



Special Series on COVID-19

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August 18, 2021

Vaccinating against COVID-19 to Avert a Disaster in Africa

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The vaccine rollout in sub-Saharan Africa, the slowest in the world, is mired in challenges ranging from global vaccine production constraints, stockpiling by advanced economies, export restrictions, and logistical obstacles. In the short term, sharing excess doses by advanced economies is urgently needed to protect essential workers. Going forward, a [risk-based approach](#) using a range of available tools such as testing, genetic sequencing, and isolation to mitigate the risks of outbreaks of more dangerous variants ahead of the vaccine rollout is needed.

IN THE MIDST OF A THIRD WAVE OF THE PANDEMIC

Sub-Saharan Africa is in the midst of a third wave of the COVID-19 pandemic. For a while, sub-Saharan Africa (SSA) seemed to have relatively low numbers of cases and deaths compared to other regions. However, in the recent months, the growth of cases in SSA has been outpacing other regions. In mid-July, the daily case count in many countries reached a new record high, surpassing the peaks in the previous wave that swept the region at the beginning of the year. Moreover, granular studies and anecdotal evidence indicate that the situation could be far more dire as there have been sizable spikes in excess deaths and prevalence, including in South Africa, where access to testing is relatively high.¹

¹ According to estimates from University of Washington Institute for Health Metrics and Evaluation, the average SSA death rate is almost three times higher, compared to 2.3 in other emerging market and developing economies (EMDEs) and 1.6 in advanced economies, likely owing to weaker healthcare infrastructure in SSA and generally to higher prevalence of malnutrition and greater disease burden. The sample includes 37 SSA countries, 87 other EMDEs, and 38 advanced economies. See also Barrie and others (2021) and Mwananyanda and others (2021) for significant underreporting of cases and deaths in Sierra Leone and Zambia, respectively.

Although the death toll from COVID-19 might be smaller than other diseases for now, its potentially explosive speed of contagion and knock-on effects make it a priority to tackle. The 1918 influenza illustrates this danger,² when mortality rates are estimated to have reached more than 5 percent of the population in Cameroon, Ghana, Kenya, South Africa, and The Gambia, which is far higher than the estimated 1 percent in Europe and the United States. The death toll is in part explained by the compounding of effects, which included a total disruption of economic activities, for example, in agricultural cycles leading to famine and quasi-famine situations. In other words, compared to malaria and other diseases burdening the continent, a pandemic such as COVID-19, if not confronted in its early stages, can rapidly dislocate all activities, including other health interventions—with far greater cascade risks. The World Health Organization (WHO) estimates that COVID-19 could provoke 1 million excess deaths in SSA as a result of disruptions in the fight against other diseases.³

Guarding against complacency is essential in avoiding history repeating itself. The delayed arrival of COVID-19 on the African shores is eerily reminiscent of what [happened in 1918](#), and how it subsequently evolved should be a warning of the looming risks. How the situation rapidly deteriorated in Argentina, Brazil, and India provides a further warning. In these countries, while the situation seemed under control until recently, contagions and deaths soared at unprecedented rates, overwhelming healthcare systems and affecting the younger population.

Vaccination is key to avoiding these risks and safeguarding the economic recovery. The region's economy has been hit hard by the pandemic, contracting by 1.8 percent in 2020, the worst performance on record. Furthermore, SSA is set to be the world's slowest-growing region in 2021. Since the first vaccine dose was administered in early January in Seychelles, as of August 15, only about 13 million people or 1.2 percent of population in SSA have been fully vaccinated, far from reaching herd immunity this or next year. Further delays in vaccination could worsen the pandemic dynamics in the region, threatening not only to exact a sizable human toll, but also to cause deep long-lasting economic scars, with the region diverging dangerously as the global economy rebounds.

A SLOW START IN THE VACCINATION CAMPAIGN

The vaccine rollout in SSA has been the slowest in the world. Based on data from 43 countries, as of August 15, about 39 million doses have been administered in SSA, accounting for only 0.9 percent of global total, or 3.6 doses per 100 people, not even sufficient to cover essential frontline workers in most countries (Figure 1). In contrast, vaccine doses administered in advanced economies and non-SSA EMDEs stand at 107 and 63 per 100 people, respectively. Likewise, the number of fully vaccinated people stands at 2, 49, and 23 per 100 people in SSA, advanced economies, and non-SSA EMDEs, respectively.

Given the limited supply, the pace of vaccination varies considerably across countries. South Africa has administered the largest number of doses in the region at 9.4 million, fully vaccinating only 6.9

² Studies show that the influenza eventually reached SSA in 1919 after the return of demobilized troops from Europe following the end of WWI.

³ Extrapolating from studies showing a more than 50 percent decline in services ranging from the provision of skilled birth attendants to the treatment of malaria cases in May, June, and July 2020 in 14 African countries.

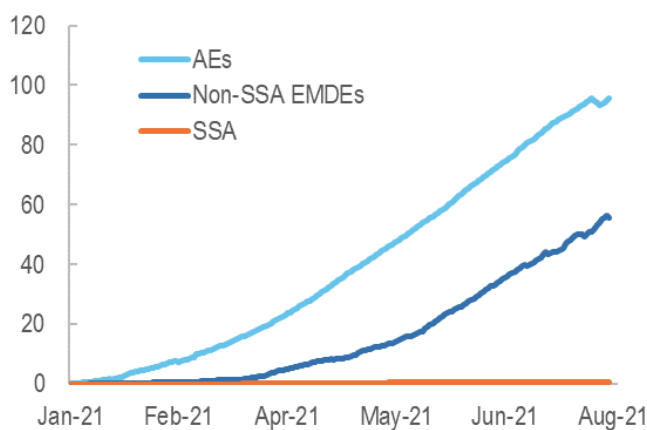
percent of its population (Figure 2, Annex Table 1). On the other end of the spectrum, Seychelles has administered 141,435 doses, which translates into 69 percent of its population being fully vaccinated, with

an additional 4 percent having received the first dose.

Vaccination proceeded in stages in many countries, accelerating when the new supply of vaccines arrived and tapering off as the supplies dwindled (Figure 3). For example, Kenya received 1.02 million doses of the AstraZeneca (AZ) vaccine through COVID-19 Vaccines Global Access (COVAX) and a donation of 100,000 doses from India in early March, but the vaccinations slowed to a trickle by mid-May with no further delivery from COVAX in sight. The vaccinations picked up again in early June after South Sudan, unable to preserve the doses and fearing their expiration, returned 72,000 doses of the AZ vaccine to COVAX which were then re-allocated to Kenya, and in early July, when 182,400 doses of the AZ vaccine were donated by France. Similarly, Botswana received 24,000 doses of the AZ vaccine through COVAX and a donation of 30,000 doses from India in early March, and by end-April most doses had been administered. The vaccinations picked up again in early June, after 38,400 doses of AZ and 19,890 doses of Pfizer vaccines were received through COVAX and 200,000 doses of Sinovac were donated by China.

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Figure 1. COVID-19 Doses Administered
(Per 100 people, 7-day MA, as of Aug. 15, 2021)

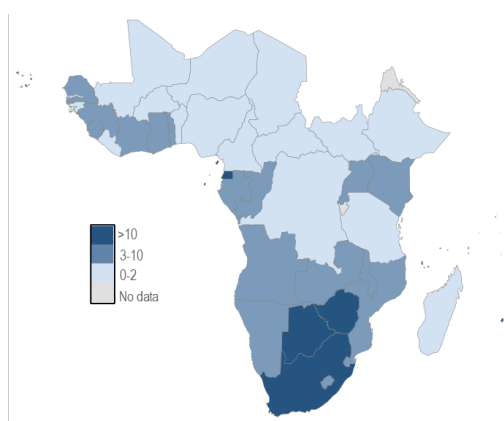


Sources: Our World in Data; IMF, World Economic Outlook database; and IMF staff calculations.

Note: AE = advanced economies; EMDE = emerging market and developing economies; SSA = sub-Saharan Africa.

Figure 2. Administered COVID-19 Doses

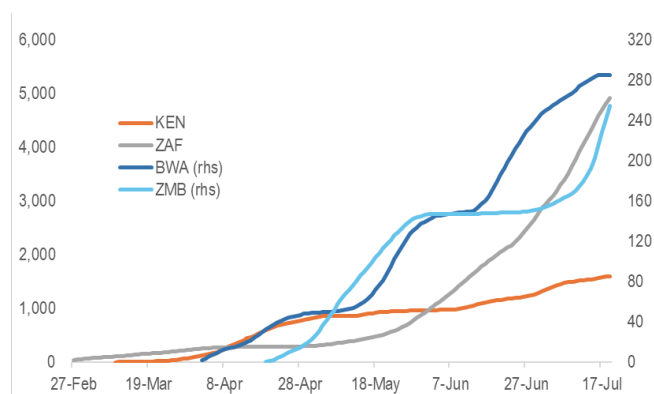
(Doses per 100 people, as of Aug. 15, 2021)



Sources: Airfinity; and IMF staff calculations.

Figure 3. Administered COVID-19 Doses, 2021

(Thousands, cumulative, 7-day MA)



Sources: Our World in Data; and IMF staff calculations.

Countries in the region have worked quickly and effectively to administer limited supplies, while also assuaging safety concerns and hesitancy. For instance, South Africa suspended the rollout of the Johnson & Johnson (J&J) vaccine for about two weeks in mid-April over potential blood clot concerns,

and in May suspended the release of doses that may have been contaminated during production at a US plant in Baltimore. To quell rising vaccine hesitancy, Malawi publicly incinerated just under 20 percent of the 102,000 AZ vaccines received from the African Union (AU) that expired due to a relatively short lifespan of 18 days.

Most countries in SSA have so far relied on the COVAX facility, the AU Vaccines Acquisition Task Team, and donations.⁴ So far, 43 countries have received a total of 64 million doses from one or more sources. Most countries rely on COVAX—38 countries received 38 million doses through the COVAX initiative, including 18.5 million from donations by France and the United States, with six countries, such as Burkina Faso, Mali, and Madagascar, exclusively relying on COVAX. 36 countries received donations of 7 million doses from countries (China, Denmark, India, Portugal, and United Arab Emirates) or private groups (Alrosa Group, MTN Group/AU). China is the largest donor for the region—68 percent of bilateral vaccine donations to the region come from China. Sixteen countries signed bilateral procurement agreements with manufacturers for about 95 million doses, with coverage ranging from less than 1 dose (for example, Benin, Ghana) to more than 100 doses per 100 people (for example, Mauritius).

Most SSA countries are set to miss the target of vaccinating 20 percent of their populations in 2021, which is well below the 60 percent minimum coverage needed to halt the pandemic. At the beginning of the year, COVAX aimed to help vaccinate 20 percent of population by the end-2021, with the AU to close the gap of vaccinating at least 60 percent of population by mid-2022. Assuming two-dose vaccines, vaccinating 60 percent of population would require about 1.3 billion doses. Since then, however, it became apparent that adhering to this timeline would be difficult as COVAX and AU were unable to secure COVID-19 vaccines for delivery in 2021 because of stockpiling by advanced economies, export restrictions, and lack of funding. Although the region has secured almost 2.3 billion doses, only 59 million have been delivered so far (Table 1). Assuming that one-third of COVAX forecasts and one-half of COVAX donations by advanced economies fully materialize, bilateral donations continue at the same rate, and a quarter of bilateral deals come through this year, the estimated supply for 2021 at 327 million doses (with a quarter being single-dose vaccines), subject to the usual risks of production disruptions (for example, industrial accidents and unexpected shortages in the supply chains such as packaging inputs) and export restrictions by major vaccine producers, will be sufficient to fully vaccinate about 200 million people or 18.6 percent of population.⁵

Table 1. Vaccine Supply and Deliveries
(Millions, as of Aug. 15, 2021)

	Total	Bilaterals ^{1/}	COVAX ^{2/}	Donations
Secured	2,270	540	1,722	8
Estimated delivery in 2021	327	130	183	14
o/w delivered so far	64	18	38	7

⁴ The COVAX Facility, a global allocation mechanism set up in April 2020 by the WHO; Coalition for Epidemic Preparedness Innovations; and Gavi, the Vaccine Alliance, is a pooled procurement initiative that aims to provide all countries with access to a diversified portfolio of vaccines at relatively low prices (~\$11 for high-income self-financing countries and ~\$2 per dose for 92 low- and middle-income countries, subsidized through official development assistance). As of July 20, COVAX has reached agreements with manufacturers to procure about 4 billion doses.

⁵ As of mid-August, only three countries (Cabo Verde, Mauritius, and Seychelles) have at least partially vaccinated 20 percent of their populations.

Sources: Airfinity; and IMF staff calculations.

1/ Including three deals through AU: 220 million J&J, 50 million Pfizer, and 300 million Sputnik. 78 percent or 445 million doses are allocated to SSA.

2/ COVAX forecasts 490 million doses allocated to SSA in 2021, of which 97 million are donated doses by advanced economies. Staff projections take one-third of the COVAX forecasts and one-half of COVAX donations.

IMPEDIMENTS IN THE RACE TO VACCINATE

Scaling up the vaccine production to meet the global demand is an enormous challenge. Vaccine manufacturing is geographically concentrated due to its sophisticated nature that requires access to specialized equipment and inputs, storage facilities, and skilled labor. While the vaccine landscape has evolved rapidly during 2020 due to COVID-19, new vaccines have traditionally taken more than 10 years to be developed and approved.⁶ Although none of the manufacturers individually are able to supply to all countries by the end-2021, a pooling of manufacturing capacity could produce about 12 billion doses of vaccines this year, doubling in subsequent years. This would be sufficient to vaccinate adult population of all countries in 2021. However, some advanced economies have pre-ordered vaccines for coverage of several multiples of their populations (for example, 300 percent). As a result, demand outstrips supply, penalizing poorer countries in other regions and preventing full global coverage in 2021. Advanced economies, representing about 15 percent of the global population, have struck pre-orders covering at least 7.4 billion doses of COVID-19 vaccines or more than 70 percent of doses available in 2021 (Figure 4).

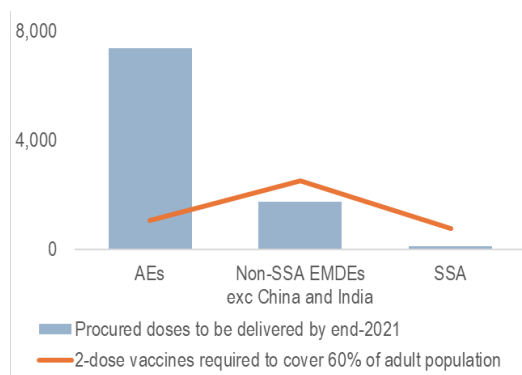
Export restrictions further impede the vaccine production and access for SSA countries (Figure 5). Close to 300 experimental vaccines are in development, with seven having been authorized by WHO or a stringent regulatory body,⁷ but their ability to end this pandemic depends on an effective supply chain that can ensure the uninterrupted availability of quality vaccines from manufacturing to delivery. Export controls on key ingredients and inputs into vaccine production, such as syringes and vials, hamper global vaccine manufacturing by forcing suppliers to prioritize domestic contracts (United Kingdom, United States). In January, the EU introduced export controls requiring authorization to export vaccines outside of the bloc. And in April, following an unprecedented surge in COVID-19 cases, India halted the exports of AZ vaccines produced by the Serum Institute, the main supplier of vaccines to COVAX initiative on which most SSA countries rely.⁸ As a result, most doses ordered by COVAX and the AU in 2021 were cancelled, as exports are not expected to resume until end-2021. Moreover, export restrictions on vaccines and intermediate inputs could jeopardize the nascent vaccine production on the continent.

⁶ The exceptional nature of the pandemic meant that COVID-19 vaccines were approved for emergency use in many countries only eight months after the new disease was first identified.

⁷ Seven vaccines have been authorized by WHO or a stringent regulatory body: AstraZeneca/Oxford University, BioNTech/Pfizer, Gamaleya/Sputnik, Moderna, Sinopharm, Sinovac, and Johnson & Johnson. As of August 13, 110 and 184 vaccines were in clinical trials and preclinical development, respectively. Aside from injectable vaccines, several nasal and oral vaccines are in Phase 1 or 2 clinical trials which could greatly facilitate the logistics of vaccine rollouts as they would not require refrigeration or a healthcare worker to administer them.

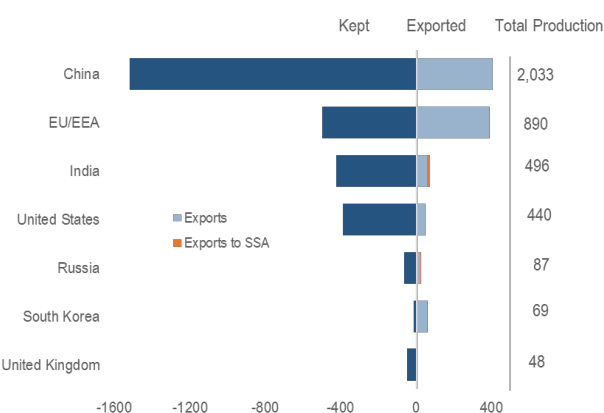
⁸ Under the COVAX allocation plan covering February through June, 59.5 of 62 million doses of AZ vaccine destined for 37 SSA countries were to be produced and supplied by the Serum Institute of India. As of early May, only 15 million doses have been delivered to 32 countries.

Figure 4. Vaccines Deliveries by end-2021
(Million doses, as of May 14, 2021)



Sources: Duke Global Health Innovation Center, Launch and Scale Speedometer, and IMF staff calculations.

Figure 5. Vaccine Production and Exports
(Million doses, as of Jul. 22, 2021)



Sources: Airfinity; and IMF staff calculations.

Financing will be needed to ensure all sub-Saharan Africa is vaccinated, but countries must also have fair access to the most effective vaccines. The total cost to vaccinate 60 percent of the population in SSA is estimated at about \$10–12 billion, including the cost of the rollout.⁹ The relatively wealthier SSA countries are able to self-finance the procurement of the vaccines, through the AU and Afreximbank guarantees or directly from manufacturers. However, these costs are sizeable for some poorer countries—equivalent to a 50 percent increase in existing health expenditures or about 2 percent of GDP. Grants and donations will be necessary to help cover the costs of these countries. COVAX lacked financing in 2020 to enter into advance market commitments to expand beyond the 20 percent target, reporting needs of approximately \$6 billion by summer 2021 if they were to help SSA vaccinate 50 percent of its population by the end-2022.¹⁰ Advance market commitments with manufacturers would allow them to scale up production at the existing facilities. Tapping into the facilities of the World Bank and the African Development Bank Group could help finance the upgrade of health systems and preparedness for the vaccine rollout. For most countries, the proposed general SDR allocation can also provide sufficient liquidity to cover vaccine costs, and the IMF would stand ready to incorporate the costs in existing programs. Finally, countries in the region need to pool their resources and be directly engaged with international stakeholders to ensure access to the most effective vaccines. For example, concerns were also raised that AZ—the vaccine most often donated—is unsuitable for Africa’s younger population and less effective against the South African (beta) variant.

Beyond availability and financing, some SSA countries should tackle logistical obstacles to accelerate vaccine rollout. Many SSA countries have rolled out the vaccines efficiently, where administered doses closely track delivered doses (for example, Côte d’Ivoire, Ghana, Kenya) (Figure 6). But in some countries (Burundi, Eritrea), either there is no vaccination plan or preparations are still ongoing, and Tanzania only recently requested to participate in COVAX. Although vaccine hesitancy has

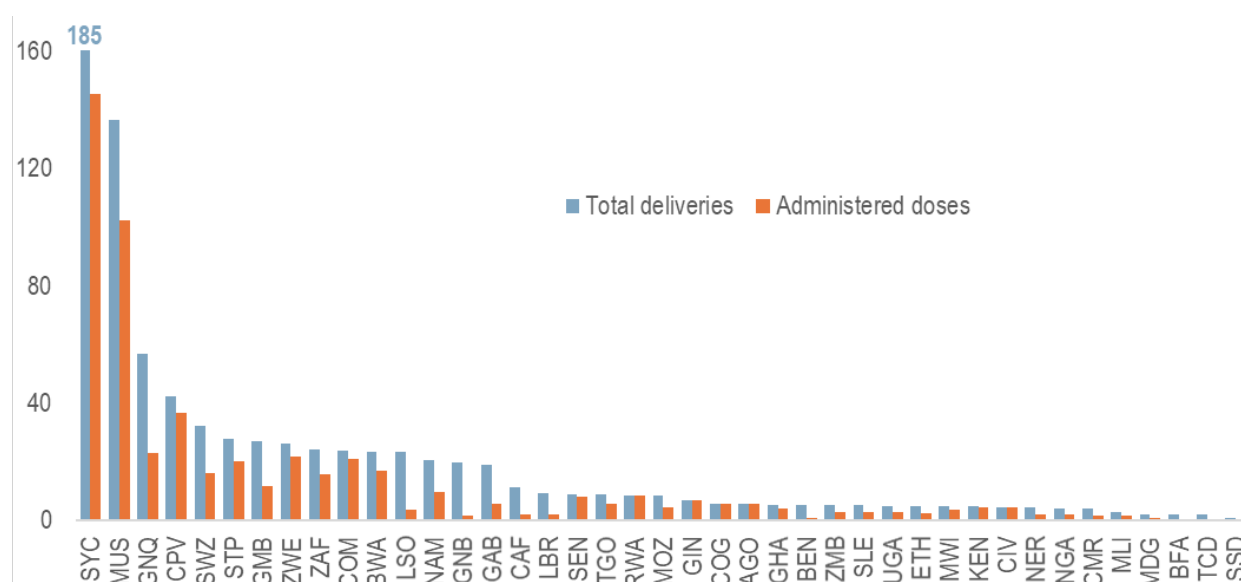
⁹ A recent [IMF proposal](#) targets vaccinating at least 40 percent of the total population of all countries by the end-2021, and at least 60 percent by the first half of 2022. This comes with a price tag of \$50 billion, which includes insuring against downside risks, ensuring widespread testing and tracing, maintaining adequate stocks of therapeutics, and enforcing public health measures in places where vaccine coverage is low.

¹⁰ As of early August, \$9.8 billion has been committed in funding for COVAX, sufficient to procure at least 2 billion doses.

been high in some countries, it is comparable to what was observed in some areas in advanced economies, and was overcome amid wide availability and accessibility of vaccines.¹¹ Other major issues driving the low vaccination rate include confusing information and anti-vaccine campaigns on social media, negative perceptions of the pharmaceutical industry, safety concerns, and cost to individuals. Slow vaccine rollout in some countries was due to delay or suspension of AZ (Cameroon, Democratic Republic of the Congo, Liberia, South Africa) and J&J vaccines (South Africa) due to safety concerns. Other countries have limited capacity to administer the doses at a large scale. In some cases, hard-to-reach rural populations, crime, and insecurity further delay the vaccine rollout (Central African Republic, Chad, Democratic Republic of the Congo, Mali, and South Sudan).

Figure 6. COVID-19 Vaccine Deliveries versus Administered Doses

(Per 100 population, as of Aug. 15, 2021)



Sources: Airfinity; Our World in Data; and IMF staff calculations.

A RISK-BASED APPROACH TO TACKLE SUPPLY CONSTRAINTS

In the coming months to a year, urgent action is needed to deliver as many vaccines as possible to SSA countries. The most effective course of action to avoid the repeated outbreaks in SSA includes: (1) accelerating donations of extra doses from advanced economies, especially to immediately cover critical health care workers; (1) ramping up donations to the COVAX facility so it can diversify its procurement away from the Serum Institute and mobilizing more resources and efforts to help the AU access more vaccines through its vaccine initiative; and finally (3) ensuring that all aspects of the vaccine rollout are adequately funded and in place ahead of delivery (for example, logistics, training of staff).

¹¹ A recent Afrobarometer survey of five West African nations (Benin, Liberia, Niger, Senegal, Togo) found that only 4 in 10 respondents would consider getting vaccinated. Dinga, Sinda, and Titanji (2021) reported 15 percent acceptance rate among young adults in Cameroon; Ditekemena and others (2021) reported 56% acceptance rate in the Democratic Republic of the Congo, but lower rates among healthcare workers.

In the short term, sharing excess doses could help address some of the vaccine shortages, but it is unclear whether the recent pledges will be delivered fast enough. Of the 2.3 billion doses secured by COVAX by May 2021, 1.3 billion were purchased in advance from the Serum Institute. However, the catastrophic situation in India coupled with the huge gap in the procurement of vaccines by Indian government has led to an export ban, affecting the majority of SSA countries as recipients of COVAX. Meanwhile, production capacity for 2021 has already been largely procured. A fast way to address some of the current supply shortages is for advanced economies to share their vaccine stockpiles with SSA countries or COVAX. In June, G7 countries have pledged to donate 870 million doses to developing countries (190 million to SSA), with at least half by end-2021, channeled through COVAX. As of August 15, 82 million have been donated to COVAX, including 72 million doses by the United States and 2.6 million doses by France.¹² In recent months, COVAX has also diversified its suppliers and secured doses from Clover, Sinovac, and Sinopharm.

Countries should ramp up their readiness for the vaccine rollout while adopting a risk-based approach by intervening to supply a range of critical pharmaceutical solutions.¹³ Faced with the risk of delays in the delivery of vaccines (for example, production delays, export bans and the lack of financing or donations) and the appearance of more dangerous variants, most developing countries will be forced to either incur enormous death tolls or keep relying on targeted lockdowns and other restrictions on social distancing until 2023 or beyond with heavy economic costs. Countries should avoid at all cost compounding the risk of delays with a lack of readiness for the rollout of the vaccine by adopting the recommendations of the World Bank (see World Bank [Report](#)). Moreover, a [risk-based approach](#) to tackle a scenario of protracted vaccination entails using a range of available tools to quickly tackle, or ideally avert, outbreaks ahead of the vaccine rollout. This means that countries must increase their screening efforts, for example, via frequent surveys, run outreach campaigns to encourage social distancing, be ready for a quick isolation of hotspots, and prepare field hospitals and cotes for isolation. Meanwhile, the world must urgently come [together to help](#) in the interim period while vaccine supply is limited. For example, international organizations and countries could collaborate and draw from available funds to deliver urgently needed supplies such as oxygen, rapid tests, PPEs, pharmaceutical products and tents for isolation sites to save lives and spur preparedness. Relying on different solutions, as well as boosting community-based care would hedge against the risk of the appearance of more dangerous mutations spiraling out of control as in India by providing the logistics and production capacity to adapt to the fluid situation.

Dedicating sizable resources so that SSA countries tackle supply constraints through domestic production would also be worthwhile despite the risks. This policy would tackle the main market failures preventing SSA countries from accessing pharmaceutical solutions in a timely manner. This effort does not start from scratch. Several African countries are already active in the production of rapid tests (Senegal) and drugs (Kenya) as well as non-COVID-19 vaccines (Senegal, South Africa, and Uganda), which may have to be ramped up as the production of COVID-19 vaccines in advanced economies is likely to crowd out other vaccines such as dengue fever. What is needed is a coordinated action to help with risk-sharing, pooling resources, leveraging the existing industrial capabilities in selected countries, and designing a mechanism to distribute production, as well as leveraging talents among expatriates.

¹² [UNICEF COVID-19 Vaccine Market Dashboard](#) (accessed August 15, 2021).

¹³ See Cherif and Hasanov (2021).

A transfer of technologies and know-how would help expand the manufacturing capacity, make vaccines more affordable and create new industries. The proposal by India and South Africa to temporarily suspend intellectual property (IP) rules related to COVID-19 vaccines was an attempt to accelerate technology transfers. It was initially met with strong opposition by advanced economies that did not consider the IP waiver the best way to achieve equitable and swift distribution of vaccines. The IP waiver on COVID-19 vaccines is now supported by the United States and is the subject of negotiations within the World Trade Organization. In historical perspective, an IP waiver usually takes many months to negotiate, and the negotiated waiver might be much narrower (for example, 2003 IP waiver for generic treatments for the AIDS virus, malaria, and tuberculosis took more than eight months to negotiate). Moreover, installing new production capacity and training workers typically takes months. Although a waiver alone is unlikely to help expand the manufacturing capacity before end-2022, it may still be worth expanding existing production facilities in the continent given the risks (for example, new export bans, the need for boosters). What is needed is to develop production capacities, ideally through partnerships with other firms to transfer know-how and skills. Moreover, as shown by the experience with HIV generic drugs, developing new production capacity in emerging markets was done much faster than expected by the industry at the time and led to a substantial decline in prices which ultimately saved millions of lives.

In the long term, building regional vaccine manufacturing capacity could help reduce SSA exposure to future health shocks, but it would require support and commitment from the authorities. Existing local manufacturing capacity can potentially be expanded through licensing and technology transfer agreements. Some manufacturers already signed collaboration agreements with SSA manufacturers. For instance, Aspen Pharmacare in South Africa will be one of six sites globally responsible for filling and packaging the bulk-imported J&J vaccine, which it started supplying in June 2021. Biovac in South Africa plans to build a plant to make active pharmaceutical ingredients, and will start producing the COVID-19 vaccine by US-based ImmunityBio, Inc., which is currently in Phase 1 clinical trial.¹⁴ Biovac has also reached an agreement with Pfizer-BioNTech to manufacture and distribute the Pfizer-BioNTech vaccine within the African continent starting in 2022, becoming the first facility in Africa to use mRNA technology.¹⁵ There are also reports that Senegal's Institut Pasteur is working in partnership with Belgian biotech group Univercells to start producing COVID-19 vaccines in 2022. Moreover, African companies have started exporting new vaccine technologies to advanced economies in recent years (for example, Biovac in South Africa). Over the long term, the AU and the African CDC launched an [initiative](#) with plans to increase domestically sourced routine immunization from 1 percent to 60 percent by 2040. To achieve this, governments will need to commit to funding research and development and facilitating technology transfers. To develop regional supply chains in a longer term involves establishing a sustainable ecosystem for local pharmaceuticals production, which would require highly specialized equipment, a highly trained workforce, partnerships with multinational companies, a conducive investment climate, as well as a predictable and stable demand from African countries for vaccines.

¹⁴ <https://www.bloomberg.com/news/articles/2021-03-19/immunitybio-to-have-covid-19-vaccine-made-in-south-africa>

¹⁵ <https://www.bloomberg.com/news/articles/2021-07-21/pfizer-partners-with-biovac-to-boost-africa-s-vaccine-supply>

CONCLUSION

SSA countries, and the rest of the world, face a perilous situation as a result of the lack of access to vaccines. Even the modest target of immunizing 20 percent of the population by end-2021 is out of reach for many countries, unless there is a marked change in strategy by advanced economies. It is also not clear when the rest of the population would be immunized if all countries are prioritizing their own populations and in the face of “hard” production constraints. The region has already lost seven years of progress in 2020, with substantial loss of income and economic hardship. The spread of the virus in the next months could lead to even more suffering with consequences on social cohesiveness and the risk of providing a fertile ground for even more dangerous mutations which could backfire in the rest of the world.

To tackle the pandemic, urgent action is needed by both SSA countries and the global community. SSA countries are in the midst of a perilous phase of the pandemic, with delays in the delivery of vaccines as a result of export bans leaving them susceptible to the appearance of more dangerous variants. First, every effort should be made to deliver as many vaccines as possible and as fast as possible. This entails sharing stockpiles and providing adequate financing and access to COVAX and the AU initiatives. Second, SSA countries must ramp up their efforts in terms of vaccine readiness to ensure an effective rollout and to protect their critical workers especially in the health sector. Third, even with the best efforts in terms of donations and financing there is a great risk of delays especially as a result of production constraints. SSA countries should therefore take a proactive stance and stand ready to face the virus with alternative tools such as testing and isolation of hotspots to avoid an infernal spiral of curfews and instability with unforeseeable consequences. This means that the supply of oxygen, tests, and PPE should be urgently ramped up and the world community should help.

This crisis also illustrates the importance of upgrading production capabilities in the long term to build resilience in the face of future crises. This includes facilitating international partnerships, pooling financial and human resources, and ensuring demand through procurement commitments to spur investment in risky new industries. The world would be better off if SSA countries had an expansive capability to produce a wide range of vaccines and were able to vaccinate their population as fast as other regions, ensuring that viruses do not find a breeding ground to generate ever more dangerous variants.

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Annex Table 1: COVID-19 Vaccination in SSA*(Per 100 people, as of Aug. 15, 2021)*

	Administered doses	Vaccinated	Fully vaccinated
Angola	5.2	3.0	2.2
Benin	0.6	0.4	0.2
Botswana	16.3	10.2	6.1
Burkina Faso	0.2	0.2	0.0
Cabo Verde	34.1	29.8	4.3
Cameroon	1.4	1.2	0.2
Central African Republic	2.0	1.8	0.2
Chad	0.2	0.2	0.1
Comoros	21.0	13.5	7.5
Congo, Dem. Rep.	0.1	0.1	0.0
Congo, Rep.	4.7	2.9	1.7
Cote d'Ivoire	4.6	4.6	0.0
Equatorial Guinea	23.0	13.3	9.7
Eswatini	15.1	8.0	7.1
Ethiopia	2.0	2.0	0.0
Gabon	5.5	3.3	2.2
Gambia	11.6	6.5	5.0
Ghana	4.1	2.8	1.3
Guinea	7.3	4.6	2.6
Guinea-Bissau	1.5	1.4	0.1
Kenya	3.8	2.4	1.4
Lesotho	3.5	1.7	1.7
Liberia	1.9	1.7	0.2
Madagascar	0.7	0.7	0.0
Malawi	3.8	3.0	1.4
Mali	1.3	0.9	0.4
Mauritius	99.8	55.5	44.3
Mozambique	4.4	2.9	1.5
Namibia	9.8	7.2	2.6
Niger	1.8	1.6	0.1
Nigeria	1.9	1.2	0.7
Rwanda	8.3	5.2	3.0
São Tomé and Príncipe	22.0	16.1	5.9
Senegal	8.1	6.2	1.9
Seychelles	141.4	72.9	68.6
Sierra Leone	2.8	1.0	0.2
South Africa	15.8	12.5	6.9
South Sudan	0.5	0.5	0.0
Tanzania	0.2	0.2	0.2
Togo	5.7	3.9	1.9
Uganda	2.6	2.6	0.0
Zambia	2.8	1.7	1.2
Zimbabwe	22.1	13.9	8.2
SSA Total	3.6	2.6	1.2

Sources: Our World in Data; IMF staff calculations.