02

PUBLIC HEALTH: ENSURING EQUAL ACCESS AND SELF-SUFFICIENCY

ESSAY

VIEWPOINTS

GOVERNANCE CALL-OUT

Reimagining the future of health in Africa

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The COVID-19 pandemic has caused enormous global disruption and the loss of many lives and livelihoods. The pandemic is still unfolding: Worldwide, there are currently more than 300 million infected and 5.5 million dead as of January 2022—with 9.4 million confirmed infected and more than 220,000 confirmed dead in Africa alone.[1,2] The situation is still unfolding, with several SARS-CoV-2 variants of concern emerging since the onset of the pandemic.[3]

COVID-19 has also exposed major flaws in the underlying logic of the pre-pandemic global health system.[4] The assumption that infectious disease threats will emerge from the poorest countries and spread to wealthier ones has been dispelled. Unlike Ebola, which started in low-income countries and was largely contained, COVID-19 started in China and quickly engulfed developed countries in Europe and North America, sparing Africa to a large degree.[5]

Weaker economies were mostly correlated with weaker public health systems and, therefore, greater public health risks. The Global Health Security Index ranked the United States first in pandemic preparedness, clearly not anticipating an irrational and anti-science political leadership.[6] This development suggests that wealthier economies' public health systems can be vulnerable to infectious disease threats.

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Despite strong efforts by multilateral institutions, weak commitment to multilateralism by some national political leaders exposed some long-standing fallacies. For example, the assumption that, in a global crisis like that which we saw in 2020, wealthier countries like the United States would step up to ensure the poorest and most vulnerable countries are protected. Instead, the world witnessed the hoarding of critical equipment like masks and ventilators in the wealthier countries—many looking only after their national interests. Similar actions have resulted in certain low-income countries in Africa reaching less than 5 percent of COVID-19 vaccination rate,[7] while many developed nations achieved 70 to 90 percent coverage to date and are now administering booster vaccine doses.

Faced with such glaring inequity, African leaders emerged to exercise leadership, taking a continental approach through the African Union's Partnership for Access to COVID-19 Tools, African Medical Supplies Platform, and African Vaccines Acquisition Task Team. This effort was led by private sector leaders as Special Envoys, the Africa Centers for Disease Control, United Nations Economic Commission for Africa, and African Export-Import Bank—and supported by the World Bank. (For a discussion on strategies for addressing global vaccine inequity, see page 31.)

1 "COVID-19 Dashboard." Center for Systems Science and Engineering, Johns Hopkins University, 2021.
2 The African numbers may be underestimated because of limited testing in the region compared to other parts of the world. "Outbreak Brief #99: Coronavirus Disease 2019 (COVID-19) Pandemic." African Union, 2021.
3 "Tracking SARS-CoV-2 variants." World Health Organization, 2021.
4 Dalglish, Sarah L. "COVID-19 gives the lie to global health expertise." The Lancet, Volume 395, Issue 10231, 2020.
5 "Preparing for the next pandemic: A conversation with Africa CDC Director John Nkengasong." The Brookings Institution, 2021.
6 "2021 Global Health Security Index." The Global Health Security Index, 2021.
7 As of this writing. For updated numbers, see: "COVID-19 Vaccines." World Health Organization, Regional Office for Africa, 2021.

Yet, Africa's development challenges persist: political and security crises; slow demographic transition; high youth unemployment; increasing urbanization; rapid population aging; epidemiological transitions with rising noncommunicable diseases in the face of background endemic infectious diseases; child undernutrition and adult obesity; environmental uncertainties due to climate change (e.g., floods, droughts, rising temperatures); and slow progress in improving water, sanitation, and hygiene. While governments have managed to increase spending during the height of the pandemic, for many countries, general government expenditures on health will take until 2026 to return to pre-pandemic levels.(For more on strategies for financing health outcomes, see the viewpoint on page 35.)[8]

Despite these ongoing problems, the pandemic has created a reset moment for Africa's health systems and an opening for leaders to reimagine—and then hopefully realize—a better future for health in Africa.

There are at least eight recommendations to shape the emergence of a brighter future of health in Africa.

- **Protect and increase investments in the health of women, adolescents, and youth.** With a large and increasingly young population, Africa represents the future of the world. By 2050, 60 percent of Africa's 2.5 billion population will be under 25 years of age,[9] potentially providing huge human capital and talent for its development and for the world. After decades of being left behind, African girls and women are rising, and the power and resilience of African women should not be underestimated. Mobilizing investments to ensure African children survive and thrive and women have access to quality reproductive and maternal health care as well as empowering girls and women through quality education and a conducive labor market will guarantee the future of Africa's health and prosperity. (See Chapter 3 for strategies to empower African women and girls across these and other sectors.)

- **Tackle inequalities by being intentional with inclusion, especially for marginalized and vulnerable populations.** With fast-growing populations in many countries, increasing mobility, urbanization, and consequent social dislocations, neglecting the health needs of the poor and excluded groups will negatively impact everyone. On the other hand, orienting health systems to tackle the needs of the most vulnerable is likely to strengthen societal bonds of trust and cohesion to improve resilience. Already, young leaders on the continent are emerging with new ideas, such as the notion of "radical inclusion" in Sierra Leone.[10] The nature of demand by citizens is becoming more sophisticated than in the past, requiring adaptive responses by governments, but it is important that all critical voices are included to build a better and stronger future.

Mobilizing investments to ensure African children survive and thrive and women have access to quality reproductive and maternal health care as well as empowering girls and women through quality education and a conducive labor market will guarantee the future of Africa's health and prosperity.

- **Balance reactive health care with prevention, promotion, and wellness.** Africa's "weak" health systems still can avoid the Lilliputian trajectories of the more advanced health systems. They can choose to reinvent the wheel. They can build community-based integrated health systems that promote health and well-being, rather than the potentially unsustainable path of focusing mainly on treating diseases. African countries can still balance the focus on the prevention of diseases[11] (e.g., good nutrition, environmental sanitation, and the promotion of health and wellbeing) with treatment of acute illnesses, which may require expensive technologies and medical interventions for a small group of people. A primary health care approach offers a good foundation for treating basic diseases, strengthening public health, and engaging communities to build trust and accountability. However, this policy shift still requires improved domestic and external mobilization and investments, including innovative financing approaches.

8 Kurowski et al. "Health financing rifts mean growing risks for a global recovery." World Bank, 2021.

9 Kariba, Felix. "The Burgeoning Africa Youth Population: Potential or Challenge?." Cities Alliance, 2020.

10 The "radical inclusion" policy in Sierra Leone is allowing adolescent girls and women who get pregnant while in school to return to school and complete their education in safe environments, likely to reduce unsafe abortions, reduce mortality and empower the girls and women. "National Policy on Radical Inclusion in Schools." Ministry of Basic and Senior Secondary Education, Sierra Leone, 2021.

11 "Fiscal Sustainability of Health Systems: Bridging Health and Finance Perspectives." Organization for Economic Co-operation and Development, 2015.

Encouraging African entrepreneurs to unlock the market potential of the health sector will help both deepen the sector's resilience in the face of crises and create a form of insurance mechanism by ensuring a decentralized diversified manufacturing capacity for shocks.

- **Optimize the health value chains in appropriately regulated markets to encourage health manufacturing to sufficiently deliver commodities, pharmaceuticals, and equipment.**
  The health sector is labor-intensive and can create quality jobs. Encouraging African entrepreneurs to unlock the market potential of the health sector will help both deepen the sector's resilience in the face of crises and create a form of insurance mechanism by ensuring a decentralized diversified manufacturing capacity for shocks such as the COVID-19 pandemic. Tech transfer is good, but harnessing Africa's own intellectual property is equally important.

- **Seize the opportunity of digital technology, data science, and innovations for step-change in productivity in the health sector.**
  It can strengthen data governance on the African continent to accelerate technological diffusion and innovation. With its young population and already-demonstrated propensity to drive and adopt innovations, Africa can build a strong multidisciplinary health workforce. It can put its people and communities at the center of its health system, rather than the medical industry.

- **Build a pipeline for talent by connecting reforms to strengthen STEM education.**
  With the need for health talent to drive Africa's biotech and life sciences industry, addressing employment needs for its youth is critical. Such developed talent will drive research and development to discover new ways of treating old diseases and connect Africa's biodiversity asset to address both old and new diseases. The future of the world may depend on it, as almost certainly there will be future infectious disease epidemics and pandemics, as well as the growing problem of noncommunicable diseases.

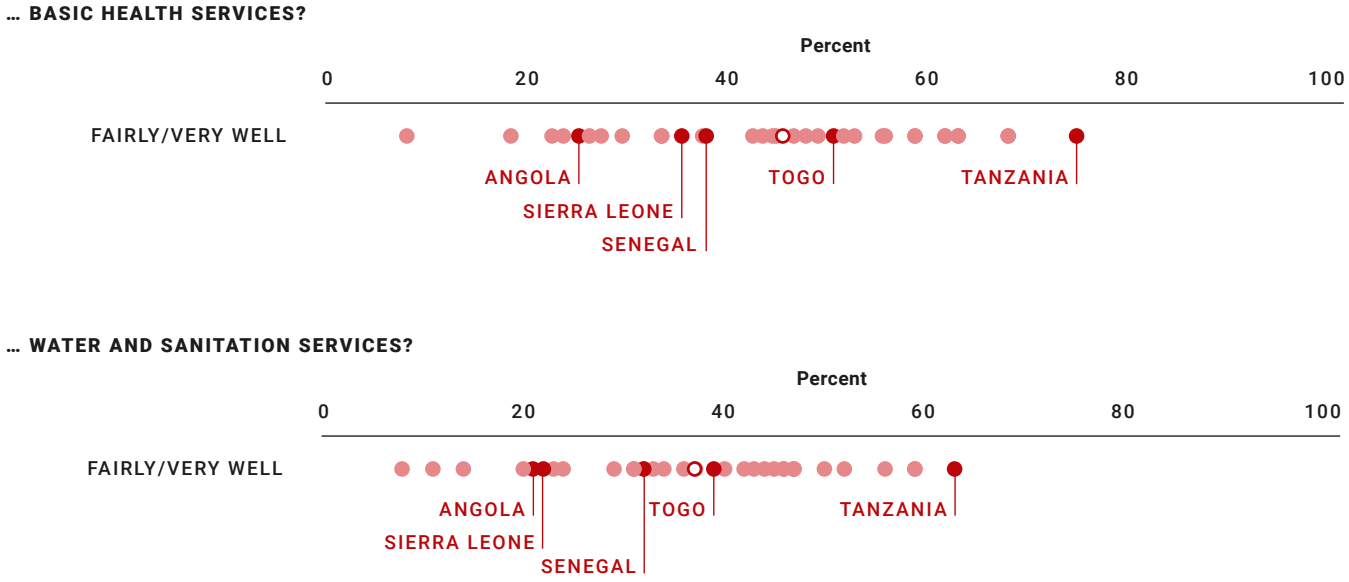
- **Rapidly implement the African Continental Free Trade Agreement as a catalyst to promote intra-African trade and economic integration, making progress towards the vision of Africa 2063.**
  By orienting its trade in products and services, Africa will be able to harness tremendous energy, foster shared prosperity, and improve its population's health and resilience. By harnessing the African Continental Free Trade Agreement, along with the new Africa Medicines Agency, the continent can improve availability, affordability, and security of supplies critical for improved health, such as personal protective equipment, biologics, pharmaceuticals, and medical devices.

- **Encourage political participation, revitalize democratic governance, peacebuilding, and strengthened national and regional institutions.**
  Such efforts should focus on the emancipation of the continent from a global system rooted in colonial and imperialist ideology. The next generation of leaders in politics, government, private sector, academia, civil society, and communities can emerge to change the narrative of Africa in the world.

Realizing a different, brighter, and more hopeful future for health in Africa is possible, even if it may require change from the present. The time is now for leaders to lift their gaze and start working towards that future.

FIGURE 2.1. HOW WELL DOES THE GOVERNMENT PROVIDE …

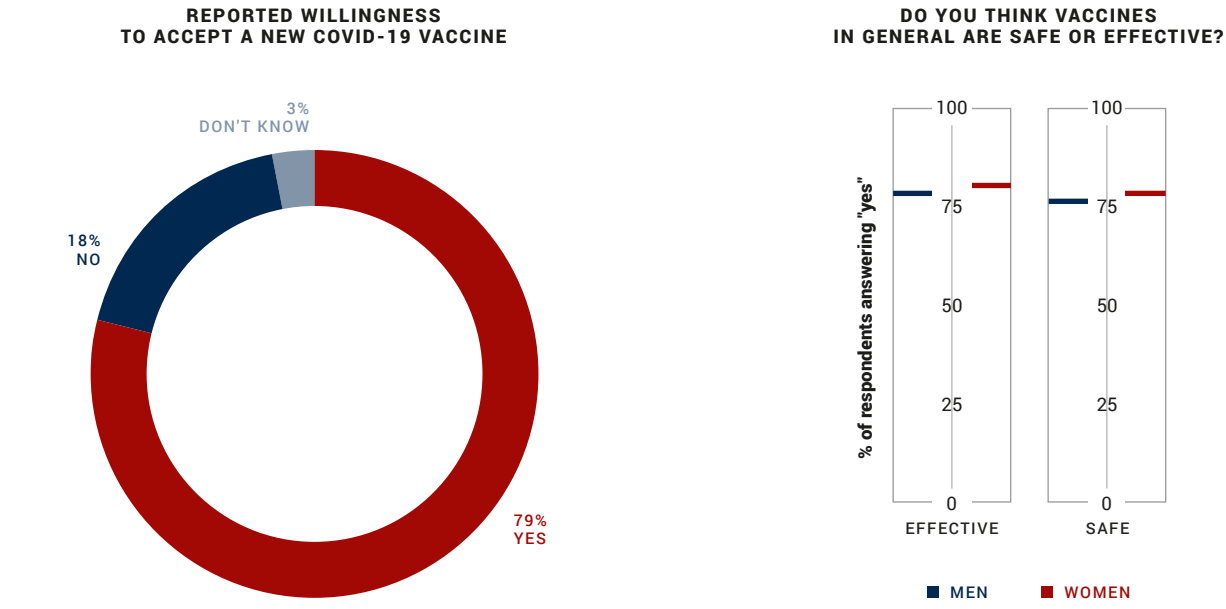
The perception of how well government provides basic health and water and sanitation services is divided among African nations. Respondents in relatively wealthier African nations, do not necessarily report better conditions than their less wealthy counterparts or the 34-country average. At the same time, respondents in a handful of less wealthy countries, such as Tanzania, rank their government's health-related services highly.



NOTE: The top figure show the share of respondents answering "well" or "fairly well" to the question, "How well does the government provide basic health services?"
The bottom figure shows the share of respondents answering "well," "fairly well," "fairly badly," or "very badly" to the question, "How well does the government provide water and sanitation services?"
SOURCE: Afrobarometer. (2021). "Round 8 (2019/2021)."

FIGURE 2.2. A SUPERMAJORITY OF AFRICANS INTEND TO TAKE THE VACCINE.

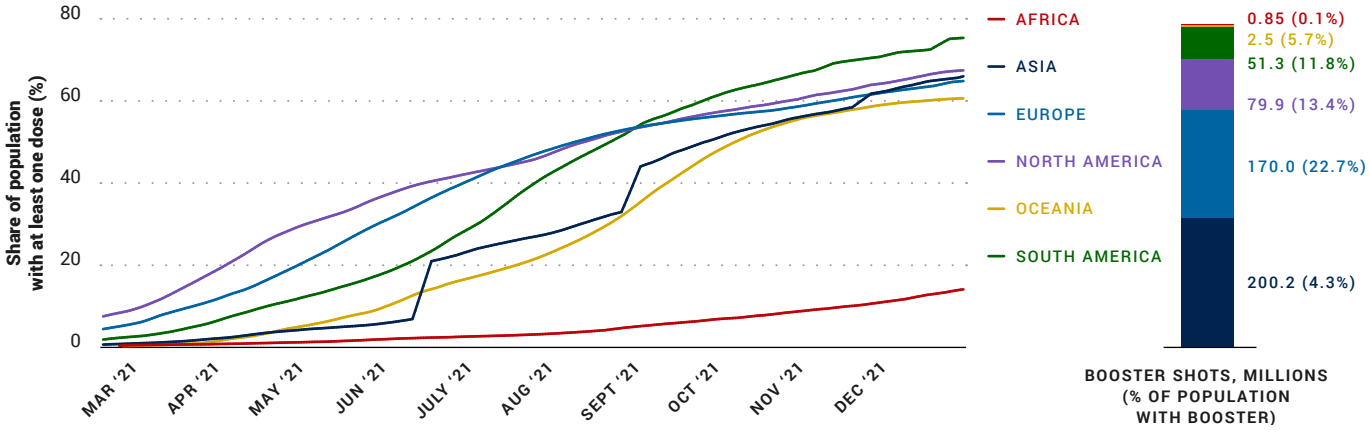
Despite reports of vaccine hesitancy in Africa, according to a 15-country study by the Africa CDC and the African Union, a wide majority of the citizens surveyed actually intend to take the vaccine once it becomes available. Moreover, over 75 percent of those surveyed believe that vaccines in general are effective and safe.



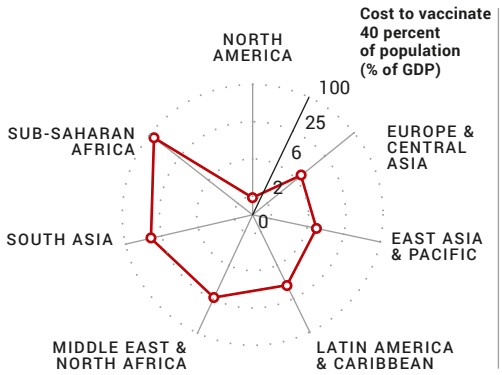
SOURCE: "COVID-19 Vaccine Perceptions: A 15-country study," Africa CDC and the African Union, 2021.

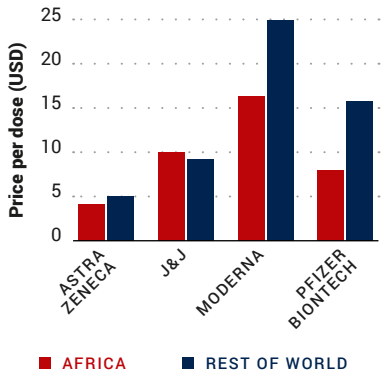
FIGURE 2.3. AFRICA'S COVID-19 VACCINATION STORY

Africa has received very small share of global vaccines, but vaccination rates have accelerated in recent months. As of this writing, more than 14 percent of Africans have now received at least one dose, and almost one million Africans have received a booster shot.

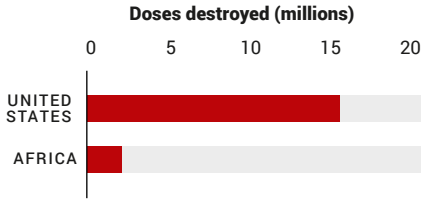


While Africa tends to pay less per dose for most vaccines through COVAX, the cost is more burdensome relative to the rest of the world.





Donations of nearly expired vaccines have led to Africa destroying some of its vaccine supply. Vaccine destruction has been prevalent in many countries, including the United States, which has destroyed more than 15 million doses so far.



Half of the COVID-19 vaccines delivered to the continent have been donations, mostly through COVAX. Donations have constituted a higher share of doses in low-income countries, while two-thirds of vaccines in upper-middle- and high-income countries have been purchased through deals directly with pharmaceutical companies. Chinese companies (Sinopharm and Sinovac) made up nearly one-fifth (18.7 percent) of such deals. Overall, the COVAX facility has brokered more than 57 percent of all vaccine deals in Africa.

	LOW-INCOME COUNTRIES					UPPER-MIDDLE AND HIGH-INCOME COUNTRIES				
VACCINE	COVAX	COVAX DONATIONS	DEALS	BILATERAL DONATIONS	TOTAL	COVAX	COVAX DONATIONS	DEALS	BILATERAL DONATIONS	TOTAL
JOHNSON & JOHNSON		22.4%	7.5%		29.9%		0.3%	24.3%	0.1%	24.7%
MODERNA		3.4%		0.8%	4.1%					0.0%
OXFORD-ASTRAZENECA	8.3%	13.4%		3.9%	25.7%	1.2%	1.8%	0.2%	1.8%	5.0%
PFIZER-BIONTECH	1.2%	14.1%		0.9%	16.1%	2.9%	20.5%	31.4%		54.8%
SINOPHARM	10.0%		3.1%	6.0%	19.0%			7.4%	2.0%	9.4%
SINOVAC	3.3%		0.2%	1.6%	5.2%			1.2%	0.7%	1.9%
SPUTNIK V/LIGHT								3.8%	0.1%	3.9%
TOTAL	22.7%	53.3%	10.8%	13.1%	100%	4.1%	22.6%	68.7%	4.7%	100%

NOTE: Price per dose data does not include donations. Covaxin is not included in the vaccine distribution tables due to low frequency. "Deals" includes bilateral and multilateral (EU, AU/AVAT) supply deals.
SOURCES: Airfinity. (2021). "COVID-19 Vaccination Data." Airfinity. Hannah Ritchi et al. (2021). "Coronavirus Pandemic (COVID-19)." Published online at OurWorldInData.org. Data retrieved on December 29, 2021.
UNDP. (2021). "Global Dashboard for Vaccine Equity." Data retrieved on October 20, 2021.
United Nations Development Programme. CDC. (2021). Vaccine disposal data. Center for Disease Control and Prevention. Data retrieved on September 2, 2021.

Vaccine inequity: Ensuring Africa is not left out

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The global roll-out of COVID-19 vaccines to date is neither inclusive nor adequately planned: Many countries are already administering boosters while the rest of the world is being left far behind. Despite the urgent need to increase vaccination, Africa has received too few vaccines from the global supply: As of this writing, out of more than 9 billion vaccines doses produced,[1] Africa has only received approximately 540 million (about 6 percent of all COVID vaccines, despite having 17 percent of the world's population) and administered 309 million doses.[2] Less than 11 percent of Africans are fully vaccinated.[3]

In other words, approximately 1.2 billion Africans have not received a single dose of vaccine and, at the current rate, much of Africa may not be vaccinated until 2023.[4]

The COVID-19 pandemic has exposed our continent's vulnerabilities in ensuring access to vital drugs, vaccines, and health technologies. More specifically, it has underscored the critical gap in vaccine manufacturing as a whole: Before COVID-19, Africa produced less than 1 percent of the vaccines that it consumed—importing over 99 percent—despite consuming over 25 percent of vaccines globally.[5]

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Such vaccine inequality is not simply unjust; given the potential for dangerous mutations that could affect vaccine effectiveness, it is epidemiologically wrong. As a result, Africa may well become the COVID epicenter.

The issue is no longer one of supply but rather one of unequal distribution. Despite the acute vaccine supply shortage in Africa, global vaccine production has been increasing at a secure rate, around 1.5 billion doses per month. By December 2021, over 1.2 billion doses could be available for donation by the G7 alone.[6] Western countries should agree to transfer their vast stockpile of unused vaccines to COVAX to ensure that the vaccines reach the places most in need. In addition, to ensure the best allocation and distribution of vaccines, COVAX should work with the African Vaccine Acquisition Task Team (AVATT), which has pooled resources to procure vaccines for its member states.

There is no greater test of moral solidarity and the world's ability to come together than this global health challenge.

There is no greater test of moral solidarity and the world's ability to come together than this global health challenge. Moreover, the solution is not charity: Given the emergence and spread of variants, the pandemic will not be over until it is over everywhere. Africa cannot and must not be left out of the vaccination conversation. Delays in vaccinating everyone have an economic cost as well. A recent study from *The Economist* estimated that, among other regions, sub-Saharan Africa will register the highest economic losses (3 percent of GDP from 2022-2025) globally due to slow vaccination rates.[7]

1 Our World in Data. (2022). "COVID-19 Data Explorer." University of Oxford. Accessed on January 4, 2022.
2 Africa CDC (2022). "Africa CDC Vaccine Dashboard." Africa CDC. Accessed on January 4, 2022.
3 WHO. (2021). "Coronavirus (COVID-19) Dashboard. World Health Organization. Accessed on November 26, 2021. https://covid19.who.int/
4 Padma, T.V. "COVID vaccines to reach poorest countries in 2023 — despite recent pledges." Nature, Vol. 595, No. 7867, 2021.
5 Nkengasong, J. (2021). "Why Africa needs to manufacture its own vaccines." Gavi.
6 Prediction current as of this writing, for more, see: September 2021 snapshot COVID-19 data." Airfinity, 2021.
7 Salmon, K., "Africa's biggest economies will struggle in 2022." November 8, 2021. The Economist.

THE FUTURE OF AFRICA'S HEALTH SYSTEMS CAN BE BRIGHT

Africa accounts for 23 percent of the world's overall disease burden yet only 1 percent of global consumption of healthcare goods and services, of which 44 percent is financed by government and the remainder is from out-of-pocket payments. This indicates that there is a significant health financing gap to treat the continent's disease burden.(For more on strategies for financing Africa's health sector, see the viewpoint on page 35.)[8]

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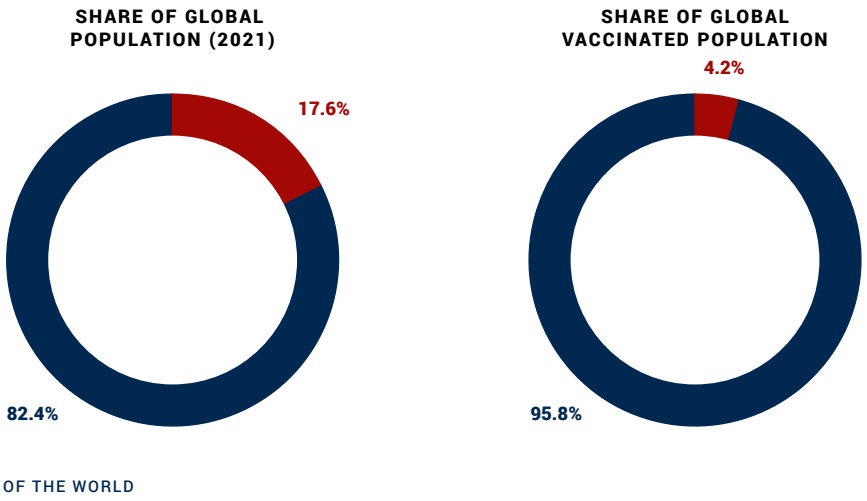
The African pharmaceutical sector is expected to grow from $19 billion in 2012 to $66 billion by 2022—the fastest growing in the world; the health and wellness sector is projected to be worth around $259 billion by 2030, with the potential to create over 16 million jobs.[9] Already, pharmaceutical manufacturers have announced plans to create factories in the region—although challenges in infrastructure, regulation, and know-how, among others, may hinder those efforts. (For more on the future of vaccine manufacturing in Africa, see page 39.)

Given these complex challenges, the pandemic has also confirmed the integral role of a strong regulatory system in a well-functioning health ecosystem. The African Medicines Agency (AMA), launched in September 2021, is the second continental health agency after the Africa Centres for Disease Control and Prevention (Africa CDC), with the mandate of enhancing regulatory oversight across the continent and meeting the challenges of access to quality, safe, and efficacious medicines.

The AMA can take advantage of and build on the ongoing efforts towards regulatory harmonization and economic inclusion through other key Africa programs:

- **African Continental Free Trade Area**
  Facilitates trade through simplification of regulation and minimization of red tape.

FIGURE 2.4. COVID-19 VACCINE ACCESS REMAINS DISPROPORTIONATELY LOW IN AFRICA



NOTE: Vaccination rates as of December 21, 2021.
SOURCE: "COVID-19 Vaccination Data." Airfinity, 2021.; "COVID-19 in Africa one year on: Impact and Prospects." Mo Ibrahim Foundation, 2021.

8 Ogbuoji, O. et al. (2019). "Closing Africa's health financing gap." The Brookings Institution.
9 Sidibé, Michel. (2021). "Why the creation of the African Medicines Agency is an urgent and compelling requirement for Africa?" Entreprenante Afrique.

- **Partnerships for African Vaccine Manufacturing (PAVM)**
  Supports local manufacturing.

- **African Medicines Regulatory Harmonization (AMRH) and African Vaccine Regulatory Forum (AVREF)**
  Both focus on medical products and regulation.

By partnering with these key programs, the AMA will be able to further strengthen continental research and development capacity, harmonize drug registration regulations, and help African countries comply with best practices and international standards.

These institutions, including AMA, do not exist in a vacuum. Some of the greatest strengths are when they work across institutions and sectors. And only in partnering together will they be able to safeguard the health security of Africa and the world as a whole.

Paying for the malaria vaccine: Will Africa take responsibility?

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OPPORTUNITY AND DEPENDENCY

Twelve decades after Ronald Ross won the Nobel Prize for his foundational work on understanding malaria transmission, the World Health Organization recently recommended widespread use of the new RTS,S malaria vaccine among children in sub-Saharan Africa and other regions with moderate to high transmission of *P. falciparum*, a deadly form of the malaria parasite. RTS,S achieves up to 40 percent reduction in malaria episodes—an important feat in absolute terms because more than 260,000 African children under the age of five die from malaria annually.[1]

The landscape of fighting malaria in Africa has four dimensions. First is the **human** toll in the form of preventable illness, disability, and death—this dimension prompts commitments to action. Second is the **political** dimension, multiple statements of commitment to curbing malaria and achieving Universal Health Coverage. Without financing, though, political statements are mere platitudes. Indeed, **financing**, the third dimension, reflects the continent's enduring dependency on external financiers. For example, a recent estimate showed that, in low-income countries, development assistance for health (DAH) provided about 70 percent of total immunization spending in 2017. In 31 African countries, DAH provided more than 50 percent of total immunization spending that year.[2] The dependency of most malaria-endemic African countries on external financiers belies the political declarations of commitment. The fourth dimension, **technology**, has two main categories. One is prevention by killing or keeping at bay the vector—the *Anopheles* mosquito—through indoor residual spraying (IRS) and insecticide-treated nets (ITNs), as well as preventive treatment with medicines. The other is case management through diagnosis and treatment with medicines. The new malaria vaccine strengthens the suite of technologies, all of which remain important.

The dependency of most malaria-endemic African countries on external financiers belies the political declarations of commitment.

1 WHO. 2021. WHO recommends groundbreaking malaria vaccine for children at risk.
2 Kizeli G et al. 2021. Estimating total spending by source of funding on routine and supplementary immunization activities for low-income and middle-income countries, 2000-17: a financial modelling study.

THE EASY WRONG VERSUS THE CHALLENGING RIGHT

While such externally driven [financing] mechanisms might have short-term merit in some cases, the strategic reality is that they have enduring pernicious effects on Africa.

There are two main options for financing the next phase of malaria control and elimination in Africa. One is continued dependency on external financing, including for the new vaccine—from development banks, foundations, and grant financiers like the Global Fund to Fight AIDS, Tuberculosis and Malaria (for ITNs and medicines) and Gavi (potentially for the malaria vaccine). Indeed, Gavi has announced its decision to commit $155.7 million to finance malaria vaccine introduction, procurement, and delivery for Gavi-eligible countries in sub-Saharan Africa in 2022-2025.[3] While such externally driven mechanisms might have short-term merit in some cases, the strategic reality is that they have enduring pernicious effects on Africa. They unwittingly deepen and prolong the dependency of Africa on solutions designed outside the continent, dampen incentives for Africa to develop its own institutions, shift the loci of accountability from African leaders and capital cities to politicians and unelected influencers outside the continent, and absolve African leaders of their responsibilities. They also leave the continent vulnerable to the vagaries of geopolitics during crises, as evidenced by the extreme inequity of access to COVID-19 vaccines despite abundant supplies in the Global North. For these reasons, the path laid by Gavi, while familiar and easy, is also wrong because of its long-term implications for the prolonging of Africa's dependency on the Global North.[4]

It is time for a strategic rethink. The alternative and prudent path is to approach the vaccine as an opportunity for African countries to *finally* take financial responsibility for the continent's fight against malaria. Accomplishing such a tall task requires three key steps. First is that African countries lead and own the continent's plan of attack against malaria based on the technical expertise and political legitimacy of the Africa Centers for Disease Control and Prevention (Africa CDC). Second is that financing should primarily come from the domestic budgets of African countries. The burden of malaria in Africa is mostly predictable, and thus amenable to multi-year public expenditure frameworks. African countries would finance those domestic budgets first from their own general revenues, supplemented by *prudently managed* domestic and international borrowing that is *on budget and within their control*. Third, African countries would seek time-limited external grant financing to complement domestic budgets. They, not Gavi or any other entity outside the continent, would set the terms of engagement and execution for all malaria programs and technologies in Africa, including the vaccines. External financing would add to, but not substitute for, domestic financing from public budgets. External technical assistance would support African programs without setting or dominating the agenda from outside. That new path, though wise, would be challenging. It would upend the status quo of dependency and cause discomfort within and outside the continent.

If Africa cannot or will not take financial responsibility for a scourge as old, as pernicious, and as visible as malaria, what does independence really mean?

Yet, the case for this strategic change is compelling. Malaria afflicts most households on the continent. It has none of the stigma associated with sexually transmitted diseases, hence governments have no need to fear that their bold action would offend any religious or social constituency. The mosquito vector that transmits malaria is known and visible to the naked eye, so there is little mystery about what brings the disease to the people. If Africa cannot or will not take financial responsibility for a scourge as old, as pernicious, and as visible as malaria, what does independence really mean?

3 Gavi. 2021. Gavi Board approves funding to support malaria vaccine roll-out in sub-Saharan Africa.

4 Adeyi O. 2022. Global Health In Practice. Investing Amidst Pandemics, Denial of Evidence, and Neo-dependency. World Scientific Publishing. In Press.

Strategies for financing Africa's health sector

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Never before in the last half century has Africa's health care landscape seen so many changes and attracted so much interest. In fact, Africa's health care sector would be worth an estimated $259 billion by 2030.[1] While these trends reveal a lucrative opportunity for the private sector, if not well-regulated, Africa's health care system could end up keeping more Africans below the poverty line. Thus, African countries have an opportunity to build on the health financing success of 2021 to strengthen the resilience of this sector and Africa's people.

Out-of-pocket (OOP) health spending in Africa remains excessively high compared to other continents—just one weakness in Africa's health systems that the COVID-19 pandemic has exposed. Indeed, despite the havoc the virus has wreaked, it has also provided the continent with opportunities to reshape its health infrastructure as well as its supply systems, urging a shift from donor and externally manufactured products to continental production systems leveraging opportunities created by the African Continental Free Trade Agreement.

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COVID-19 has created not only a health crisis, but an economic contraction never experienced before with such speed. In addition, the COVID-induced increase in unemployment is causing private sector spending on health to decrease at the same time COVID is adding to the cost of health care—in a region where private health expenditure already exceeds 50 percent of total health expenditure in over 15 countries (Figure 2.6). The immediate challenge for many governments is how to supply affordable and reliable health care in a fiscally constrained environment.

Prior to the COVID pandemic, a number of suggestions for increasing public support for the health sector had been proposed, primarily through domestic resource mobilization. However, in the face of economic contraction, increasing government revenue in the short term is no longer feasible.

The immediate focus of international financial institutions, therefore, has been to support African economies to raise additional concessional resources. Over the course of the crisis, the G-20 provided three phased options for additional liquidity: Debt service suspension, special drawing rights, and an innovative financing approach to vaccine acquisition. Multilateral financial institutions also increased disbursement of new credits to countries to support additional health spending.

The G-20–building on a proposal from the African finance ministers and the Economic Commission for Africa (UNECA)—adopted the African proposal for a debt service suspension initiative (DSSI) as the first liquidity injection for low-income countries. The DSSI allowed countries to suspend debt payment obligations to creditors in 2020 and 2021 so that the governments could use the financial resources to respond to the global health crisis. These newly available resources were used to purchase personal protective equipment (PPE) and also support local production of PPE, which helped stand up some part of the economy.

In early 2021, the G-20 further approved the issuance of Special Drawing Rights (SDRs)—which had been called for by African finance ministers early in the pandemic—to the magnitude of $650 billion, of which Africa received about 5 percent (worth around $33.6

1 Manlan, Carl. "This is the key to boosting economic growth in Africa." World Economic Forum, 2019.

billion). These additional resources increased liquidity to countries to respond to both the health and the economic crises.

The COVID-induced increase in unemployment is causing private sector spending on health to decrease at the same time COVID is adding to the cost of health care.

Relying on African institutions to finance and fight the pandemic has served Africa well throughout the crisis. As such, Africa has put in place a number of new institutions and innovative financing approaches to fund vaccine acquisition.

The first such institution is the African Medical Supplies Platform (AMSP), whose strength lies in its ability to pool demand for medical supplies in a transparent manner—thereby commanding lower market prices. Another important innovation was the creation of the African Vaccines Acquisition Trust (AVAT) by pooling SDRs from countries like Egypt, Nigeria, and Zimbabwe. It provided early resources for the African Export-Import Bank (Afreximbank)[2] to set up a facility for vaccine procurement. Under the leadership of African Union Special Envoy Strive Masiwiya, and in collaboration with the African CDC led by Dr. John Nkengasong and UNECA, AVAT has been able to procure over 40 percent of Africa's COVID vaccine needs[3] (which includes a 110 million dose purchase from Moderna brokered by the U.S.).[4] With the support of a $500 million donation from the Mastercard Foundation,[5] the costs of vaccines under the AVAT mechanism are on par with those procured via COVAX. Indeed, in 2022, a major focus for leaders must be to administer procured vaccines: As of January 2022, less than 11 percent of Africa is fully vaccinated. (For more on vaccine equity, see the viewpoint on page 31.)

Afreximbank also developed the AVAT No-Fault Compensation Program for Participating Member States. This program, the first of its kind on the continent, provides no-fault lump-sum compensation in full and final settlement of any claims to individuals who have suffered a "serious adverse event" resulting in permanent impairment or death associated with a COVID-19 vaccine procured or distributed under the AVAT Framework within any of the participating member states.

The development of these innovative mechanisms means Africa can now go to the market to procure its own health commodities, empowering Africa to move from importing over 90 percent of its health needs to producing equipment and pharmaceuticals on the continent. This dynamic has already begun with countries like South Africa, Senegal, and Algeria increasing capacity and Rwanda, Kenya, Nigeria, and Morocco setting up new capacity for health sector commodity manufacturing.

FIGURE 2.5. GLOBAL HEALTH EXPENDITURES (% OF GDP)

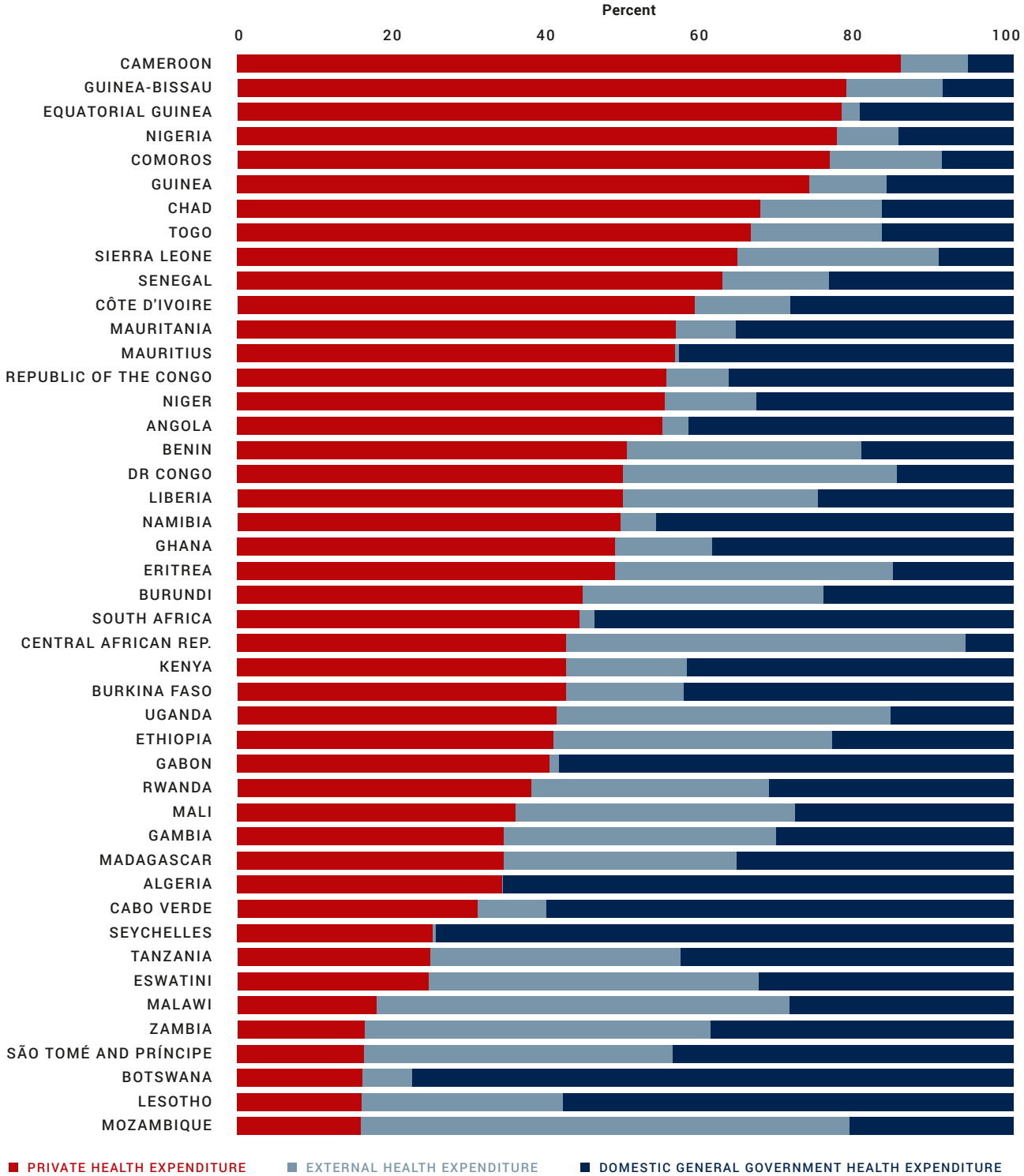
	HEALTH SPENDING (% OF GDP)		
COUNTRY GROUPS	**2000**	**2010**	**2019**
HIGH-INCOME	6.4	7.6	8.3
UPPER-MIDDLE-INCOME	5.7	6.0	6.5
LOWER-MIDDLE-INCOME	4.7	4.3	5.0
LOWER-INCOME	5.5	6.4	6.0

NOTE: Country groups based on World Bank classification.
SOURCE: WHO Global expenditure on health 2021.

2 "Africa Signs Historic Agreement with Johnson & Johnson for 400 Million Doses of COVID-19 Vaccines." The African Export-Import Bank (Afreximbank), 2021.
3 "J&J signs Covid-19 vaccine purchase agreement with AVAT." Pharmaceutical Technology, 2021.
4 Jerving, Sara. "Moderna to supply the African Union with 110 million COVID-19 vaccines." Devex, 2021.
5 Disclosure: The Mastercard Foundation supports AGI's work on youth employment.

FIGURE 2.6. STRATEGIES FOR FINANCING AFRICA'S HEALTH SECTOR

In 2019, nearly three-quarters of health spending in low-income countries was financed by a combination of out-of-pocket (OOP) spending and external aid. In these countries, the share of external aid rose from 16 percent in 2000 to 29 percent in 2019, while the share of government transfers declined. Lower-middle-income countries relied less on external aid and more on government transfers and social health insurance contributions, though OOP spending remained high. In these countries, social health insurance contributions rose slowly but remained a very small share of total health spending. In upper-middle-income countries, more than half of health spending was financed by government transfers and social health insurance contributions, and 9 percent was financed by voluntary health insurance contributions. High-income countries had the lowest share of OOP spending (21 percent) and the largest shares of spending from government transfers (48 percent) and social health insurance contributions (22 percent).



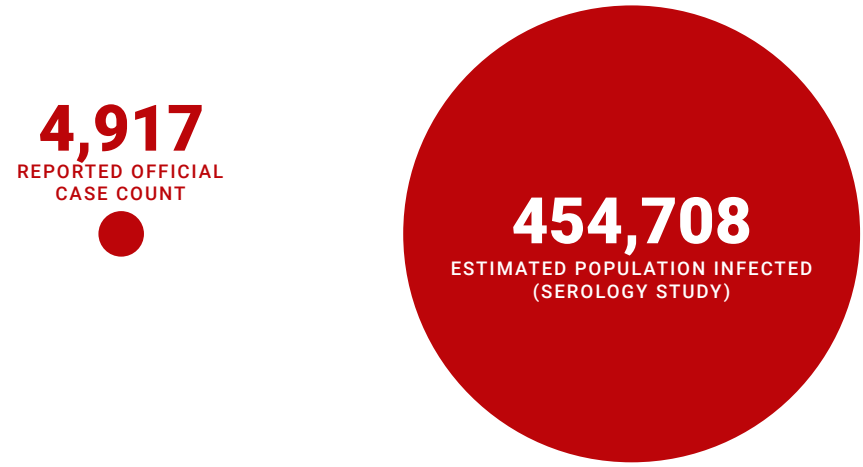
SOURCE: Authors' calculations based on WHO global health expenditure data.

With the COVID-19 pandemic, the need for closer collaboration between health and finance ministers became even more important. Indeed, inclusive, efficient, and effective health care financing needs both working together. There is now a call to create a Global Health and Finance Board[6] to address fundamental problems of global governance for health, some of which were so clearly exposed by the (mis)management of the pandemic.

Africa is ahead of the game on this effort: Under the leadership of the African Union heads of state, Africa CDC, and UNECA, relevant ministers have held bi-monthly coordination meetings to align resources and delivery. This new mechanism could also be used post-pandemic to build and structure financing for more affordable and improved health care on the continent. The World Bank, the Mastercard Foundation, UNICEF, GAVI and others are already working through this mechanism to help address the biggest health challenge for Africa in 2022: vaccinations.

FIGURE 2.7. TESTING SCARCITY LIKELY MASKED EARLY COVID SPREAD IN AFRICA

Early in the pandemic, limited access to test kits, an important tool for indentifying the spread of the virus, hindered widespread testing for COVID-19 in sub-Saharan Africa. As a result, African governments narrowed the eligibility criteria for testing hoping to best utilize their scarce equipment, which also led to depressed case counts. In fact, serology studies, which can uncover a record of infection by detecting anti-bodies formed in response to the virus, later revealed that the spread of the virus was much larger than the official case count. In Zambia, as shown in the figure, a serology study indicated that COVID-19 was almost 100 times more prevalent than recorded by official case counts.



NOTE: The serology study tested more than 4,000 randomly sampled Zambians for active infection and antibodies over July 4 to July 27, 2020.
SOURCE: Mulenga et al. "Prevalence of SARS-CoV-2 in six districts in Zambia in July, 2020: a cross-sectional cluster sample survey." *Lancet Global Health*, Vol 9, 2021.

6 "G20 High Level Independent Panel on Financing the Global Commons for Pandemic Preparedness and Response" Financing the Global Commons for Pandemic Preparedness and Response, 2021.

The future of vaccine manufacturing in Africa

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Reminiscent of the 2009 H1N1 Influenza pandemic, the COVID-19 pandemic is perpetuating the stark reality of vaccine insecurity in Africa. Less than 1 percent of all vaccines used on the continent are locally produced—a statistic that reveals the region's intense vulnerability and overdependence on foreign supplies. Compounding these challenges are other obstacles such as the high cost of vaccine development, vaccine market fragmentation, and need for building workforce capacity, to name a few. When these challenges are juxtaposed with the absence of a long-term mobilizing vision, paucity of political will to invest in public health goods and technologies, and absence of enabling policies to incentivize investment and maintenance of vaccine manufacturing infrastructure, the skepticism of a bright future for vaccine manufacturing in Africa appears justified.

Although there are no silver bullets to fixing the future of vaccine manufacturing in Africa, much has changed since 2007 when the Pharmaceutical Manufacturing Plan for Africa (PMPA), an African Union-led tool for catalyzing local pharmaceutical production, was adopted.[1] Furthermore, in addition to several technological innovations reducing the cost of continental production, national governments and allied agencies are beginning to stake a claim on initiatives such as the launch of the African Continental Free Trade Area, the establishment of the African Medicines Agency, and the development of the Framework For Action (FFA) by the Partnership for African Vaccine Manufacturing (PAVM) of the Africa Centers for Disease Control.

Given increased collaboration among the bodies of the FFA, national pharmaceutical agencies, and independent, private companies, there is cause for productive optimism. Indeed, capacity building is occurring at various stages through technology transfer partnerships at existing, developing, and prospective manufacturing facilities as exemplified by Aspen in South Africa, Institut Pasteur in Morocco, and the government of Ghana, respectively. Installed-base scale-up efforts by Biovac in South Africa and first-of-its-kind vaccine production initiatives in Nigeria by Innovative Biotech, in collaboration with Merck, are also manifesting. At the international agency level, the World Health Organization has established a global mRNA technology training hub in Africa. The African Vaccine Manufacturing Initiative (AVMI) is providing leadership, building on its experience and expertise over more than 10 years of advocacy for local vaccine manufacturing in Africa.

Less than 1 percent of all vaccines used on the continent are locally produced—a statistic that reveals the region's intense vulnerability and overdependence on foreign supplies.

So, the sun may yet shine on vaccine manufacturing in Africa. We have the galvanizing vision and the mobilizing strategies of the PAVM with the unprecedented engagement of all major stakeholders in Africa and beyond—including politicians and funding institutions. Fundamental elements critical to securing a bright future—and ensuring its sustainability—should focus on a long-term Africa-led multi-stakeholder agenda that allows for scientific potential actualization and local ownership, as articulated in a three-point agenda in a 2014 paper on HIV vaccines:[2]

1 Byaruhanga, J. (2020). The Pharmaceutical Manufacturing Plan for Africa. AUDA-NEPAD News.

2 Nweneka, C. V. (2014). Taming the Monster: Need for Africa-initiated, Africa-led HIV Vaccine Research and Development Advocacy in Africa. Journal of Vaccines & Vaccination, 05(05).

FIGURE 2.8. THE NEXT STEP: AFRICA AIMS TO MANUFACTURE 60% OF ITS VACCINES BY 2040

Africa currently imports nearly all its routine vaccine supply. The 1 percent of vaccines Africa produces (roughly 12 million doses) are limited to downstream steps such as filling and finishing or labeling and packaging. Given that Africa represents a quarter of the global demand for vaccines, but only accounts for 0.1 percent of global vaccine production, the African Union and Africa CDC have outlined a plan to manufacture 60 percent of Africa's routine vaccinations by 2040.

SOURCE: "African Union and Africa CDC launches Partnerships for African Vaccine Manufacturing." Africa Center for Disease Control, 2021.; "COVID-19 in Africa one year on: Impact and Prospects." Mo Ibrahim Foundation, 2021.

- **Agenda 1**
  Development of a long-term, focused, well-coordinated, Africa-initiated, Africa-led vaccine research and development (R&D) advocacy targeting the highest ministerial level in Africa, corporate bodies, African philanthropists, and all the major stakeholders.

- **Agenda 2**
  Institution of deliberate strategies to address the limited vaccine pipelines such as diversifying the players on the field through the establishment of several vaccine related freedom to discover grants with very transparent and liberal eligibility criteria, and establishing regional biotechnology incubation centers in Africa to encourage small groups of scientists to develop their potentials.

- **Agenda 3**
  Building genuine local ownership of vaccine projects through effective partnerships, effective communication, and enactment of policies to compel externally funded vaccine-related projects to demonstrate adequate local involvement at all stages of the project before granting final approval.

Quality vaccines are being produced in Africa; that effort now needs to expand. We have no choice but to do it ourselves.

Africa's vaccine production destiny must transform beyond the current "fill and finish" model to full end-to-end manufacturing and include vaccine research and development. (For more on health R&D in Africa, see the viewpoint on page 44.)

There is a promising future for vaccine manufacturing in Africa. Bottlenecks (e.g., weak investments in vaccine manufacturing by African governments; weak regulatory capacity for vaccine research, development, and production; low interest in vaccine production in Africa by global vaccine stakeholders; and uncertainties in the demands for Africa-made vaccines by African countries)[3] that caused previous efforts to fail must be fixed. Current

3 Makenga, G., Bonoli, S., Montomoli, E., Carrier, T., & Auerbach, J. (2019). Vaccine Production in Africa: A Feasible Business Model for Capacity Building and Sustainable New Vaccine Introduction. Frontiers in Public Health, 7, 56.

and future opportunities must be exploited maximally through diverse partnerships and the creation of an enabling multi-centered vaccine development and manufacturing ecosystem in Africa. In the end, it is only Africans that can change the narrative for Africa. Quality vaccines are being produced in Africa; that effort now needs to expand. We have no choice but to do it ourselves.

Africa's just energy transition could boost health outcomes

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Transitioning some 900 million Africans from biomass fuels to more affordable and environmentally friendly options over the next year could help prevent the deaths of millions of Africans (particularly women and children), foster social stability, and unlock significant labor market productivity. Each year, air pollution caused by environmentally hazardous wood and coal cooking technologies results in respiratory illnesses, natal complications, heart disease, and premature deaths of children.[1] Globally, such pollution accounts for almost 60 percent of black carbon emissions, which amount to a gigaton of carbon dioxide annually.[2] Concerted efforts over the past decade have failed to make an appreciable dent in biofuel use across the continent—partly because most households are yet to have access to, or afford, viable options for clean technology. (For more on strategies for addressing the drivers and impacts of climate change, see Chapter 4.)

Adopting less polluting cooking fuels across Africa will reduce the financial, environmental, and social costs imposed by frequent illnesses and untimely death that result from the use of biomass fuels. Research indicates that smoke inhalation from indoor and outdoor cooking with such polluting fuels causes between 1.6 million and 3 million deaths of African children every year.[3] These poor health outcomes further impose a substantial socio-economic burden on families. Figure 2.9 illustrates how wood and charcoal provide cooking fuel for almost three-quarters of African households.

African households must be able to afford alternative fuel sources—a fact highlighted by the COVID-19 pandemic, which pushed some 100 million Africans back into using wood and coal because they could no longer afford clean energy options.

The impacts of these fuels are also felt on the local economy and labor force. On average, African women spend 20 hours a week collecting firewood and up to 4 hours a day cooking on traditional stoves. Adopting cleaner and more efficient cooking fuels will free this important segment of Africa's labor force up to engage in economic activity, thereby making households more likely to be able to afford cleaner fuels and technology. Furthermore, improved health outcomes will save households money and facilitate greater investment in human capital. Environmentally, biomass fuel is estimated to be responsible for the deforestation of 2 million hectares per year—twice the size of The Gambia.[4]

While African countries renewed their commitment to transitioning from polluting cooking fuels at the U.N. Climate Change Conference (COP26), they were resolute in their call for an affordable energy transition.[5] African households must be able to afford alternative fuel sources—a fact highlighted by the COVID-19 pandemic, which pushed some 100 million Africans back into using wood and coal because they could no longer afford clean energy

1 Ibrahim, M. and Robinson, M. (2021). "Africa: Clean Cooking - Lifting the Lid on Dirty Cooking Fuels." AllAfrica.com.
2 World Bank. (2019). "Clean cooking: Why it matters." World Bank Group.
3 Thurber, M. and Moss, T. "12 reasons why gas should be part of Africa's clean energy future." World Economic Forum.
4 Collins, B. (2019). "Africa's $40B Market for Cooking Fuel Is Being Cleaned Up: Q&A." Bloomberg.
5 UN. (2021). "Priorities for Africa at COP26 and Beyond." United Nations.

Affordability is an important variable in this context, as the highest death rates from cooking fuel pollution occurs in poorer African countries.

options.[6] Affordability is an important variable in this context, as the highest death rates from cooking fuel pollution occur in poorer African countries. Furthermore, over the short to medium terms, the transition must be based on Africa's comparative advantage. A pivot to natural gas would meet these requirements.[7]

Recent research from the University of Liverpool suggests that attainable supply-side interventions, like reducing the distance to liquefied natural gas (LNG) retail points and improving access to affordable multi-burner stoves, could expand usage by up to 58 percent of households by 2030.[8] Moreover, the combination of increasing incomes, a more tech-savvy population, and growing urbanization suggests a growing market for cleaner cooking solutions. Capital investments in this sector will not become "stranded assets" for two reasons. First, the quantitative and qualitative growth of domestic markets bodes well for profitability. Second, any investments would have been fully amortized by 2050. The transition away from biomass cooking fuels will enable the continent to invest in the technology and infrastructure that will facilitate the adoption of even cleaner fuel sources in the future.

Africa's just energy transition is an urgent imperative: It is no longer an option. African governments and their development partners must step up to provide the right incentives alongside an enabling regulatory ecosystem to expedite this transition. Through its Climate Promise, the United Nations Development Program (UNDP) is committed to working with governments and local communities to increase access to clean and affordable energy for 500 million Africans.[9] Urgent attention must also be given to innovative financing mechanisms. Blended finance could help de-risk the capital required for longer-term investments in the infrastructure required to provide LNG access to households, particularly those in remote locations. Incentives should also be extended to local small- and medium-sized enterprises so that they can provide the technology and products to support Africa's just energy transition at the household level.

6 IEA. (2020). "World Energy Outlook 2020." International Energy Agency

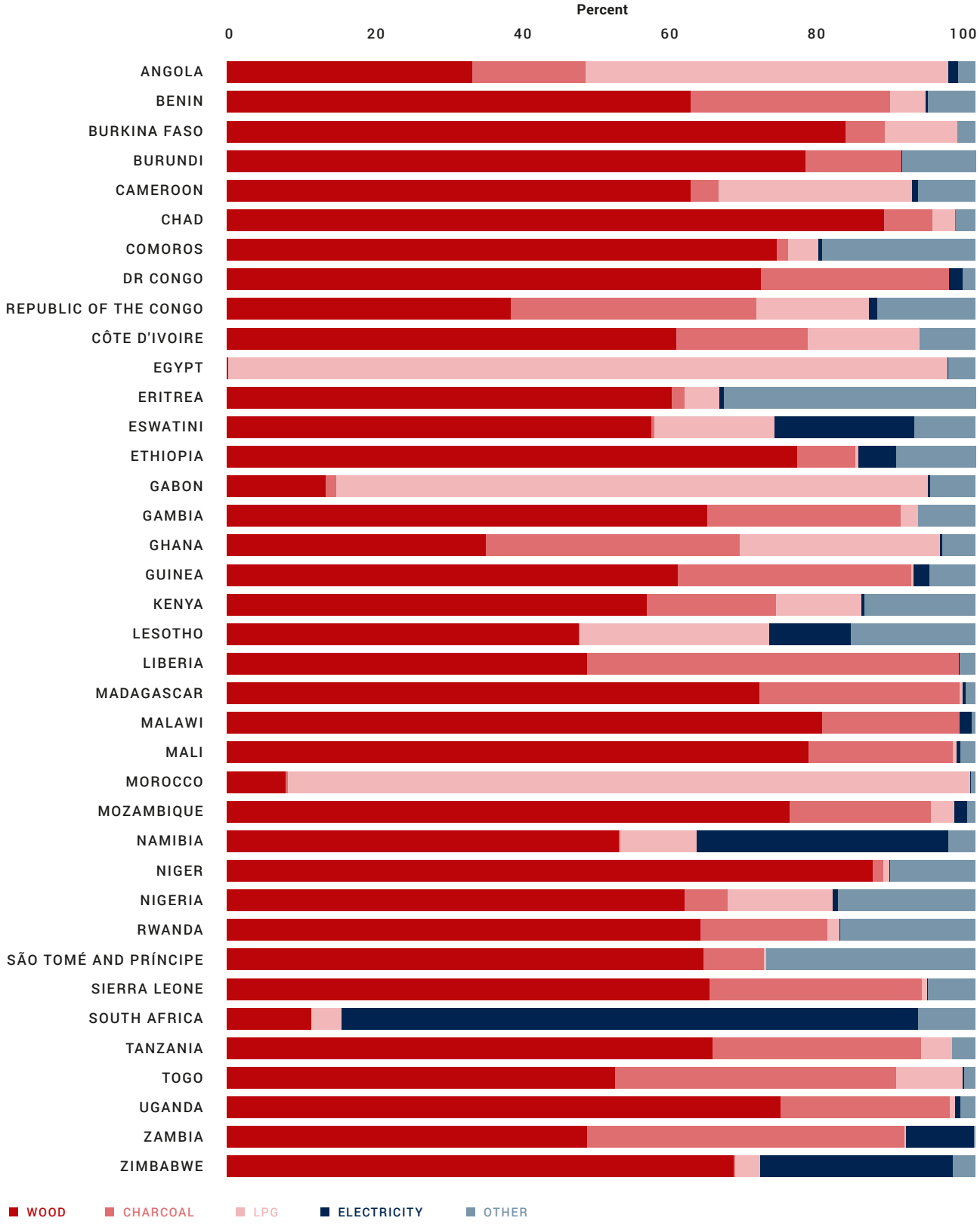
7 In fact, Africa is home to some 800 trillion cubic ft of known natural gas reserves, which can be utilized to initiate and expedite Africa's just energy transition.

8 Shupler, M., Mangeni, J., Tawiah, T. et al. (2021). "Modelling of supply and demand-side determinants of liquefied petroleum gas consumption in peri-urban Cameroon, Ghana and Kenya." Nature Energy.

9 UNDP. (2021). "Helping countries reach their climate goals." United Nations Development Programme.

FIGURE 2.9. SOURCES OF COOKING FUEL IN AFRICA, SELECT COUNTRIES

Africans use a variety of fuel sources for cooking, but their prevalence is markedly diverse across countries. Many countries in sub-Saharan Africa rely more heavily on wood and charcoal as their main cooking fuel than North Africa, although South Africa notably uses electricity more than any other sampled African country.



NOTE: LPG: Liquefied Petroleum Gas. LPG is most commonly a mixture of butane and propane.
SOURCE: World Bank (2021). Sustainable Energy for All (SE4ALL) database from WHO Global Household Energy database. World Bank Group.

What's next for R&D in health for Africa?

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Africa is endowed with very rich biodiversity, among which include pathogens causing many of the infectious diseases afflicting the continent. Sadly, Africa has failed to use this as an opportunity to develop solutions (e.g., diagnostics, therapeutics, and vaccines) that could benefit the world. Although Africa presently produces less than 2 percent of the global research output, scientists on the continent have always demonstrated their capability to take charge when the opportunity calls and the resources abound. For instance, at the beginning of the COVID-19 pandemic, the African Center of Excellence for Genomics of Infectious Disease (ACEGID) at Redeemer's University in Ede, Nigeria, generated the first sequence of the SARS-CoV-2 on the continent at an unprecedented speed of 72 hours from sample receipt.

This success catalyzed the surge of genomic sequencing by scientists on the continent, whose data were effectively used to guide the public health response to the COVID-19 pandemic in Africa. Translational applications of these genomic sequences in Africa include the use of the gene editing technology to quickly develop a SARS-CoV-2 rapid diagnostic test (SHINE) as well as the development of COVID-19 DNA-based vaccine (DIOSYNVAX) at ACEGID in collaboration with the Broad Institute and University of Cambridge.

It is clear from the above examples that, in less than a decade, Africa has harnessed and localized genomic technology. However, its effective use and translational applications on the continent is limited and may not move beyond the current level of development. Many obstacles prevent the forward movement of the genomic capability demonstrated by African scientists including: 1) lack of political will; 2) lack of sustainable funding for research and development (R&D) by governments, regional funders, developmental organizations, or African private sector and philanthropists; 3) lack of local infrastructure to support R&D; 4) lack of local investment in the development and emergence of the biotechnology sector; and 5) lack of well-trained and skilled human resources. In addition, the political and academic ecosystems in Africa are not leveraging the rich and diverse resources available through its diaspora.

Africa must realize that the future of the continent's economic growth and development is inextricably linked to R&D.

Africa must realize that the future of the continent's economic growth and development is inextricably linked to R&D. The continent needs to take advantage of the weaknesses exposed by COVID-19 pandemic to develop a well-articulated plan to accelerate translational R&D with a focus on diagnostics, therapeutics, and vaccines for infectious and non communicable diseases. The plan should be backed by national governments through pan-African political, health, and financial organizations with the help of the private sector. It will require leveraging the existing excellent genomic hubs in Africa, as well as the richness and the diversity of the African diaspora. More importantly, it will require long-term and sustainable investments in infrastructure development and human capacity building.

How strengthened political engagement can lead to improved health outcomes in Africa

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By developing evidence-based national medicines policies, African member states have demonstrated that they are prioritizing universal access to essential medicines and health products. Notably, 95 percent of African countries have developed policies and plans on medicines, over 90 percent on blood safety and 85 percent on traditional medicine. Such policies are vital for a robust and effective health infrastructure: For example, by developing essential health products lists, countries are better able to regulate and procure health products that contribute to patient safety and better quality of healthcare.

The strengthened political engagement has contributed to improved availability and affordability of some essential medicines, particularly for tuberculosis, HIV, and malaria. For example, in 2020, 76 percent of people living with HIV in Africa had access to antiretroviral drugs (ARVs). However, the overall availability of essential medicines in Africa remains low.[1] In particular, the availability of medicines for non-communicable disease medicines is only about 40 percent.

COVID-19 has exposed the extreme vulnerabilities of the global supply chain. African countries import between 70 and almost 100 percent of their medicines, vaccines, and other health products.[2] At the beginning of the pandemic, low-income countries were relegated to the back of the queue. Border closures and protective measures restricted exports, which led to a 40 percent increase in delays and disruptions.[3] Prices of health products increased due to market inflation, leading to products being at least five times more expensive in volume than in Europe and North America. The variation in prices between countries adds to the complexity of the market: For example, the price of a cylinder of oxygen sufficient to treat an adult for a day varies from $112 in Guinea to $23 in Kenya.[4] These prices are completely out of reach for most health facilities in Africa. In fact, in Nigeria, hospitals rank oxygen as one of the most expensive treatments.

Strengthened political engagement has contributed to improved availability and affordability of some essential medicines, particularly for tuberculosis, HIV, and malaria.

The COVID-19 pandemic brought us back to reality, emphasizing the difficulties in maintaining a continuous supply of health products in Africa. However, to scale up local production, Africa will need to elevate regulatory standards, shape the market, and enhance the continent's negotiation capacity in the global pharmaceutical market. The African Medicines Agency is contributing to this agenda by providing a continental-wide harmonization of regulatory standards and processes; facilitating uptake of innovative technologies for emergency preparedness and response; coordinating joint safety monitoring and assessments of medical products especially complex molecules (e.g., vaccines and biotherapeutics); and providing advice on local pharma industry development in line with the Partnerships for African Vaccine Manufacturing (PAVM), the Pharmaceutical Manufacturing Plan for Africa (PMPA) in support of African Continental Free Trade Area (AfCFTA).

1 Mattke et al. "Improving Access to Medicines for Non-Communicable Diseases in the Developing World." RAND Corporation, 2011.
2 World Health Organization. (forthcoming).
3 Ibid.
4 Ibid.