change in the trade balance across all 10 countries. In contrast to trade, COVID-19 is significantly reducing FDI in the Africa-10, with disproportionate reductions observed in the FDI of oil-producing countries.

Though beyond the scope of this study, COVID-19 has wider implications on government finances, child mortality, socio-economic development and risks to internal conflict, as well as disproportionate effects on all of these indicators across different African countries (see, for example, Moyer and Kaplan, 2020; OECD, 2020a; Robertson et al., 2020; Spiegel, Schwank, and Obaidy, 2020). This will further complicate a response to the COVID-19 pandemic. For example, government finances are being negatively affected, with many countries concerned about rising debt-to-GDP ratios, which in some cases are projected to reach 100 percent. In South Africa, for example, average annual growth rates as high as 4–5 percent will be required to stabilize the debt-to-GDP ratio without severe cutbacks on government spending.

The COVID-19 pandemic has pushed this stabilization increasingly out of reach, with 2020 growth across the Africa-10 estimated at -5 percent. For oil-dependent countries, such as Angola, Chad and Nigeria, the March–April 2020 drop in oil price to \$9 devastated government revenues on top of affected non-oil revenues due to lockdown measures, and the projected drop in FDI. Loans and other interventions to stimulate the economy in the face of these challenges are also accelerating negative debt-to-GDP ratios in these countries.

In conflict-affected and fragile States, there are fears that tensions could escalate following the pandemic given the reductions in government revenues to deliver various services such as health, education and security. Among the Africa-10, Chad and Mali are expected to be worst affected, facing a multi-year, multidimensional crisis involving terrorism and rising domestic political tension. The effect of the pandemic in addition to these pressures could push political and social order to a tipping point (Moyer and Kaplan, 2020).

Our analysis shows that even after the health crisis has been controlled by limiting the spread of the virus and eventually distributing a vaccine, the impacts of the pandemic will be far from over, with long-term increases in disease prevalence and mortality across countries, long-term changes to economic structures, shifts in patterns of international trade, and wide, predominantly negative implications for government investment and human progress in areas such as education, health, poverty eradication and child mortality. This wide array of immediate and long-term effects requires governments to think much more creatively about how to respond to COVID-19 across all domains. As such, neither a vaccine nor a specific set of conventional government measures will be enough to address the system-wide implications of COVID-19. If anything, COVID-19 emphasized the need for a comprehensive review of Africa's recent economic transformation efforts. In particular, the continent needs to make a more determined effort to use modern technology to leapfrog in terms of its development and to rapidly implement initiatives such as trade integration.

COVID-19 is a multiplier of country-level vulnerabilities and development challenges, with long-term increases in mortality and reductions in economic growth affecting the most vulnerable countries.

The immediate effects of COVID-19 in 2020 and 2021 are country-specific and not directly related to pre-COVID-19 economic and human development. The two island nations (Cabo Verde and Mauritius), for example, have relatively high GDP per capita (with Mauritius ranking first and Cabo Verde ranking third of the Africa-10) and high HDI levels (with Mauritius ranking first and Cabo Verde ranking second), but are among the countries hit hardest in terms of GDP reduction, and are more affected by reductions in international flows.

In the long term, however, the combined COVID-19 shocks will act as a multiplier of the development challenges that countries faced prior to COVID-19. Our analysis shows that COVID-19 risks persistent increases in mortality to 2030, as well as continued, sometimes worsening, economic effects to 2040 and 2050. It also shows that indirect mortality in 2030, as a consequence of the economic downturn, will exceed direct mortality from COVID-19, and will be driven primarily by preventable communicable diseases. By 2030, in the most optimistic Relief & Rebound scenario, increased mortality is the result of diarrhoea (+4.0 percent), malaria (+5.4 percent) and respiratory infections (+4.0 percent). In the more pessimistic Global Suffering scenario, a stronger economic downturn further drives increased mortality due to diarrhoea (+12.7 percent), malaria (+15.8 percent) and respiratory infections (+12.0 percent). In addition, mortality of children under five years is expected to account for more than 80 percent of indirect mortality. Without policy actions, COVID-19 threatens to significantly increase child mortality in the next decade.

However, there are important differences in the long-term impact across countries, mainly driven by economic, governance and health infrastructure prior to COVID-19. Importantly, we show that the initial COVID-19 shock is not correlated to the long-term socio-economic outcomes, which are in fact driven by important country typologies. For countries with low government capacity and low government investment in health systems, the direct mortality from COVID-19 is projected to be small compared with indirect mortality. The same holds true for the economic recovery: countries with low government capacity and a high share of agricultural labour are expected to face deteriorating economic growth to 2040 and 2050, whereas countries with higher government capacity and lower shares of agricultural labour are not expected to face continued economic declines. These differences across countries highlight the importance of country-specific vulnerabilities as well as the readiness and capacities of a country to respond to and recover from the combined health and economic effects of COVID-19.

Our analysis highlights some country-level vulnerabilities to COVID-19 and during post-crisis recovery. As future global crises such as land degradation and desertification disproportionately affect African States, efforts should focus on building country resilience, both in terms of economic and

human development. Lessons from post-recession recovery, as well as the 2008/2009 financial crisis, show that strengthening institutional and governance capacity in the long term is key for building resilient economies and will also drive short-term economic growth (Caldera-Sánchez, Rasmussen and Röhn, 2015). Our analysis emphasizes the importance of increasing governance capacity for post-COVID-19 recovery and of shifting the long-term outcomes of COVID-19.

Countries' health systems and the disease burden are also identified as important factors in responding to the pandemic. Improvements in health systems are crucial for the immediate response and will help minimize long-term increases in indirect mortality resulting from communicable diseases, as well as projected child mortality increases. Investments in the health system should be coupled with investments in infrastructure, most notably to improve access to safe water and sanitation.

However, the need to further build government capacity and invest in health systems and infrastructure comes at a time in which government finances are at risk. Our analysis shows that countries with low levels of development prior to COVID-19 are likely to suffer the strongest and longest effects of COVID-19 on human lives and economic recovery. As such, there is an emerging relationship between the level of development and long-term resilience to the COVID-19 economic shock. We define long-term resilience as a country's capacity to recover from the COVID-19 shock, and measure recovery in a broad sense, through excess mortality rates, economic size, levels of international dependence and levels of extreme poverty. Countries must try to address these challenges while simultaneously facing projected reductions in government revenues and foreign aid (in Chad, the Democratic Republic of the Congo, Ethiopia, Kenya and Mali, for example). The international community must therefore seek to increase its efforts to support countries that have poor levels of structural resilience and government capacity so that they can weather the initial COVID-19 shock and recover beyond the pandemic. Additional foreign aid, debt forgiveness and debt restructuring, among other measures, should be provided by the international community to countries most vulnerable to COVID-19-related economic downturns to minimize the impact on long-term economic and human development.

COVID-19 accelerates existing patterns of trade dependency, with a notable increase in trade with China and a decrease in trade with India, the United States of America and Europe.

Prior to COVID-19, the Africa-10's major trading partners were China, India, the United States of America and the EU27+UK, with intra-African trade representing a lower share of total trade. COVID-19 has affected the economies of these countries in very different ways, with the greatest GDP declines in Europe and India.

In the medium to long term, this will result in a restructuring of global trade networks. Compared with the No-COVID scenario, COVID-19 will shift the share of bilateral international trade primarily towards China, with the share of trade with India and the EU27+UK set to decline.

This trend holds true for almost all Africa-10 countries, but there are important country-level variations. For example, both Cabo Verde and Kenya show a shift towards trade with China, but for Cabo Verde this shift comes mostly at the expense of trade with the EU27+UK, whereas for Kenya it is mostly at the expense of trade with India. In the medium term, the share of intra-African trade is projected to increase in Mali, which in 2019, was the country with the highest dependency on intra-African trade of the Africa-10. Prior to COVID-19, Chad had a higher dependency on trade with the United States of America, and as such is the only country showing a shift towards trade with the United States of America by 2050.

Slow shifts in trade patterns between international partners have limited effects on human development and should initially be understood as a political consideration. However, countries with significant sectoral dependence on one external partner that may be further consolidated could experience more acute developmental vulnerabilities that are difficult to model using macro-level tools such as IFs. We argue that African nations should focus on strategic policy decisions around managed interdependence with the rest of the world.

COVID-19 has laid bare some of the economic vulnerabilities associated with relying on international trade for essential commodities, especially food. As part of the project, we conducted an expert elicitation with country-level experts on the immediate to long-term effects of COVID-19 for their country. During the expert elicitation, many countries exhibited a growing awareness of the unintended risks of globalization and reliance on global supply chains and were considering moving towards increased self-sufficiency (especially for food supply). For example, a number of African countries have experienced a COVID-19-related shortage of seed supply for important crops such as cowpea, sorghum, millet and maize (Gakpo, 2020). In Mauritius, sugar barons are shifting from sugar (one of the biggest global cash crops) to other agricultural crops. Overall, Mauritius is highly reliant on the global economy for its tourism, financial services and textile sectors. In the case of its tourism sector, for example, recovery to 2019 levels is expected to take four to five years and will need significant and deep restructuring, including a pivot to new regional markets and new business models (such as targeting retirees to spend extended periods on the island compared with short stays). These examples from the expert elicitation highlight the strategic considerations countries are making on the type of interdependencies they want to

have with trading partners. However, there are also benefits to globalization. As such, it is crucial that countries decide strategically in which goods, products and services they wish to be self-sufficient.

Similarly, the Africa-10 should be strategic about their level of dependence on other nations. Over-reliance on trade, foreign aid, debt, remittances and FDI from a single source presents both economic and political risks. As such, diversification is not only a question of products and sectors, but also a question of the reliance and alliances these countries have on and with specific trading partners. This is challenging as the relative effects of future global economic recessions might not follow the same patterns as COVID-19.

While our analysis shows shifts in trade patterns over time, it does not suggest a move away from globalization towards a more regionalized focus. COVID-19 has revealed some of the risks associated with long supply chains and import dependencies on certain countries and products. Boosting intra-African trade has been a policy ambition prior to COVID-19. To support intra-African trade, countries have set up the African Continental Free Trade Area (AfCFTA), which not only aims to increase intra-African trade, but also shift exporting goods away from raw commodities towards higher value-added products in industry and services. Despite the pandemic delaying AfCFTA's implementation until early 2021, Africa's continued commitment to intra-African collaboration and integration has been visible throughout the pandemic through the Africa Medical Supplies Platform (AMSP) joint initiative, which has enabled medicines and medical supplies to be supplied across countries. In the medium to long term, however, we may see a greater prioritization of the AfCFTA, as African governments seek to counteract the downturn.

Such coordination could take advantage of the unmet demand for goods and services to establish stronger trade relations among African economies. The results presented here do not yet account for a potential increase in intra-African trade following AfCFTA ratification and implementation. However, previous analysis disagrees on the extent to which AfCFTA will improve the level of economic and human development in African countries (Kabandula et al., 2020; Moyer et al., 2020; World Bank, 2020e). Nonetheless, intra-African trade and the development of associated regional value chains will – together with other policies – assist African economies in improving the value added in exports and knowledge transmission, while also likely shifting the relative interdependencies between African economies and the rest of the world.

7. Discussion and conclusion



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The analysis presented in this report quantifies selected immediate to long-term outcomes of COVID-19 across a set of macroeconomic indicators for 10 African countries.

It provides insights into the relative magnitude and duration of COVID-19 on mortality, domestic economic development and international dependencies. Here we focus on some of the main limitations in this analysis.

Most fundamentally, the COVID-19 epidemic is still ongoing at the time of writing, meaning there are many uncertainties around the extent of mortality and immediate and short-term economic impacts both globally and at the country level. As this study has shown, and barring an unexpected surge in mortality above current projections and scenarios, the more significant uncertainty with respect to most longer-term implications lies in GDP patterns during the pandemic and its economic impact in the mid-range recovery period (Friedman et al., 2020; IMF, 2020b). Although alternative scenarios in this report have allowed the longer-term outcomes of this uncertainty to be explored, the analytical limitation remains.

There are other important, often derivative and mostly longer-term uncertainties falling into at least three categories.

- **The first category comprises the fiscal and monetary implications of decisions taken during the pandemic.** Unemployment, economic closures and combinations of governmental revenue shortfalls and increased expenditure pressures are leading to substantially increased household, business and government indebtedness in many countries, along with monetary policy loosening. These behaviours will have future implications for government spending and performance with respect to transfer payments and direct spending on education, health, infrastructure and other public goods. In Africa, the relationship between poverty levels, transfer payments and public spending is pronounced. Spending reductions coupled with governmental searches for additional revenues will therefore affect patterns of future household incomes, their inequality and broad human development, thereby also affecting future poverty levels. Until the scenarios explored here can be updated with more complete first-order economic effects of the pandemic and augmented with information about changed fiscal and monetary situations and policy choices post-pandemic,

the uncertainty will have unknown implications for analytical conclusions. It seems likely that the addition of these factors to analysis will worsen projections of negative socio-economic fallout from COVID-19.

- **The second category of uncertainties includes many elements of economic restructuring.** The IFs system already translates changes in expected levels of GDP per capita and trade patterns across sectors into changes in sectoral labour demand, including the relative shares of skilled and unskilled labour demand. This analysis has not, however, explored and elaborated the implications of first-order economic effects on total labour demand, its formal and informal breakdown and the interaction of such changes with the educational and skill composition of the labour force (related to societal attention to and spending on education and health as noted previously), nor the potential outcomes of the pandemic for changing patterns of long-term economic productivity, with potentially varying implications for sectors (including manufacturing, services, and information/communications). Furthermore, the reduction in global oil prices, which is occurring alongside the COVID-19 pandemic, are likely to play out in complicated ways in the longer term for countries such as Angola and Nigeria (Onyekwena and Ekeruche, 2020). Many of these economic restructuring elements will affect income distribution, the forecasts of which are therefore not as well-developed and understood in this analysis as desired.

- **The third category of uncertainties involves various changes in sociopolitical behaviour.** Perhaps the most important of these is the potential for increased societal instability, conflict and disruptive regime shifts. This increase seems more likely than a decrease considering the global instability that followed World War I and the flu epidemic of that era. The COVID-19 pandemic is unfolding in the face of an already unstable situation in some Africa-10 countries (Moyer and Kaplan, 2020; UNHCR, 2020). More generally, this analysis has not tried to address the potential for capable governance. Less dramatic perhaps, but still important, are the immediate sociopolitical changes such as school closures, as many African countries have limited opportunities for remote learning which is depriving many children of education. Although early warnings suggest COVID-19 has broad negative impacts on education, there is uncertainty as to whether it will result in permanent reductions in educational attainment or merely cause a delay in it (and perhaps even some technological enhancement of education systems and their future performance). Similarly, health systems' shifting attention to the pandemic cannot help but detract from attention to other critical diseases, such as HIV and AIDS, malaria and tuberculosis (WHO, 2020). There has also been a necessary but costly shift of broader government attention from other challenges, including the locust outbreak in Eastern Africa (Mold and Mveyange, 2020).

Despite these uncertainties and the analytical limitations, the basic takeaways and policy prescriptions presented in this report are likely to prove sound.

COVID-19 will undoubtedly have considerable longer-term effects. Even though it may accelerate some positive changes, it is highly likely that the main effect will be negative, diminishing the rate of future economic and human development.

There will, of course, be further shocks affecting that development, not least those associated with climate change. Ideally, COVID-19 could and should be a strong call to action to deliberately work towards alternative futures by implementing a broad and inclusive economic and human development agenda and by building resilient countries with resilient populations.

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Appendix 1 – Long-term effects of COVID-19 mortality on economic and human development



Appendix 1 – Long-term effects of COVID-19 mortality on economic and human development

There is a great deal of uncertainty involved in projecting direct COVID-19 mortality. IHME projections of global COVID-19-related deaths currently range from 1.8 million to 3.7 million as of 14 October 2020 (IHME, 2020).

To isolate and frame the uncertainty related to the short-, medium- and long-term impacts of these mortality estimates, we have developed three scenarios with differing assumptions of direct COVID-19 mortality. In the low mortality scenario (Low) there are 326,000 fewer deaths than in the high mortality scenario (High). Case fertility rate assumptions by age are the same across both scenarios (Table 17).

Table 17 summarizes the impacts that the mortality assumptions of these two scenarios have on GDP (MER), GDP per capita (at PPP), extreme poverty and trade openness in 2020, 2030 and 2050. The results suggest a very minimal effect, with less than a 1 percentage point difference between scenarios for every indicator over time. This insight should assuage some concern regarding the validity of results discussed in this report given the significant uncertainty related to mortality projections.

Table 17. Summary of changes in indicators for the Africa-10 between Low and High mortality scenarios

Indicator	Scenario	2020	2030	2050
GDP at MER billion constant 2011 USD	Low	1,259	1,853	6,905
	High	1,259	1,835	6,842
GDP per capita at PPP constant 2011 USD	Low	3,997	4,555	8,616
	High	3,998	4,523	8,568
Extreme poverty percentage of population	Low	47.5	40.6	19.4
	High	47.3	40.9	19.5
Total Trade percentage of GDP	Low	42.8	44.8	39.8
	High	42.8	45.0	40.1



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Graphic design and layout by Strategic Agenda