

GETTING THE WORLD VACCINATED AGAINST COVID-19

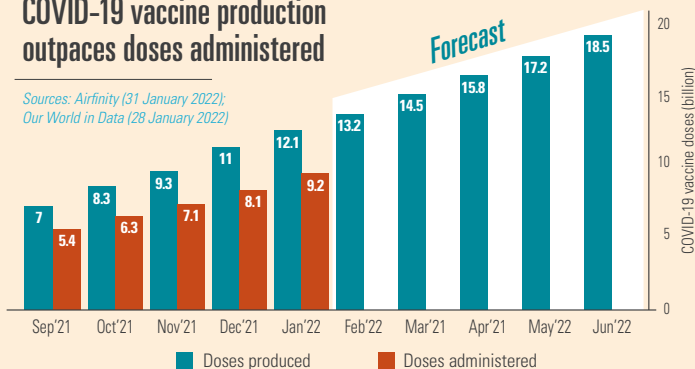
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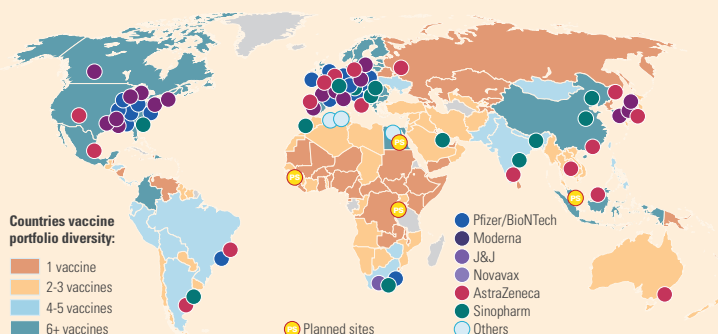
VACCINE PRODUCTION IS NOT A BOTTLENECK AS THE GAP WITH DOSES ADMINISTERED GROWS EACH MONTH

COVID-19 vaccine production outpaces doses administered

Sources: Airfinity (31 January 2022); Our World in Data (28 January 2022)



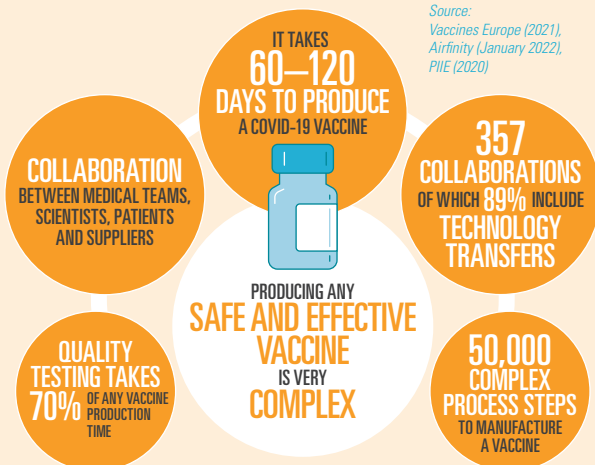
Vaccine approvals* and production sites globally



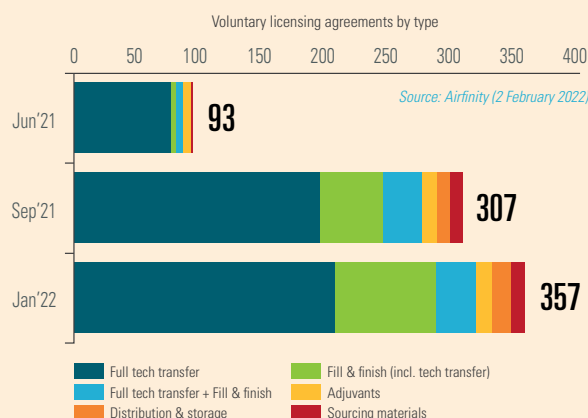
* mRNA vaccines are not currently approved in countries representing more than 40% of the global population (e.g. India, China, Russia)
Source: Airfinity (31 January 2022)

COVID-19 vaccine production is very complex and subject to extensive testing and quality control

Source: Vaccines Europe (2021), Airfinity (January 2022), PIIE (2020)



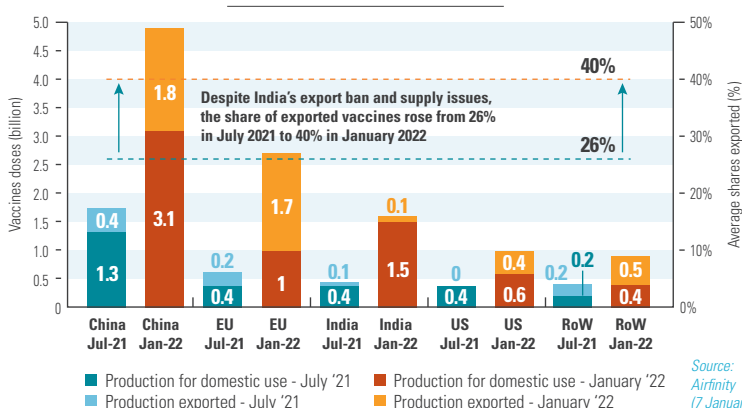
Voluntary licensing agreements have risen sharply since June 2021



Using economies of scale, screening of many potential production sites and voluntary licensing agreements, the number of COVID-19 vaccines produced (12.1bn by January 2022) has consistently outpaced the number of vaccines being administered (9.2bn by January 2022) showing production is not a bottleneck. Further production expansions are planned, notably in Africa.

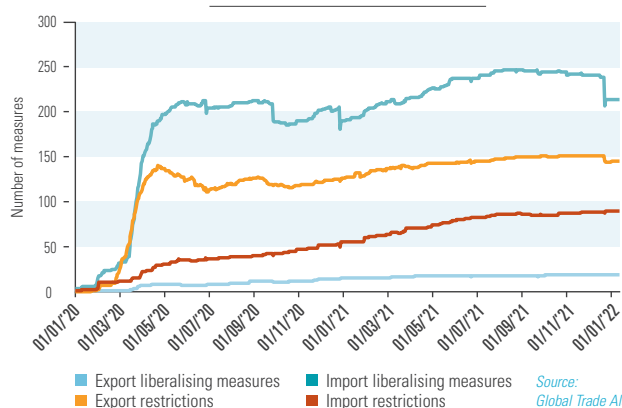
EXPORTS AND DELIVERIES CONTINUE TO RISE WHILE HURDLES TO TRADE LEVEL OFF OR START TO COME DOWN

Cumulative COVID-19 vaccine doses produced and exported



Source: Airfinity (7 January 2022)

Export and import related trade measures



Source: Global Trade Alert (February 2022)

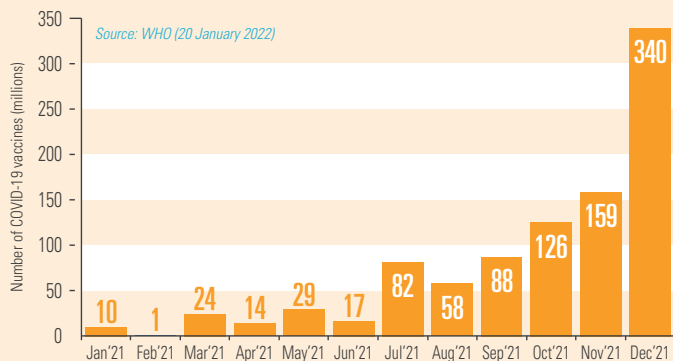
Global COVID-19 vaccine exports have reached 4.5bn in January 2022 (40% of production), despite trade barriers EU exports rose most (to 1.7bn) while India did not contribute to global distribution due to its export ban and supply issues. Distribution between countries is no longer a key bottleneck. Industry is even asked to halt deliveries as stocks in LMICs and LICs rise.

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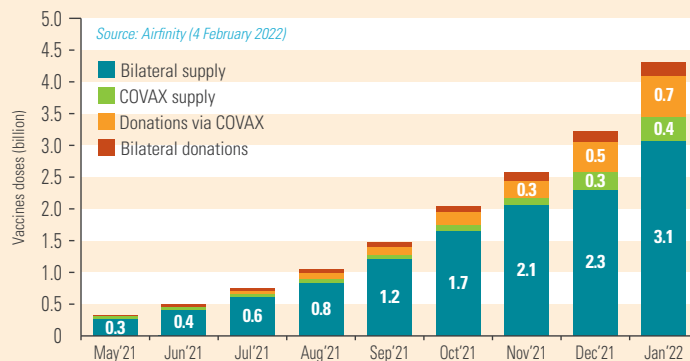
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WITH VACCINE DONATIONS AND DELIVERIES RAMPING UP, DISTRIBUTION IS NO LONGER A KEY BOTTLENECK

COVAX monthly shipments (2021)



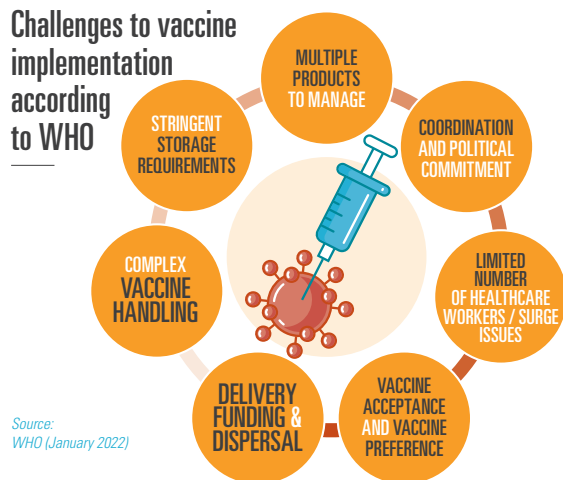
Bilateral and COVAX supply and donations to LMIC/LIC



COVAX deliveries surged in Q4 2021 with more vaccines having been shipped through COVAX in the last 10 weeks than in the 10 months prior, passing 1.0bn by mid-January 2022. This is corroborated by the evidence of rapidly increasing bilateral and COVAX supplies and donations to LMICs and LICs, passing 4bn in early 2022.

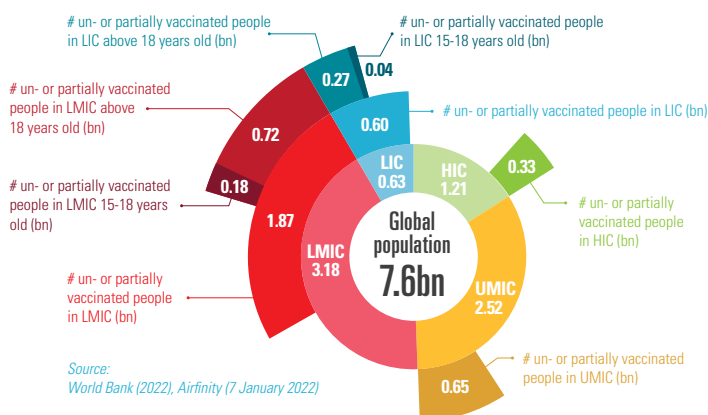
HEALTHCARE SYSTEM CAPACITIES AND VACCINE HESITANCY HAMPER VACCINATION SUCCESS

Challenges to vaccine implementation according to WHO

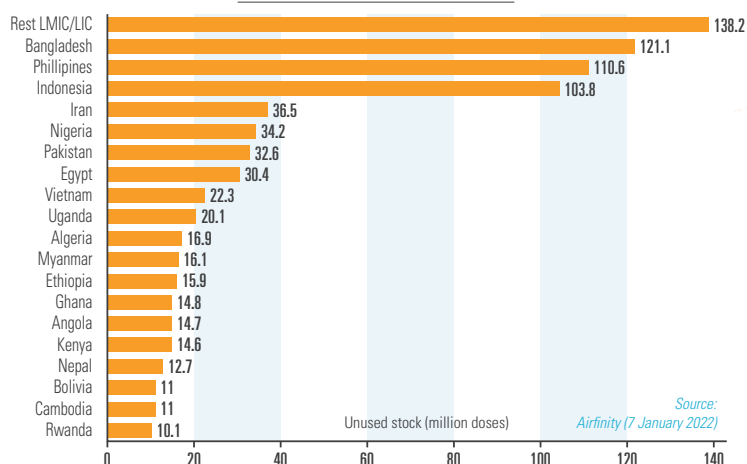


Source: WHO (January 2022)

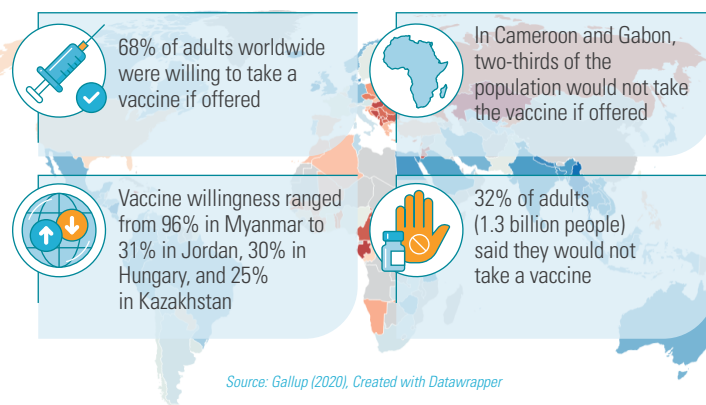
0.99bn adults in LMICs and LICs have not been fully vaccinated



Unused COVID-19 vaccine stocks in LMICs and LICs



Varying degrees of vaccine hesitancy



Core elements needed for effective vaccination roll-outs are: 1) Strengthening healthcare system capacities for COVID-19 vaccine administering (coordination, healthcare workers, complex vaccine handling) and 2) Addressing vaccine hesitancy. This would help the 1.21bn unvaccinated 15+ citizens of LMICs and LICs and reduce undistributed stocks of COVID-19 vaccines.

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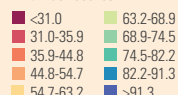
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BY STRENGTHENING HEALTHCARE SYSTEM CAPACITIES IN AFRICA, VACCINE EQUITY CAN BE REACHED

Healthcare Access & Quality Index

Source: The Lancet (2018)

HAQ Index deciles



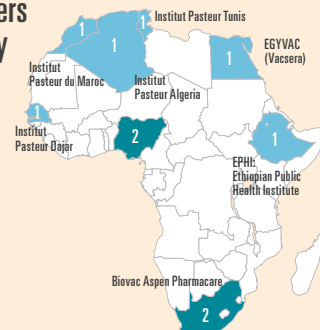
COVID-19 vaccination rates Africa (15+, %)

Source: Airfinity (7 January 2022)



Number of Africa's vaccine value chain players per country

Source: CapitalIQ (2021)



Africa's engagement by value chain steps

Current
Planned



Manufacturer	Products	R&D	Drug substance mfg	Fill & finish	Pack & label	Import for distribution
InstPast* Dakar	Yellow fever					
EGYVAC (Vacsera)	BCG-T, Tuberculosis, Tetanus, DTP, Typhoid, Cholera					
InstPast Tunis	BCG					
Biovac	BCG, Measles, Pneumococcal, Hep-B, COVID-19					
Aspen Pharmacare	COVID-19					
InstPast Morocco	BCG, DT, Yellow fever, Typhoid, Influenza, Rabies					
EPHI	Plan to produce vaccines					
Biovaccines	Plan to produce Hep-B, Tetanus, DTP + Hep-B, Yellow fever, Measles					
Innovative Biotech	HIV					
InstPast Algeria	Rabies					

*InstPast - Institut Pasteur

Source: CapitalIQ (2021)

Industry engagements in Africa

Source: IFPMA (2022)

Optimise production

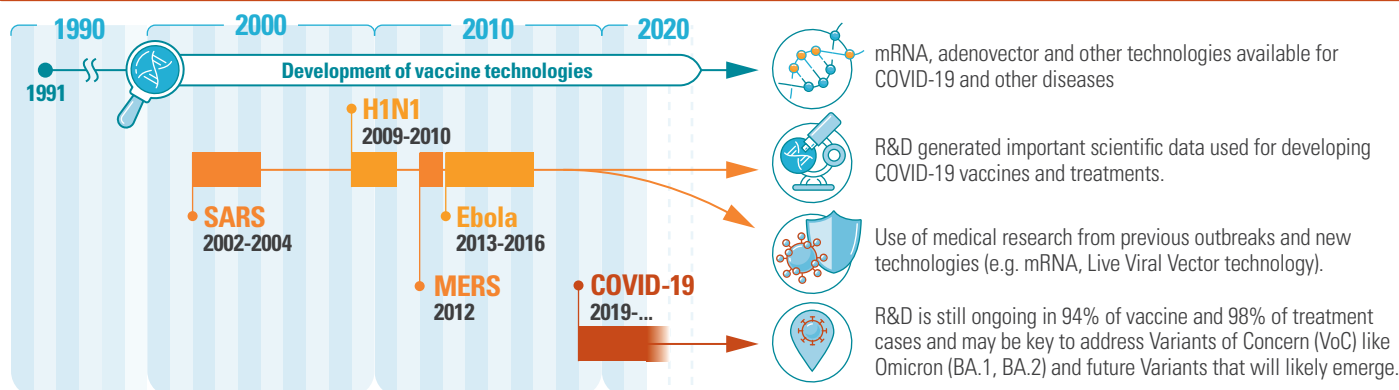
- 30.11.21** - J&J near final discussion to license J&J vaccine to Aspen Pharmacare.
- 26.11.21** - EU led initiative to create stronger manufacturing capabilities in Africa.
- 16.11.21** - Agreement between Pfizer and MPP to license Paxlovid.
- 27.10.21** - Agreement between MSD and MPP to license Molnupiravir.
- 07.10.21** - Moderna announces to build mRNA facility in Africa (for up to 500 mln vaccines p.a.)
- 27.08.21** - BioNTech announces plans to manufacture vaccines in Rwanda and Senegal.
- 21.07.21** - Pfizer/BioNTech sign agreement with Biovac to manufacture Pfizer/BioNTech vaccine

Country readiness

- 11.11.21** - Pfizer and Zipline complete first vaccine delivery by drone in Ghana.
- 03.06.21** - Moderna signs supply agreement with Botswana to support access to vaccines.

There is a strong correlation between healthcare capacity and vaccination rates. With production not being a bottleneck, strengthening the varied healthcare system capacities across Africa is critical. Building up manufacturing capacity will support African resilience for future pandemics.

R&D HAS GIVEN US SAFE AND EFFECTIVE COVID-19 VACCINES BUT WE NEED TO BE READY FOR NEW VARIANTS



The vaccine technologies used against COVID-19 are the result of decades of R&D, made possible by strong cooperation between industry, academics, regulators and governments. At present 33 vaccines have been approved and many more are in the R&D pipeline. Omicron highlights how vital continued R&D and innovation are to stay ahead of the virus.

INTELLECTUAL PROPERTY – PART OF THE SOLUTION NOT PART OF THE PROBLEM

IP incentivises long-term R&D (5,518 clinical trials are currently ongoing)

IP allowed for the first COVID-19 vaccine approval within 326 days; the fastest ever

IP has facilitated ramping up production through use of best available infrastructure for scaling up

IP continues to facilitate effective collaboration and voluntary technology transfers

IP supports vaccine confidence by reducing the risk of counterfeit vaccines

IP is key for global preparedness for new Variants of Concern and future pandemics

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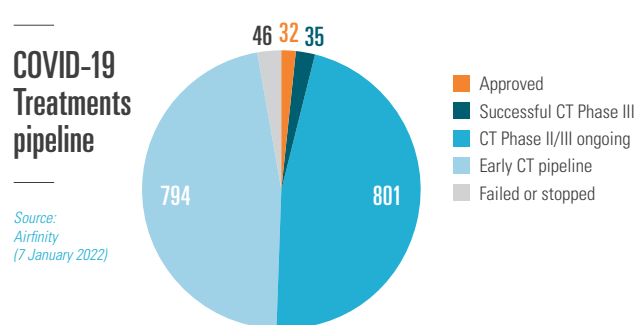
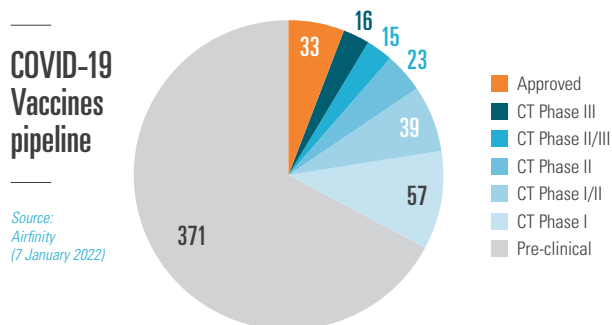
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WHO EMERGENCY USE LISTING (EUL) FOR THE DIFFERENT VACCINES IN 2020 AND 2021



THE COVID-19 R&D PIPELINE SHOWS THAT MOST R&D EFFORTS ARE STILL ONGOING, MAKING IP PROTECTION VITAL



Some examples of innovative ideas that are currently being researched

NEW TYPES OF VACCINES:

VAXELIS (MSD, Sanofi Pasteur): six-in-one (hexavalent) combination vaccine

NEW VACCINE FORMULATIONS:

Dry-powder formulation of a COVID-19 vaccine

NEW FORMS OF PROTECTION:

Lettuce-based chewing gum that blocks entry of virus in human cells and traps COVID particles in the mouth

NEW TYPES OF ADMINISTRATION:

Vaxxas "nanopatch", nasal spray vaccines

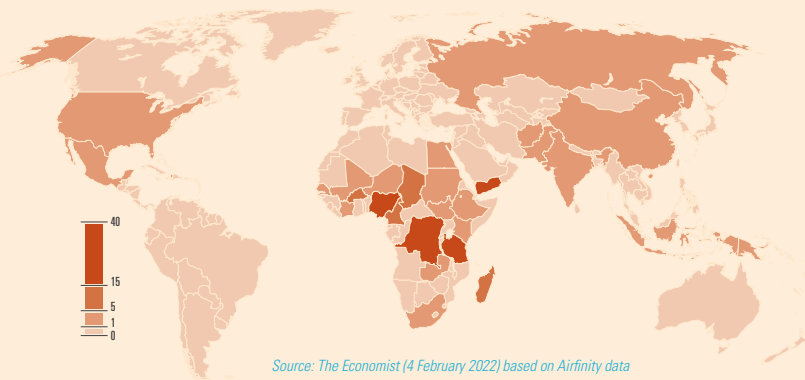
NEW TESTS:

Three-in-one tests for COVID-19, flu and cold in the form of saliva spit test

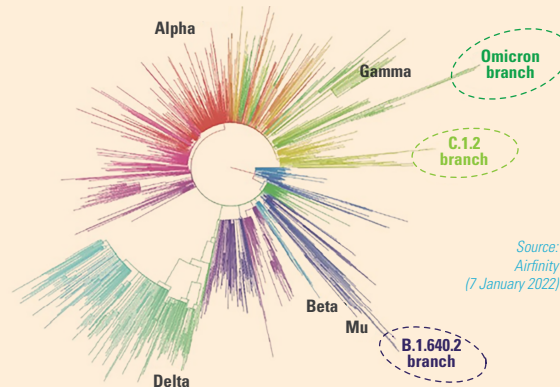
Only 5.9% (33 of 554) of all COVID-19 vaccines and 1.9% (32 of 1708) of all treatments in development have been approved to date. A strong IP framework remains vital to continue to fight emerging COVID-19 Variants of Concern, to support different patient populations, and increase future pandemic preparedness.

R&D IS ALSO VITAL AGAINST CONTINUOUSLY EMERGING VARIANTS OF CONCERN (VoC)

Levels of risk of emerging new variants



Current situation on main existing COVID-19 variants



Continued R&D is vitally important also in light of the risk of newly emerging Variants of Concern (e.g. Delta, Omicron BA.1, BA.2), especially in case next generations of vaccines are needed against new mutations. The risk of emerging new variants is significant, linked to the degree of uncontrolled transmission, population, immunocompromised prevalence, vaccine coverage, etc.

FIVE STEPS TO URGENTLY ADVANCE COVID-19 VACCINE EQUITY



OPTIMISE PRODUCTION



ELIMINATE TRADE BARRIERS



STEP UP DOSE SHARING



SUPPORT COUNTRY READINESS



DRIVE FURTHER INNOVATION