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equity by design

ensuring regional vaccine production shifts power, not just factories

author

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Any remaining errors or interpretations are the author's own.

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Workers look at the filling process of HepB vaccine filled in Uniject syringes at the Bio Farma serum factory.
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Foreword

There are many stories that will be told about how the world responded to the COVID-19 pandemic. Vaccines will sit at the centre of the one about scientific triumph and recovery from crisis, and rightly so. But that story will no doubt sound very different depending on where you lived during the early stages of vaccine discovery and distribution.

An uncomfortable truth is that access to vaccines, especially in the early months, was profoundly unequal. While some wealthy countries vaccinated their populations within months of vaccines becoming available and then stockpiled surplus doses, others were left waiting. This inequity cost millions of lives.

Yet even this account, important as it is, is incomplete. When collective action was taken it did save lives, and it was built on many years of contributions from those same countries who were guilty of hoarding doses. COVAX, for example, was built on two decades of investment in immunisation systems and market shaping through Gavi, the Vaccine Alliance. This mechanism provided vaccines at scale to countries that would otherwise may have been completely left behind.

Both parts of this story and the lessons we should take forward matter deeply in the world we live in now. The post-pandemic period has, for the most part, not ushered in renewed cooperation. Instead, we see a more fragmented and transactional global order. Aid budgets have been raided for other short-term national priorities, geopolitical tensions are ever rising, and multilateralism, which has been a central mechanism for responding to shared threats, is under immense strain.

It is in this context, as leaders around the world look towards an uncertain future, that the question of regional vaccine manufacturing has become so urgent. Vaccine nationalism and inequity during the initial response to COVID-19 exposed the specific dangers of over-concentration, dependence, and market power. Our report, Equity by Design, argues that where vaccines are made, who owns the technology, and who governs production are political choices that will matter for everyone. African-led manufacturing, grounded in equity, technology transfer, and long-term investment, should be understood as a strategic necessity in this era of uncertainty. Pandemics, climate shocks, and supply-chain disruption linked to unstable governments, economies or conflict, and even vaccine misinformation, will all affect disease risk and burden. None of these interconnected threats will respect borders, and no single country can insulate and protect itself through national action alone.

Traditional donor countries and other market-shaping states must now act collectively to make structural changes that can deliver for everyone when the next crisis comes.

Kitty Arie
CEO, Results UK

Executive summary

The recent experience of the COVID-19 pandemic demonstrated that equitable access to vaccines is not guaranteed in the current system of research, development and production. Although efforts were made to increase the fairness of vaccines distribution, these were add ons to an unfair and skewed system and did not deliver the scale of change needed to ensure that vaccines reached the people who needed them most.

Since the pandemic there have been a number of initiatives, such as the Gavi-led African Vaccine Manufacturing Accelerator, to ensure that vaccines are produced more widely in the Global South. There are also new global policy frameworks that set the stage for reform, namely the WHO Pandemic Agreement, and the Lusaka Agenda. However if these are to lead to a meaningful shift in power, equity has to be designed into the manufacturing process.

To support a more equitable global vaccine ecosystem, high-income countries, including the UK, and global health institutions should consider the following three recommendations.

1. Invest in African-led manufacturing with long-term, flexible financing

Build on initiatives like the Gavi-led AVMA and add to it by supporting manufacturing with sustained, predictable funding that prioritises African ownership and long-term capacity, including for R & D to build sustainable pipelines. This aligns with Article 10 of the Pandemic Agreement on distributed manufacturing capacity and Article 13 on global supply chain governance.

2. Guarantee equitable access through technology transfer, knowledge sharing, and African-led R&D

Close critical gaps by enabling full vaccine production in Africa in ways that ensure new technologies are shared broadly and affordably. This reflects Article 11 of the Pandemic Agreement on technology transfer and the Lusaka Agenda's emphasis on sovereignty and local leadership.

3. Align governance, procurement, and equity safeguards

Global health financing and governance must embed equity and accountability at every stage. This is consistent with the Pandemic Agreement's commitments on equitable supply chains (Article 13) and the Lusaka Agenda's Shift 5 on donor reform.

1. Introduction

At 6.31am on the 8 December 2020, 90-year-old Margaret "Maggie" Keenan, was vaccinated against COVID-19 at University Hospital Coventry, in the UK.[1] She was the first person in the world to receive such a vaccine outside of a clinical trial. This was a significant milestone as a path out of the global pandemic was now ahead.

This moment of optimism was quickly overshadowed by a deeply unfair distribution of vaccines in the months that followed. The COVID-19 pandemic exposed fault lines in global health reminiscent of the HIV/AIDS crisis of the 1980s and 90s. Countries, with less resources and with some of the weakest health systems, were the ones who were burdened by delays and shortages in vaccine supply. The outcome was catastrophic. Modelling research estimates that if low- and middle-income countries had received vaccines earlier or at the same pace as high-income countries, more than half of deaths in the analysed low- and middle-income countries could have been averted.[2]

A long thirteen months after Maggie's landmark vaccination, Dr Tedros Adhanom Ghebreyesus, WHO Director-General, described the global situation in bleak terms: **"It's vaccine apartheid. It is a catastrophic moral failure."**[3]

This profound failure reflected structural imbalances within the global vaccine ecosystem, one that enabled rapid innovation but lagged in ensuring equitable access. This system is structured around high-income country control of research and development, manufacturing and ultimately the supply chain. That dominance is further strengthened by high income countries' ability to procure vaccines through advance purchase agreements and market commitments, an advantage made possible by substantial public financing and strong domestic mandates. Meanwhile, Africa is home to 20 percent of the world's population but currently produces less than 1% of the vaccines it uses. "This is a challenge we are committed to changing," said Dr. Jean Kaseya, Director General of Africa CDC.

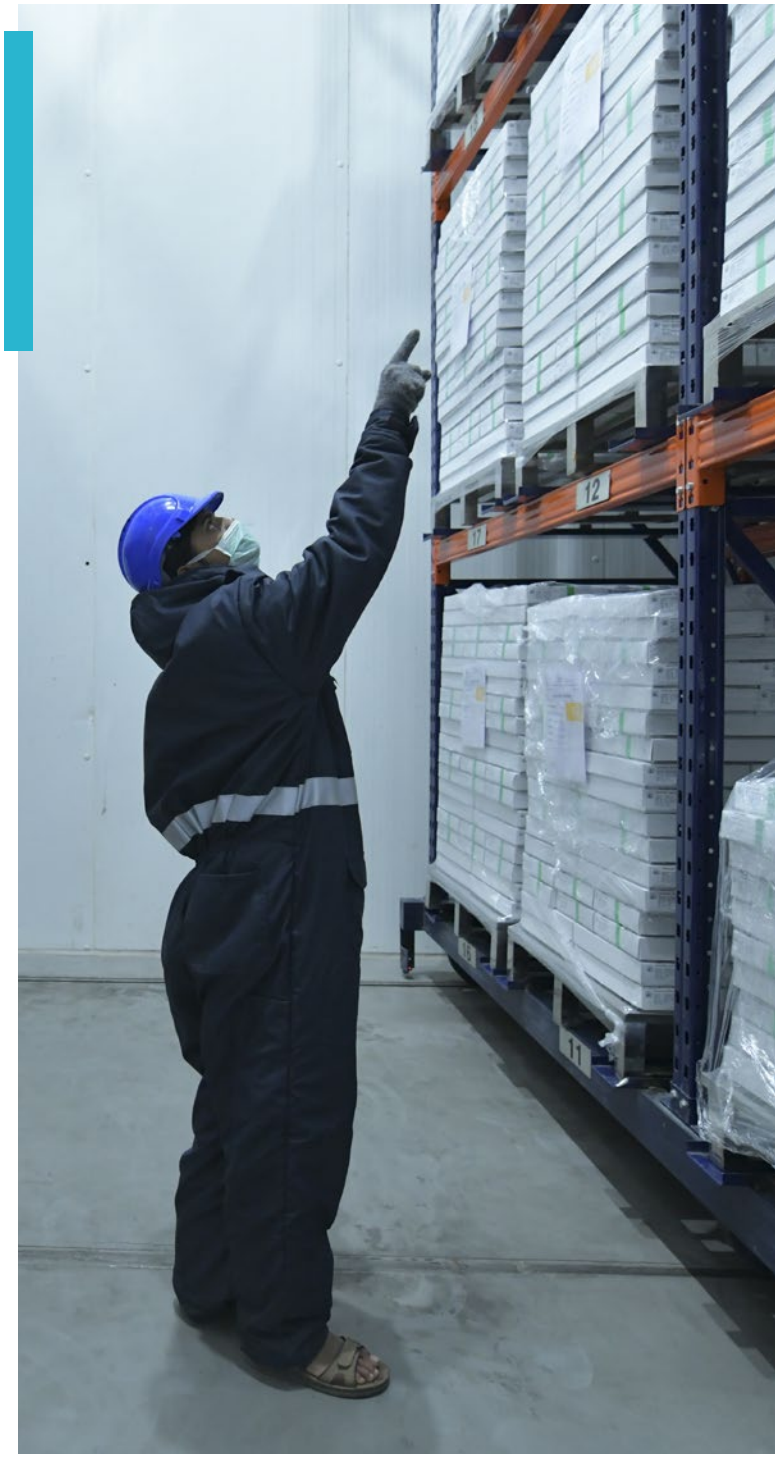
This report examines what a different future for vaccine manufacturing could look like and how that change might come. We explore how high-income partners like the UK, France, Canada and others with a track record of championing vaccination can support systems that are fair, transparent, and rooted in African leadership. Such support would contribute to achieving the African Union's goal of producing 60% of the continent's vaccine needs by 2040.[4]

This report comes at a moment when the gap between the need for change, and the capacity to deliver it is narrowing. Across Africa, institutions and manufacturers are building momentum to shape a new vaccine market. African leaders increasingly view expanded

manufacturing capacity as a core economic and strategic priority, aimed at building competitive industries that serve regional markets while contributing to resilient global vaccine supply chains and stronger pandemic preparedness. In the post-COVID era, these capabilities are recognised as critical global public goods. But real change will not come from a relocation of manufacturing alone. It will require an industrial policy that is consciously built on a foundation of decentralised decision making, regional ownership and the sharing of knowledge through technology transfer partnerships, with principles of equity and a right to health built in from the start.

A wide coalition of partners including African institutions, civil society organisations, regional development banks, multilateral organisations, and high-income countries (HICs) will all have a role to play. Among these, the G7 remains important. Even in an era of shrinking fiscal space for foreign aid, these countries retain the scientific, and industrial capabilities that through meaningful partnerships can significantly accelerate Africa's manufacturing ambitions. Traditional donor countries can act as catalysts by supporting technology-transfer, co-developing knowledge products with African biotech and academic institutions and aligning diplomatic and investment frameworks with African priorities.

There is both a moral and strategic impetus to do so. Shared vaccine production capacity can improve access for everyone, strengthen global health security, diversify supply chains, and open new opportunities for innovation and economic partnership across continents.



Production of the Oxford University/AstraZeneca coronavirus vaccine at the Serum Institute of India (SII). The vaccine is produced for mid and low-income countries.
Credit/Copyright: *GAVI/2007/Edy Purnomo*

2. The long shadow of Covid and an ongoing battle for reform

2a. Technical solutions for equitable access undermined

At the onset of the COVID-19 pandemic, access to medicines advocates warned that unless lifesaving COVID-19 technologies were shared equitably, the world would face a two-tier pandemic response.

The People's Vaccine Alliance, a coalition of over 100 organisations and networks, supported by Nobel Laureates, health experts, economists, Heads of States, faith leaders and activists, argued for the development of a not-for-profit vaccine and medical technologies that could be shared by everyone. They argued that instead of vaccines becoming private commodities, they should be treated as global public goods, supported by open knowledge-sharing and equitable access.[5]

The World Health Organization, civil society groups, academics, and leaders from the Global South proposed further technical solutions to access barriers. For example, the WHO's COVID-19 Technology Access Pool (C-TAP).[6] This was a mechanism designed to voluntarily pool patents, clinical data, and manufacturing know-how. But while civil society backed C-TAP as a tool for equitable global access, it was largely ignored or rejected by major pharmaceutical firms and donor countries. Donor countries, particularly in the Global North, opposed such measures on the grounds that strong intellectual property (IP) protections were necessary to preserve incentives for pharmaceutical innovation and to safeguard trade interests. In practice, their position aligned closely with the interests of pharmaceutical corporations and limited the ability of low- and middle-income countries (LMICs) to foster increased local production by domestic companies during the pandemic. Instead, vaccine technology remained tightly held under exclusive licenses. Voluntary partnerships, like those through the Medicines Patent Pool (MPP),[7] came too late or were too narrow in scope to make a global difference in real time.

Likewise, efforts to temporarily waive the enforcement of intellectual property rights under the World Trade Organization's Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement), initially proposed by India and South Africa and opposed by many high-income countries where major pharmaceutical companies are based, have faced significant resistance. This agreement was intended to enable broader production and distribution of COVID-19 medicines, treatments, and protective equipment during the pandemic which would have resulted in lower prices, were delayed and diluted, taking nearly two years from initial proposal to final agreement.[8] The final agreement excluded therapeutics and other medical countermeasures, and left the underlying problem of monopolies untouched, and delivered a decision on vaccines only after the most critical phase of the pandemic had passed. Again this was too

little too late. In the meantime, high-income countries, representing only 13 percent of the world's population, had purchased roughly half of the available vaccine doses.

The experience of COVID-19 showed that technical solutions to promote equitable access were available but consistently underutilised or undermined.

2b. The limitations of COVAX in a distorted market

COVAX, the vaccines pillar of the Access to COVID-19 Tools Accelerator (ACT-A), was created at the height of the COVID-19 crisis with the ambition to ensure global vaccine access. The COVAX Facility enabled participation by both 'self-financing' and 'funded' economies. In addition the Gavi COVAX Advance Market Commitment (AMC) was established to accelerate access to COVID-19 vaccines for 92 lower-income economies (the AMC92). By December 2023, the COVAX Facility and AMC distributed nearly 2 billion vaccine doses to 146 countries and territories[9], saving an estimated 2.7 million lives.[10]

The scale of this achievement sits alongside a set of uncomfortable failures. COVAX saved lives, but it was also severely constrained by the structure of the global vaccine market and a lack of solidarity. Production and supply remained in the hands of a few manufacturers, leaving COVAX with little leverage to negotiate fair terms for low- and middle-income countries, especially in terms of timing and pricing. High-income countries further undercut pooled demand efforts by striking bilateral advance purchase agreements and, in many cases, stockpiling far more doses than they required. In some contexts, this amounted to the stockpiling of enough doses to cover their populations several times over and also resulted in some countries destroying millions of doses.

This strategy of excess was rarely defended openly at the time, but within the political and economic context of 2020–2021 it was likely driven by three interrelated factors: the domestic incentive to reassure voters, the desire to hedge against uncertainty, and the pursuit of an economic advantage of reopening economies ahead of others. Taken together, these factors signalled a retreat from global solidarity and the emergence of a distinctly "we first" approach to pandemic response.

In October 2021, the medical charity Doctors without Borders reflected that:

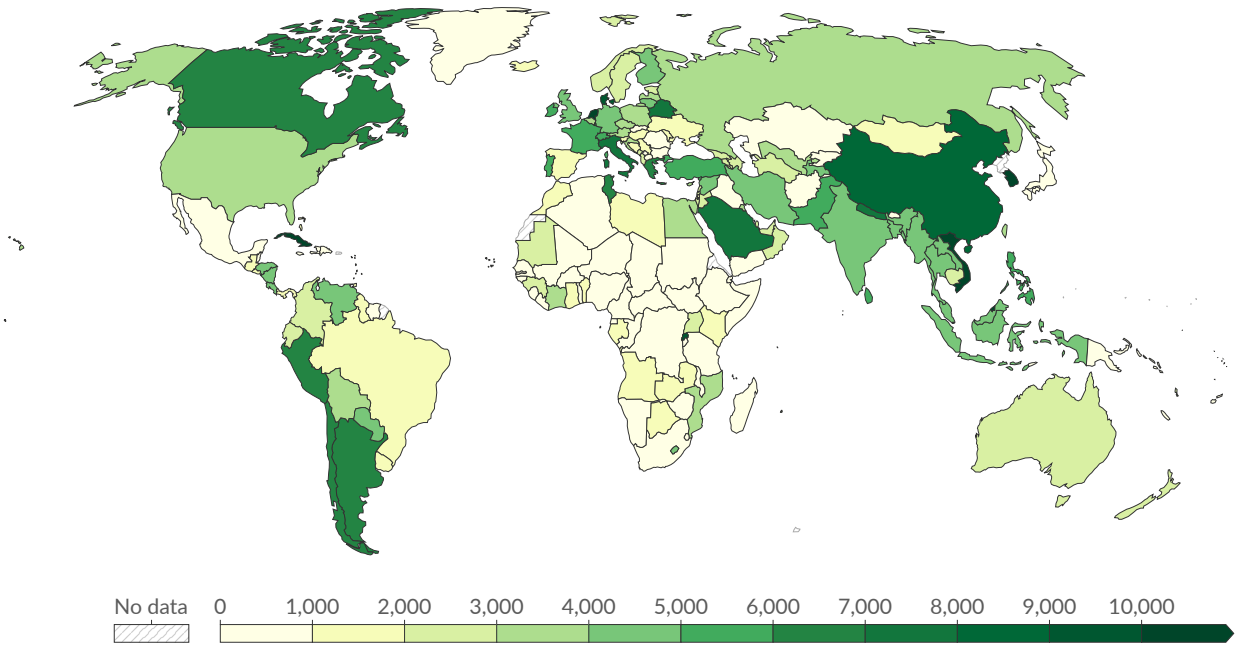
> **"COVAX was developed on false assumptions: that global solidarity would prevail; that HICs would meaningfully support the model; and that traditional market forces could be relied upon to end the most significant public health crisis in a century. While Gavi was focused on courting HICs to join COVAX, those countries made bilateral deals with manufacturers. COVAX and the LMICs relying on COVAX were pushed to the back of the queue."**[11]

These inequities were further exposed when India, home to the world's largest vaccine producer, temporarily restricted vaccine exports during its own severe COVID-19 wave. This decision, consistent with the actions of other producing countries, reflected immense domestic demand (influenced by key factors including its demographic make up) rather than a policy failure on the part of the Indian government. The real failure lay in a global health system that had largely concentrated production for low- and middle-income countries in one nation. This was a dependency shaped by high-income countries and institutional choices long before the pandemic.

Daily COVID-19 vaccine doses administered per million people, Dec 31, 2021

Our World in Data

7-day rolling average. All doses, including boosters, are counted individually.



Data source: Official data collated by Our World in Data (2024); World Health Organisation (2025); Population based on various sources (2024)

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Dr. Sène Marie-Angélique, Head of the Microbiology and Analytical Development Lab, works in the laboratory at the Institut Pasteur in Dakar, Senegal, on June 16, 2022. Credit/Copyright: *Gates Archive/2022*

By the end of 2021, COVAX had delivered fewer than half of its 2 billion doses.[12] This is particularly significant because 2021 was the peak of the pandemic. Many of the doses that were delivered arrived too late to prevent the loss of lives that timely vaccination could have averted. Power imbalances persisted and continued to shape global access to lifesaving vaccines.

Amid these failures, not only of solidarity, but of market design and global coordination, there remains a success story that donors should still recognise. Much of the global production, distribution, and access achieved during the pandemic rested on two decades of investment by Gavi, the Vaccine Alliance, in routine immunisation markets, cold-chain systems, and market shaping work. Although access barriers clearly remained and diversification had not gone far enough to prevent the over-concentration seen during COVID-19, Gavi's long-term model nonetheless had already changed the global vaccine landscape. With sustained donor support, the Alliance expanded the number of vaccine-producing countries from five to around twenty, many of them outside the G7. This shift reduced costs, expanded access, and integrated emerging manufacturers into global supply chains, while retaining the innovation strengths of established producers. The counterfactual is stark: twenty years ago, few vaccines were available to low-income countries; those that existed were often unaffordable, and the systems required to deliver them reliably were largely absent; the delivery systems needed to reach communities simply did not exist. Gavi's model changed that reality.

COVID-19 revealed that progress in market shaping was incomplete. The crisis served as a wake-up call, underscoring both the risks of over-concentration and the need to continue diversifying production in ways that build resilience, regional capacity, and equitable access. As donors reflect on lessons from COVID-19, they must recognise both sides of this story, both the structural constraints that limited COVAX and the long-term investments that enabled its successes.

3. Regional manufacturing as a possible solution to inequality

Support for further investment in regional manufacturing has emerged as a strategy to address the equity challenges laid bare by the pandemic. The core rationale is straightforward: building manufacturing capacity in all regions can create a more diversified and distributed vaccines ecosystem which should in turn improve supply and access.

In addition, newer vaccine platforms such as viral vector, RNA, and recombinant protein technologies differ from traditional approaches based on polysaccharides, live attenuated, or inactivated vaccines. These emerging platforms not only expand the potential for pandemic preparedness but can also be adapted for advanced therapies and treatments for non-infectious diseases. Harnessing these technologies presents a major opportunity for Africa's growing network of institutions and manufacturers to build capacity and shape the future of vaccine innovation.

The need for change is especially strong in Africa. The continent carries 25% of the world's disease burden yet imports 95% of its pharmaceutical ingredients and 70% of the medicines it consumes.[13] However, under current distribution arrangements, African countries assume some of the risks of innovation and engage in some of the production necessary for global supply particularly fill and finish (See box 2) without any guarantee of access to the resulting products.

This concern around inequity was particularly evident during COVID-19, when Johnson & Johnson's doses were bottled at Aspen Pharmacare's plant in South Africa and then exported from South Africa to Europe in 2021 while much of Africa remained under-vaccinated. There is a historical precedent for such extractive dynamics that contributed to the alarm at this time. African countries have frequently hosted vaccine and drug trials from HIV/AIDS research in the 1990s to HPV vaccine trials in the 2000s, yet access to the resulting products was often delayed or limited. Although the mechanisms of inequality differ across these cases, the underlying pattern is similar. African populations have contributed to global research and development efforts without reliably benefiting from the outcomes.

Community health worker Rebati gives babies like Adilya life saving vaccinations. Credit/Copyright: *Pippa Ranger/ Department for International Development*

The export of doses finished in South Africa during COVID-19 underscored this pattern, demonstrating that even when a degree of manufacturing takes place on the continent, without an industrial policy that provides the right safeguards, equitable access is not guaranteed.

3a. Strong foundations in Africa

Jean Kaseyae, Director of the Africa Centre for Disease Control (CDC), makes an explicit connection between the importance of vaccine independence and a long struggle for decolonisation:

> **"Many African countries got their independence in the 1960s, but we saw in COVID that we are not independent. Ensuring that Africa can manufacture its own vaccines will represent 'the second independence of Africa.'"**[14]

The leadership role of African institutions such as the Africa CDC, is matched by real potential in the sector. There are already companies like Biovac, and Aspen in South Africa and Institute Pasteur in Senegal with developed manufacturing capacity and many more under development.

In 2023, the Africa CDC, the Clinton Health Access Initiative (CHAI), and PATH mapped the state of vaccine manufacturing in Africa in detail. As of June 2024, the updated mapping shows 25 active vaccine manufacturing projects across Africa, spanning three levels of maturity.[15]

- Five manufacturers have commercial-scale facilities and are strengthening drug substance production, with technology transfers signed or in progress.
- Another five have commercial-scale facilities but have not yet secured technology transfer agreements.
- The remaining 15 are in earlier stages of development.

Alongside this industrial progress, African and international partners are also strengthening regulatory systems, a critical foundation for vaccine quality, safety, and trust. The MAV+ (Team Europe Initiative) for example provides a pan-European framework supporting local vaccine, medicines and health-technology manufacturing in Africa. Launched in 2021 with initial backing of roughly €1 billion, MAV+ works on what it describes as a comprehensive "360°" package of both demand and supply side support. This includes strengthening regulatory processes at the country level in coordination with regional actions involving the European Medicines Agency (EMA), WHO, AUDA-NEPAD, and the African Medicines Agency (AMA).[16]

3b. Growing support from Global Health Initiatives

Global Health Initiatives such as the Gavi, the Vaccine Alliance, and the Coalition for Epidemic Preparedness Innovations (CEPI), are beginning to channel significant investment into regional vaccine manufacturing.

Gavi, the Vaccine Alliance, established in 2000, is a public–private partnership that is a central actor in improving vaccine access in low-income settings through pooled financing, market-shaping strategies, and support to countries' immunisation programmes. In June 2024, the Gavi Board approved its new five-year strategy, known as "Gavi 6.0". This plan explicitly commits Gavi to strengthening global health security and regional vaccine supply by supporting regional manufacturing capacity, including through the African Vaccine Manufacturing Accelerator (AVMA). This is a ten year, US$ 1.2 billion innovative instrument, which is positioned to become a critical enabler of expanded production capacity across the continent. By providing milestone-based financial incentives linked to regulatory approval and the manufacturing of priority vaccines, AVMA offers a targeted, though limited, mechanism to support African manufacturers (see Box 1 for further detail on AVMA, including equity challenges).

CEPI, established in 2017 as a partnership among governments, philanthropic organisations, and the World Economic Forum, was created to invest in vaccines and technologies for epidemic preparedness, with early support from UK Aid. Its investments in rapid response vaccine platforms helped accelerate the development of several of the first COVID-19 vaccines, underscoring the importance of sustained, forward-looking funding for global health security. Building on this foundation, CEPI has expanded its mandate beyond vaccine R&D to include partnerships with African manufacturers such as Institut Pasteur de Dakar to strengthen capacity for epidemic and pandemic vaccines. In addition, CEPI funds the Regional Vaccine Manufacturing Collaborative (RVMC) Secretariat to advance policy development and coordination on the long-term sustainability of regional vaccine production.[17]

Together, these initiatives signal a shift. Global health institutions are beginning to recognise that equitable access cannot be achieved without regionally anchored manufacturing capacity. However, for this momentum to translate into structural change, investments must be coordinated, aligned with African priorities, avoid extractive models, and be embedded within long-term strategies for sovereignty and sustainability.

4. Shifting global health architecture

These institutional shifts are part of a wider reconfiguration of the global health architecture. What is emerging reflects a tension between ambitious and positive efforts at reform and a parallel erosion of solidarity, marked by declining donor commitment.

On the side of reform, new policy frameworks such as the Lusaka Agenda and the Pandemic Agreement signal an opportunity to move toward a more coherent, equity-driven system. In this context, donors are called to do more than simply pledge funds; they are expected to align their investments clearly with African priorities. Yet these positive developments are unfolding against a backdrop of reduced aid budgets and growing politicisation of assistance. The global health system is under strain as many high-income countries adopt more explicitly transactional approaches to development cooperation. This reflects both a prioritisation of domestic interests over global solidarity and crucially, a failure to recognise that infectious diseases do not respect borders.

4a. The Lusaka Agenda

The Lusaka Agenda, is a global health financing framework which centres African ownership and urges global health institutions, and donors by extension, to fundamentally change the way they operate: by aligning with country-led priorities and investing in systems that are equitable, resilient, and sustainable from the ground up.[18] This approach, and the need to end "development as usual" has been further developed in the Accra Reset.[19]

On manufacturing specifically, Shift 5 of the Lusaka Agenda, calls on global health initiatives (GHIs) to coordinate approaches to product development, research and development (R&D), and regional manufacturing in order to address persistent market and policy failures in global health. Importantly, it also makes clear recommendations to donors, including the urgent call for donors to reform their own behaviours, by adapting risk assessments, funding conditions, and accountability mechanisms, to create space for equity, local leadership, and sustainable systems to take root.

These recommendations go far beyond a geographical consideration of investment in Africa and speak to fundamental principles of equity.

4b. The Pandemic Agreement

A further major milestone in this changing landscape came in May 2025, when WHO Member States adopted the Pandemic Agreement. This treaty embeds critical principles into international law:

- Article 9: Coordinated R&D
- Article 10: Geographically distributed manufacturing
- Article 11: Binding technology transfer
- Article 12: Sharing of 20% of pandemic-related health products through the New Pathogen Access and Benefit-Sharing Mechanism (PABS) mechanism
- Article 13: Creation of a new Global Supply Chain & Logistics Network

Together, these measures represent a break from the market-driven approaches that defined the global COVID-19 response.[20] Yet the lack of binding commitments leaves implementation uncertain. It will be vital for countries like the UK to support mechanisms that translate these principles into real, enforceable action.

4c. Leadership opportunity for donors

The shifts represented by the Lusaka Agenda and the Pandemic Agreement will only deliver impact if they are backed by donor action. Donors hold significant influence over the pace and shape of reform through their financing of GHIs, bilateral investment choices, and diplomatic leadership. This moment calls for coordination, and support for long-term structural change, particularly towards self-reliance for African manufacturing.

Countries such as the UK, France, Canada, Germany, Japan, and others with long-standing engagement in global health have an opportunity to demonstrate leadership in this moment, even with shrinking fiscal space for aid.

Former UK Foreign Secretary, David Lammy has spoken about the need to treat African nations as equal partners, not simply aid recipients, in addressing shared global challenges. In his speech at the Africa debate in July 2025, he recalled the failures of the COVID-19 response and underlined the need to build capacity within Africa itself:

> **"They asked the question, why, why are we failing, the West failing to vaccinate the African continent, and that was an important question. But there was a second question – why has the African continent not got its own manufacturing capability, and that is what we now need to deliver in Africa."**[21]

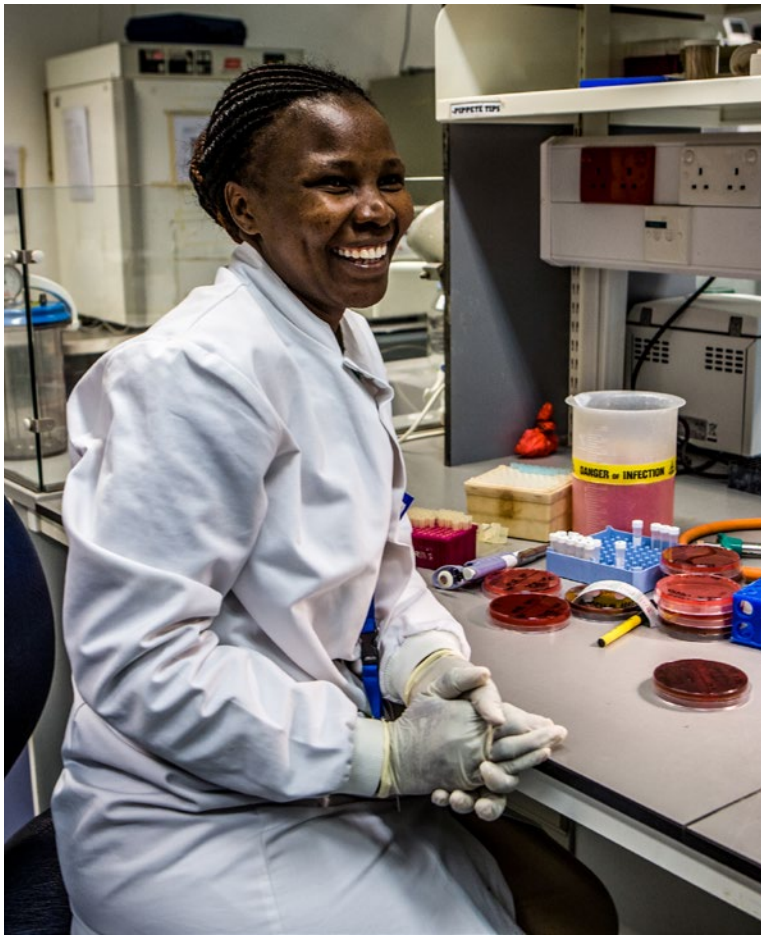
French President Macron echoed this principle of support for African-led investment in his remarks at the Global Forum for Vaccine Sovereignty and Innovation – the high-level event in Paris where Gavi launched its 2026–2030 Investment Opportunity alongside the African Vaccine Manufacturing Accelerator (AVMA). He stated:

> **"It is a global movement in which AVMA, the vaccine production accelerator in Africa, will be an essential building block for establishing a genuine African vaccine market. This movement is African, and we are delighted to support it and celebrate its first steps, but its strength lies in the fact that it has been conceived, designed, and desired by Africans."**[22]

In Canada, this imperative has been framed explicitly as a lesson of COVID-19. Reflecting on the pandemic response, the Hon. Ahmed Hussen, Chair of the Standing Committee on Foreign Affairs and International Development and, at the time, Minister of International Development, emphasised that:

> **"The pandemic showed us how crucial it is that we work together to deliver more timely and equitable access to vaccines. These are lessons we must carry forward. The African Vaccine Manufacturing Accelerator is a direct and important response to the need to produce vaccines closer to the people that need them."**[23]

There is a growing international recognition that genuine progress depends on African leadership and ownership. Donors must now translate this recognition into action by aligning their financing with African priorities, reforming restrictive funding conditions, and supporting African-led manufacturing and R&D. Without such commitment, the momentum generated by the Lusaka Agenda and the Pandemic Agreement risks dissipating, and the inequities witnessed during COVID-19 may be repeated in future crises.



Laboratory workers analyse swab tests for the PCVIS's nasopharyngeal carriage study. This is the crucial other side of the PCV-10 Impact Study: gathering evidence of whether the vaccine is in fact contributing to a drop in invasive pneumococcal disease. The Kenyan government with support from the GAVI Alliance, introduced a new vaccine, PCV-10, which targets 10 bacteria than can cause Invasive Pneumococcal Disease.
Credit/Copyright: *GAVI/2013/Evelyn Hockstein*

Box 1. Case study

African Vaccine Manufacturing Accelerator (AVMA)

The African Vaccine Manufacturing Accelerator (AVMA) is a Gavi-led initiative that provides milestone-based financial "pull" incentives to support African vaccine manufacturers. It will make up to $1.2 billion available over ten years to accelerate the expansion of commercially viable vaccine manufacturing in Africa.

AVMA was created to address a key barrier to manufacturing success, namely the cash flow constraints that prevent new manufacturers from entering, scaling or sustaining operations on the continent. With financial backing from donors including the UK, AVMA aims to de-risk investment, and it aligns closely with the African Union's Partnership for African Vaccine Manufacturing (PAVM), connecting Gavi's strategy to regional manufacturing goals.

Rather than reshaping the entire market, AVMA focuses on the specific gap of financing in order to help level the playing field so that manufacturers in Africa are able to compete with established manufacturers.

AVMA focus areas

Priority Vaccines: Oral cholera, malaria, measles–rubella, hexavalent (diphtheria, tetanus, pertussis, hepatitis B, Haemophilus influenzae b, polio), yellow fever, pneumococcal, Ebola, rotavirus.

Pandemic Readiness: Investment in mRNA and viral vector platforms, which are adaptable and scalable but not yet widely produced on the continent.

Criticisms of AVMA

By design, the scope of AVMA is limited to a focus on pull financing to support vaccine manufacturing. It therefore represents an important contribution to necessary reform of the ecosystem but is not intended to tackle every challenge ahead.

AVMA's emphasis on incentivising decentralised manufacturing has been widely welcomed. However, civil society voices have questioned whether, even within its own limited terms, AVMA goes far enough to ensure that the true localisation of manufacturing in Africa is ensured.

These concerns are well articulated in Els Torreele and Heather Sherwin's analysis, three key challenges of note include:[24]

1. "Localised" production is not the same as locally owned or governed

The authors, and other early commentary from civil society commentary raised concerns that AVMA might classify "local production" solely on the basis of geography – i.e., manufacturing activity taking place on African soil – even if led by subsidiaries of multinational companies. However, Gavi has responded that this interpretation does not fully reflect how AVMA eligibility has been designed. Under AVMA, the marketing authorisation holder (MAH) must be based in Africa, a deliberate requirement intended to foster the transfer of regulatory, technical and commercial ownership to African manufacturers.

2. Unequal access to risk capital

AVMA's milestone payment requires achieving WHO Prequalification, which is something that only companies with deep, risk-ready capital can realistically achieve. This favours established large international firms and disadvantages new or genuinely local manufacturers who lack such resources. The authors argue that, if AVMA wants to support local producers, filling the gap in push financing should be a critical niche to focus on, instead of the current preference for pull incentives.

3. Misplaced faith in competitive market dynamics

Expecting African firms to compete on equal terms in global tenders ignores structural inequities and fails to value the broader social, economic, and public health benefits of regionally rooted manufacturing. Moreover, in the health sector, the focus on market competition is known to lead to market failures and inequities, in which the poorest and most vulnerable are sidelined.

In addition to financing challenges, significant concerns remain around demand. While pandemic preparedness considerations may create some new demand for locally produced vaccines, it is still unclear how African manufacturers can secure market share in an already well-established global vaccine market.

Liza Barrie, Vaccines Director Public Citizen, has also highlighted the potential missed opportunity for technology sharing via this investment:

"Gavi should leverage its significant influence with pharmaceutical companies to share their vaccine technology and intellectual property with indigenous African manufacturers, particularly given that extensive public funding has been critical in developing this intellectual property. This transfer is essential for African manufacturers to achieve the AU's ambitious goal of vaccine self-sufficiency by 2040."

Gavi and MedAccess respond to financing gaps

In June 2025 MedAccess, a UK based social enterprise, and Gavi launched a partnership to explore a new financing mechanism to help close the gap in risk tolerant capital for African manufacturers. Under this mechanism, MedAccess will offer guarantee-based finance of up to US$50 million, subject to structuring and approvals, to support manufacturers aiming to participate in AVMA.[25]

Whilst it is too soon to assess impact, this effort signals a recognition that complementary financing tools, including guarantees and push mechanisms, are essential to ensure AVMA's success and unlock its potential to drive African led, locally governed vaccine production.

World Cancer Day, marked a major step forward in the prevention of cervical cancer with the ground breaking announcement of the first countries to get Gavi-supported HPV vaccines.
Credit/Copyright: *GAVI/2012/Sala Lewis*

5. Manufacturing investments must be oriented towards equity if they are to deliver vaccines for all

The case for increasing vaccine manufacturing in Africa has often been framed around geography. According to this logic, the more vaccines made closer to where they are needed will lead to fairer access. But geography alone does not guarantee fairness. If the structures that shape production, ownership, and decision-making remain driven by geopolitical and financial interests rather than public health, equity, and self-reliance, then vaccine manufacturing in Africa may replicate the very inequities it aims to solve.

This is why regional manufacturing must be understood as a matter of both public health strategy and social justice, which can be achieved through equity-focused health-industrial policy. Within this landscape, AVMA makes an important contribution because it models a shift away from subsidy- or charity-based approaches by investing in such a way that it signals to the market that investment in African manufacturing can be commercially viable. It is calibrated as a time-limited mechanism designed to bridge the high initial costs of operating in this sector and support manufacturers as they reach economies of scale and its decade-long commitment is unusually long in global development, intended to reduce risk and attract affordable capital.

AVMA and the move towards investing in African vaccine production sits within a broader, decades-long struggle for equitable access to medicines. This struggle is rooted in the principle that vaccines and other health technologies are not ordinary market commodities but key public health tools and should be considered global public/common goods. It sits alongside the use of TRIPS flexibilities, the campaign for the COVID-19 TRIPS waiver, and other efforts to challenge the monopoly power over life-saving tools in the global pharmaceutical industry. Seen in this context, regional manufacturing is not only an industrial or market strategy, it is also part of a long project of social justice and health sovereignty.

5a. Risks of replicating extractive models if true local ownership is not secured

Examples from the COVID-19 response show how local participation in manufacturing without meaningful ownership or benefit is not enough. A similar pattern is visible in clinical research. African populations are often enrolled in large-scale vaccine trials, but the resulting products are licensed and controlled by companies based in the Global North, with limited technology transfer or capacity building.

In South Africa, Johnson & Johnson's COVID-19 vaccine was manufactured under contract by Aspen Pharmacare. Millions of vaccine doses were finished in South Africa and then exported to Europe, resulting in a backlash and significant concerns around equity. At the time, the WHO Director-General Tedros Adhanom Ghebreyesus said he was "stunned"

to hear that J&J vaccines were being exported from South Africa to the EU, because the bloc has very high vaccination rates while even the most vulnerable people in many African countries have not been vaccinated.[26] Former UK Prime Minister Gordon Brown criticised this practice as part of a broader "neo-colonial" approach to global health, an extractive and exploitative model in which African production capacity was used to serve wealthier nations, not local needs.[27] Any investments in manufacturing must ensure that such a practice cannot happen again. Otherwise, UK investment in initiatives like AVMA will fail to achieve their original goals.

This is precisely why the Lusaka Agenda stresses donor reform (Shift 5) to promote sovereignty and local leadership, and why the Pandemic Agreement embeds binding commitments on technology transfer (Article 11). Without these safeguards, "local production" risks reproducing extractive models rather than dismantling them.

5b. Beyond geography: who leads, who benefits?

True localisation requires intentional safeguards around ownership, skills transfer, intellectual property, and governance to ensure that the financial and public health value created by new manufacturing capacity stays in the region. It must also include a shift in who is empowered within African countries to lead and benefit from these investments.

This includes addressing gender disparities, as vaccine manufacturing remains a male-dominated sector. If who makes vaccines matters, then gender equity must be seen as integral to localisation, not an afterthought. A narrow focus on geography risks reinforcing existing hierarchies, including within African societies.

Production of Rotavirus vaccine at the Serum Institute of India (SII).
Credit/Copyright: *Gavi/2020.*

Box 2. End-to-end production vs fill-and-finish

Why it matters for equity

If investment in regional manufacturing is to achieve equity goals, there is an important distinction to be made between investment in end-to-end production and fill-and-finish. They represent very different levels of capability and control.

Fill-and-finish is where bulk vaccine is put into vials or syringes and packaged. This is where African vaccine manufacturing capacity is currently concentrated. It captures only a small part of the value chain. It does not give manufacturers control over the drug substance or the decisions that shape supply, pricing, or access. As MSF noted in its critique of the Pfizer–BioNTech/Biovac fill-and-finish arrangement, "while this 'fill and finish' agreement is a first step, this is clearly not enough to achieve vaccine independence on the African continent." There is also considerable risk that if all plans to expand manufacturing in Africa are realized, capacity in fill and finish may more than double the projected demand by 2030 which threatens commercial viability of all manufacturing projects.

End-to-end production, by contrast, covers the full chain: drug substance, formulation, scale-up, and final fill-and-finish and is much less. Though more complex and capital-intensive, it offers far greater value and is the investment that the Africa CDC has repeatedly called for. With the right industrial policy and partnerships that include technology transfer, investing in end-to-end capacity gives African manufacturers and the countries they serve greater influence over R&D priorities as well as market stability and access.

For equity, this distinction is important. Increasing the number of fill-and-finish sites in Africa may expand activity, but it does not guarantee either a viable commercial future for manufacturing or timely access in a crisis or ensure that benefits can be accessed locally. End-to-end capacity has a much greater potential to build autonomy and strengthen long-term manufacturing.

Beyond, achieving equity goals, investing in diversified end-to-end production capacity in Africa is a much more strategic investment for high income countries aiming to establish more stable global manufacturing ecosystem that is able to with stand future global health threats.

5c. The building blocks of equitable regional manufacturing

The foundation stone of regional vaccine manufacturing must be deeply embedded in local systems, aligned with African health priorities and governance structures. Building equitable regional manufacturing requires a set of interlinked features:

- Genuine local ownership, fostered through an ecosystem that combines public, private, and regional investment under African-led governance to ensure that vaccine production serves public interest and regional priorities.
- Technology transfer and information sharing that goes beyond symbolic gestures to enable independent production.
- Genuine capacity building that will involve long-term investments in infrastructure, workforce development, and institutional strengthening.
- Gender equity, ensuring women are not excluded from leadership, technical, and decision-making roles in vaccine manufacturing.
- Sustainability – investments and partnerships must support autonomous production that can endure beyond the limits of donor funding cycles.

Whilst this list may appear demanding in a constrained environment, the WHO MPP mRNA Technology Transfer Programme offers a useful illustration of how several building blocks can come together to form a more equitable partnership model. Afrigen Biologics and Vaccines in South Africa hosts the mRNA hub, which is led by African institutions and works with 14 additional LMIC partner manufacturers (spokes) to share technology and build capacity. The programme brings together local leadership, capacity building, and knowledge transfer. Some questions remain about long term sustainability and the speed and depth of technology transfer. Nevertheless, its achievements to date offer a practical blueprint, albeit one still evolving, for LMIC vaccine manufacturing and technology sharing that could advance public health and social justice in Africa and beyond.

The first batch of COVID-19 vaccines for COVAX rolled out from the manufacturing plant at Serum Institute of India.
Credit/Copyright: *WHO/2021*

Box 3. Gender equality in African vaccine manufacturing investments

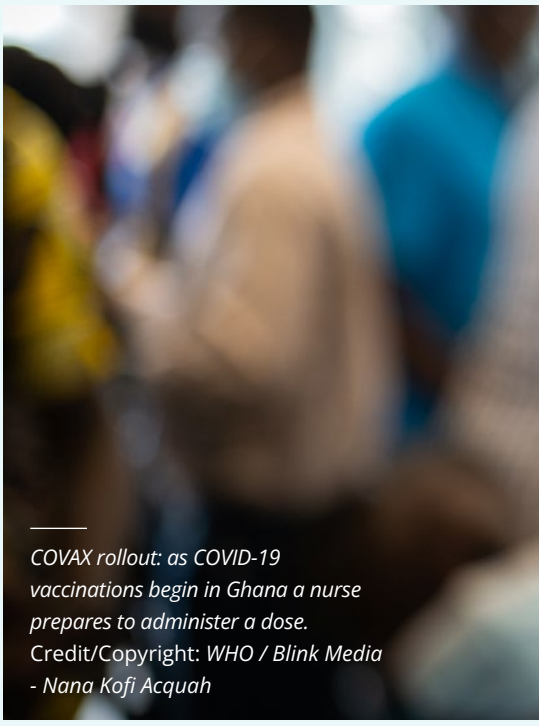
In Africa, where vaccine infrastructure is evolving, there is a unique opportunity to build a range of equity principles in from the beginning – this should include a gender transformative approach to investment. Adopting such an approach would allow for a shift beyond thinking of equity in terms of geography alone. A gender lens helps investors and policy makers avoid rebuilding old power imbalances in new buildings.

It is important to acknowledge a potential risk. Attention to gender must not translate into additional regulatory hurdles, compliance burdens, or moral expectations that fall disproportionately on new African entrants. If gender requirements are imposed without adequate support, capacity building, or flexibility, they could unintentionally disadvantage the very firms the investment ecosystem aims to strengthen.

Yet this risk is avoidable. Growing evidence from multiple sectors suggests that gender inclusion is associated with stronger innovation, productivity, and overall organisational performance. When designed well, a gender-transformative approach can strengthen industrial performance by broadening the talent pipeline, improving workforce retention, enhancing problem-solving capacity, and diversifying leadership – factors consistently associated with more resilient, innovative, and competitive manufacturing environments.

At the structural level, a gender-transformative approach would mean embedding gender analysis into every investment and policy decision. That could include disaggregating skill building and employment data by gender to ensure that employment opportunities from new investments reach men and women, setting targets for women in leadership roles, and ensuring procurement policies or investment opportunities support women-led suppliers.

Vaccine manufacturing is currently a heavily male dominated industry both in terms of leadership and employment. Vaccine manufacturing remains a sector in which women are under-represented in leadership and



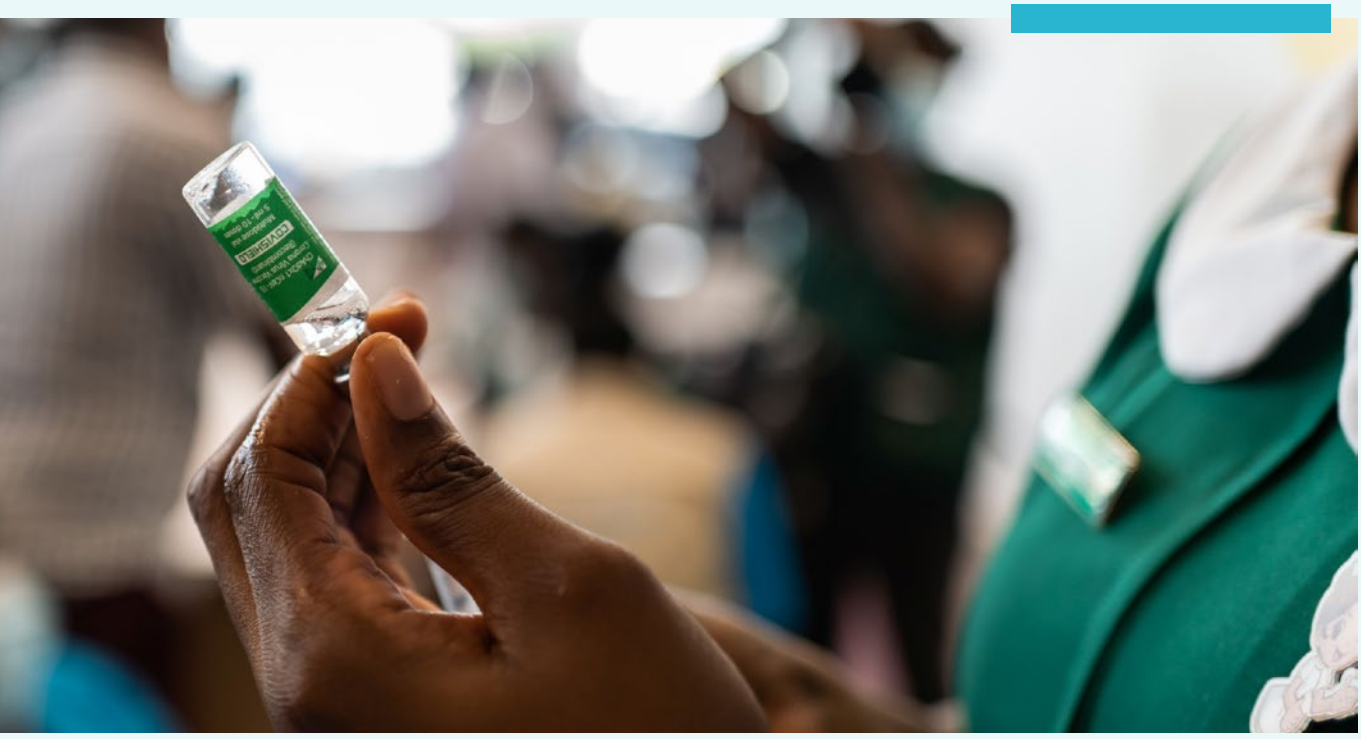
COVAX rollout: as COVID-19 vaccinations begin in Ghana a nurse prepares to administer a dose.
Credit/Copyright: *WHO / Blink Media - Nana Kofi Acquah*

ownership roles, even as they play a substantial part in the technical workforce in some settings. Limited data from UN Women and the International Society for Pharmaceutical Engineering (ISPE) suggest that while women can make up a significant share of staff in quality control, logistics, and regulatory affairs, they are far less visible in senior decision-making positions. Strengthening gender-transformative investment approaches can help ensure that women are equitably represented across all levels of the vaccine manufacturing value chain.

Examples of gender-transformative approaches:

Afrigen Biologics (South Africa): A majority-female lab team is at the heart of Africa's mRNA vaccine hub, supported by inclusive hiring and mentorship practices.

Revital Healthcare (Kenya): Offers flexible shifts and technical training to working mothers, building a skilled female workforce in syringe production.



6. Recommendations to support a more equitable global vaccine ecosystem

The following recommendations build on new global policy frameworks that set the stage for reform, namely the WHO Pandemic Agreement, and the Lusaka Agenda, launched on 12 December 2023.

To support a more equitable global vaccine ecosystem, high-income countries, including the UK, and global health institutions should:

1. Invest in African-led manufacturing with long-term, flexible financing

Build on initiatives like the Gavi-led AVMA and add to it by supporting manufacturing with sustained, predictable funding that prioritises African ownership and long-term capacity, including for R&D to build sustainable pipelines. This aligns with Article 10 of the Pandemic Agreement on distributed manufacturing capacity and Article 13 on global supply chain governance.

- Move beyond short-term supply needs to fund infrastructure, drug substance facilities, workforce development, and regulatory systems, not just fill-and-finish.
- Mobilise fair and risk-tolerant financing mechanisms (e.g. guarantees, blended finance) that shares both risk and reward for African partners equitably across the value chain, recognising not only financial risk but also the scientific, institutional, and personal risks borne by partners during research, development, and clinical testing.
- Prioritise financing models that directly support African institutions and private sector actors, ensuring local ownership and governance that prioritizes public health over financial interests.

2. Guarantee equitable access through technology transfer, knowledge sharing, and African-led R&D

Close critical gaps by enabling full vaccine production in Africa in ways that ensure new technologies are shared broadly and affordably. This reflects Article 11 of the Pandemic Agreement on technology transfer and the Lusaka Agenda's emphasis on sovereignty and local leadership.

- Facilitate equitable technology transfer to build local expertise and accelerate production, with support from governments, donors, and industry partners.
- Strengthen African-led R&D ecosystems, funding local institutions and scientists to develop products tailored to regional health needs.
- Champion global mechanisms such as the WHO mRNA Technology Transfer Programme and the Medicines Patent Pool as transitional enablers. Ensure that such mechanisms strengthen, rather than substitute for, regional autonomy and local health security through early, broad, and affordable licensing of intellectual property.

3. Align governance, procurement, and equity safeguards

Global health financing and governance must embed equity and accountability at every stage. This is consistent with the Pandemic Agreement's commitments on equitable supply chains (Article 13) and the Lusaka Agenda's Shift 5 on donor reform.

- Encourage African governments and international agencies to procure African-made vaccines, creating reliable demand and market stability.
- Track equity outcomes across vaccine manufacturing initiatives, including ownership, IP transfer, and gender equity.
- Embed gender equity and inclusive leadership, addressing disparities in decision-making, ownership, and workforce participation.

7. Conclusion

As the world prepares for future health threats, vaccines will be a key technology in keeping people safe. Scientific innovation is advancing rapidly, and vaccine development timelines have shortened dramatically. The remaining question is how we ensure fair and timely access for all. This will require shifting power, sharing knowledge, and investing in systems that serve everyone, not just those who can pay first.

The experience of COVID-19 revealed both the possibilities and the limits of the current system. Technical solutions for equitable access existed including C-TAP and TRIPS flexibilities but these were consistently marginalised.

COVAX demonstrated what rapid, multilateral innovation can achieve, saving millions of lives, but it was ultimately constrained by a highly concentrated and distorted market. Likewise, Gavi's two decades of work which included efforts to diversify manufacturing from a handful of countries to twenty laid important foundations, but the crisis exposed how incomplete that diversification remains and how dangerous over-reliance on a small number of suppliers can be.

In response, regional manufacturing has emerged as a promising path to a fairer ecosystem, particularly in Africa. As this paper has shown, the continent now has a growing base of manufacturers, stronger regional institutions, and new instruments such as AVMA, alongside evolving global frameworks like the Lusaka Agenda and the Pandemic Agreement. Together, these developments point towards the potential for a more distributed, resilient model of vaccine supply.

In a context of shrinking aid budgets the stakes are high. Traditional leaders in global health, including the UK, France, Germany, and Canada are all signalling a global retreat through ongoing cuts, prioritizing short-term domestic savings over long-term global security and solidarity. This is a false economy.

These countries should instead support structural changes that move beyond temporary fixes to long-term equity. The recommendations in this paper chart that path: sustained, flexible investment in African-led manufacturing; commitments to technology transfer and knowledge sharing; and governance reforms.

What is decided in the coming years will determine whether the next pandemic repeats the inequities of COVID-19, or whether it marks the moment when vaccines and other health technologies began to function as true global public goods produced and governed in ways that protect everyone, everywhere.

Equity by Design

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