Raising Generation ImmUnity

2021–2025

The 2023 Mid-Term Review Report


motivation


ADULATION

Raising Generation ImmUnity

The 2023 Mid-Term Review Report

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Third row: *Gavi/2023/ Ashraful Arefin.*
Fourth row: *Gavi/2023/Asad Zaidi; Gavi/2023/Oriane Zerah; Gavi/2023/Isaac Nkinzingabo RUDAKUBANA.*

Welcome message from Spain, the Mid-Term Review Host

José Manuel Albares Bueno

Minister for Foreign Affairs, European Union and Cooperation of Spain

The Government of Spain is proud to host the Global Vaccine Impact Conference and welcome you all to Madrid for the 2023 Mid-Term Review of Gavi, the Vaccine Alliance. We think this report and the meeting are critically important to help achieve our shared goal of extending the power of immunisation to where it is needed the most. As Spain takes up the Presidency of the Council of the European Union, we will act in solidarity with our European and international partners in strong support of Gavi's mission. If any proof were needed, the pandemic showed how we are only safe when everyone is safe: immunisation is a global public good and remains one of the most effective ways to save lives.

Spain has been a long-standing partner and donor to Gavi, the Vaccine Alliance. We think the Alliance plays a unique role in the global health landscape, with a flexible, agile model that ensures each stakeholder delivers according to their own comparative advantage. The results-based model is powered by innovative financial tools and mechanisms that drive value for money into what is already one of the best buys in public health – working in partnership with lower-income countries to tackle killer diseases through vaccination.

Since Gavi's early days, Spain has fully embraced the power of Gavi's innovative financial mechanisms. We have pledged over 300 million euros to the International Finance Facility for Immunisation (IFFIm) which has allowed Gavi to raise additional finance for vaccines through the international capital markets. And the Spanish private sector has also made a sizeable contribution, in keeping with the spirit of the Alliance as a public private partnership – the "la Caixa" Foundation is one of Gavi's longest-standing private sector partners.

This long-standing relationship, built on a flexible partnership that delivers, is what gave Spain the full confidence to support the COVAX Advance Market Commitment as Gavi played a central role in tackling the worst global pandemic in over a century. When COVID-19 struck, in addition to our financial support, we donated 61 million doses to COVAX, making Spain the fifth largest donor in the world, because we saw the need for equity during the pandemic as at other times. Most recently we have contributed to the introduction of the first malaria vaccine, offering a new way to tackle this terrible disease, which is the second biggest killer of children in Africa.

This Government has doubled development aid. In uncertain times solidarity is more important than ever and we will continue to support lower-income countries and organisations like Gavi so that we can secure our collective future against old diseases like malaria and new ones which threaten all of us. I look forward to welcoming you to Spain so we can learn together and chart a course for this great Alliance.

Partnership with "la Caixa" Foundation: celebrating 15 years of joint successes

"la Caixa" and its Foundation became Gavi's first private sector partner in 2008 and have been a key contributor to Gavi's work, particularly in support of pneumonia. "la Caixa" Foundation raises funds and awareness through employee donations, micro-donations from the general public and the Business Alliance for Child Vaccination, a programme that offers Spanish companies and private banking clients the opportunity to collaborate with Gavi in the fight against child mortality through vaccination. "la Caixa" Foundation has pioneered the Gavi Matching Fund for leveraging private sector donations. Since 2011, all funds channelled through "la Caixa" Foundation are being matched by the Bill & Melinda Gates Foundation via the Gavi Matching Fund. Overall, this partnership has contributed more than US$ 87 million to Gavi and has been a source of inspiration to many other private sector partners.

José Manuel Barroso
Chair of the Gavi Board

Dr Seth Berkley
CEO of Gavi

Foreword

The pandemic has tested the Alliance and the progress made on immunisation as never before, and has left us facing a polycrisis of conflict, climate change, and economic disruption. But the pandemic also reminded us of some vital truths: that vaccines are essential to protect health and wealth; that unless everyone is protected, no-one is safe; and that we go faster and further when we go together. These truths were apparent when Gavi was founded more than two decades ago; they were apparent when world leaders met in 2020 and gave us the support we needed to implement our strategy; and they are apparent now as we work to recover from the pandemic.

At this mid-point in Gavi's 2021–2025 strategic period, we can be proud of what we have collectively achieved, with the majority of commitments made in 2020 on track, including the key commitment to support countries to immunise an additional 300 million children by 2025, saving more than seven million lives. We committed to deploy vaccines to protect against 18 diseases, but through COVAX we exceeded this commitment with the extraordinary effort by countries, the Alliance, and new partners to deliver 1.75 billion doses of COVID-19 vaccines to 87 lower-income countries.

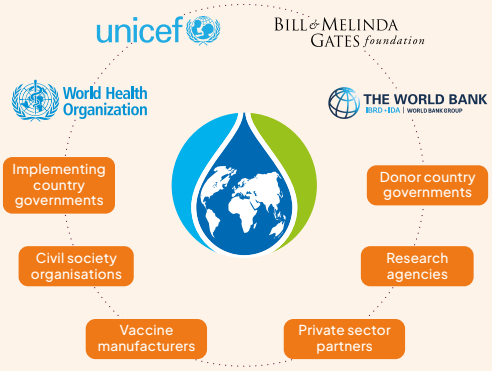
But the pandemic led to a drop in routine immunisation coverage – although it is now recovering – and to an increase in the number of children who have received no vaccines. And it has delayed us meeting our commitments in some key areas – in vaccine price savings, in country co-financing, and in countries transitioning from core Gavi support. In the face of these delays and the many challenges countries face to sustain and extend their immunisation systems, we must reinforce our efforts.

As the Alliance gathers in Madrid for the Mid-Term Review, we need to consider how we can adapt to a challenging global environment. We need to ask ourselves searching questions: How can we speed the recovery and extend the protection from more vaccines? How can we ensure that health workers have the support and protection they need to play their vital role? How can we harness the power of the Alliance to be much better prepared for the next pandemic and much quicker to respond? And given fiscal challenges and the gaps in immunisation, do we need to refresh our approach to co-financing and transition?

We are grateful to the Government of Spain for hosting this important Conference and look forward to considering these issues and more in Madrid.

Gavi, the Vaccine Alliance: a robust and flexible model

Gavi's partners work together to achieve the Alliance's mission: to save lives and protect people's health by increasing equitable use of vaccines. Each partner brings its own unique area of expertise: the leadership of developing countries; the broad skills and implementation capacity of core partners UNICEF, WHO, and the World Bank; the production capabilities of the vaccine manufacturers; the know-how and support of the private sector, donor governments and the Bill & Melinda Gates Foundation; the technical skills of research agencies and the immunisation delivery, public policy and mobilisation skills of civil society organisations. The pandemic demonstrated the importance of a flexible Alliance as new partners joined and existing partners adapted. Continuing to leverage the comparative advantages of Gavi's public-private partnership will be critical to addressing the challenges that have emerged in the current reporting period.



Summary

Two years' progress against the Gavi 5.0 investment opportunity commitments

Prevent 7–8m future deaths
ON TRACK

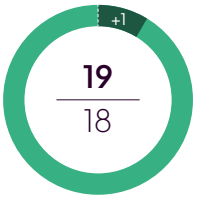
Vaccine price savings (US$)
SOME PROGRESS

Transition 10 further countries
FALLING BEHIND

US$ 80–100bn of economic benefits (US$)
ON TRACK

Vaccines delivered
ON TRACK

Immunise 300m additional children
ON TRACK



Protect against 18 diseases
ON TRACK

Country co- and self-financing (US$)
SIGNIFICANT PROGRESS

Engage 18 transitioned countries
ON TRACK

1.4 billion touchpoints
ON TRACK

New vaccine products
ON TRACK

Forecast of target status by 2025: On track · Achievable with further work · Likely to be missed

"

In my country, where climate-change and displacement are making it harder, not easier, to deliver health services – vaccines are an essential way to manage outbreaks and save lives

DR ABDELMADJID ABDERAHIM
MINISTER OF PUBLIC HEALTH AND PREVENTION, CHAD

The Alliance is on track to meet the headline commitments for the 2021–2025 strategic period

This report uses data from the first two years of the Alliance's 2021–2025 strategic period to chart progress against the 2019 Investment Opportunity. The Alliance is on track to meet the majority of the key commitments made to donors. This includes supporting countries to immunise an additional 300 million children by 2025, delivering 3.2 billion vaccines, saving more than seven million lives and generating economic benefits of US$ 80–100 billion.

Preliminary data suggests that 2022 will be a year of rebound for routine immunisation after the disruption caused by the COVID-19 pandemic

The challenge of maintaining health systems during the pandemic, while also scaling up an unprecedented vaccine response, led to an average five-point reduction in immunisation coverage in Gavi implementing countries in 2020 and 2021. It also delayed rolling out life-saving vaccines such as those against human papillomavirus (HPV) and increased the number of zero-dose children.

Encouragingly, preliminary data from 2022 shows signs that countries are driving a recovery in routine immunisation. Coverage of the third dose of diphtheria-tetanus-pertussis-containing vaccine (DTP3) has rebounded by approximately three percentage points in one year based on administrative data reported by the majority of Gavi implementing countries.

Countries have maintained the long-term trend of investing more in their immunisation programmes – but there are challenges ahead

Despite the pandemic, Gavi previously and currently implementing countries are investing more than ever before in immunisation and building sustainable programmes. They are forecast to cover 40% of vaccine costs from domestic resources across 2021–2025. One hundred percent of countries have met their co-financing obligations, with 11 exceptional waivers worth 3% of total co-financing granted during the COVID-19 pandemic. Following policy changes by the Gavi Board linked to the broader macro-economic environment, four of the 10 countries expected to transition during the 2021–2025 strategic period will now do so in the next period. Rising levels of debt and lower growth are putting pressure on the Alliance's transition model.

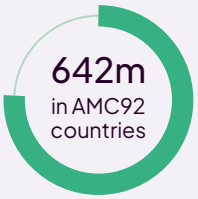
The Alliance's market-shaping has continued to drive lower prices, more choice and greater availability of vaccines for lower-income countries

The cost of the pentavalent, PCV and Rotavirus vaccines needed to immunise a child dropped by more than 50% between 2010 and 2021. The pandemic has helped to drive the maturation of new technologies – with exciting possibilities

FIGURE 1

COVAX and COVID-19 Vaccine Impact

Numbers immunised (vaccinated with complete primary series)

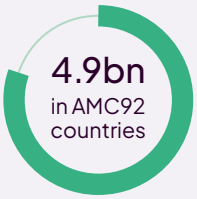


including
488m
in Gavi57
countries

Deaths prevented with COVAX-supported vaccine doses

including
1.6m
in Gavi57
countries

Touchpoints through immunisation with COVID-19 vaccines



including
3.7bn
in Gavi57
countries

for new vaccines. It has also highlighted the need for greater diversity of vaccine production, including at a regional level, and in particular in Africa. In 2021 a record number of 11 Gavi vaccine markets were demonstrating healthy market dynamics. Disruptions in the rotavirus market had reduced that number to 10 in 2022. Challenges also remain in the oral cholera vaccine (OCV) and human papillomavirus (HPV) markets. Interventions to improve these markets and shape the malaria market are underway.

The Alliance's efforts to extend immunisation are bringing economic benefits and helping countries manage the impact of climate change

The Alliance is on track to deliver US$ 80–100 billion in economic benefits through immunisation by 2025. Over the next three years, continued progress will help to underpin the health and prosperity of Gavi implementing countries. It will reduce the cost of future epidemics and pandemics, and narrow the gap to meeting the UN Sustainable Development Goals (SDGs). At the same time, the world is facing a polycrisis. Many countries leave the pandemic with greater fiscal constraints; face the impacts of climate change; suffer from rising level of conflict and insecurity; and have rising pressures on their health systems. The Alliance is already responding by providing more vaccines against six diseases that are spreading rapidly as a result of climate change – including malaria.

In addition to the Gavi core commitments, COVAX has delivered 2 billion COVID-19 vaccines

In early 2020, Gavi and COVAX partners took on the challenge of leading the largest ever multilateral effort to ensure vaccine equity in a public health emergency. They established the COVAX Facility and Gavi COVAX Advance Market Commitment (AMC) for 92 lower-income economies – which acted as the Vaccines Pillar of the Access to COVID-19 Tools Accelerator (ACT-A).[1] Drawing upon this support, these economies fully immunised an additional 642 million people against COVID-19, saving almost 3 million additional lives[2] in the first two years of this strategic period and collectively reaching 55% coverage levels. It is important to recognise that supply was constrained in 2021, and a number of evaluations are providing important lessons for Gavi and COVAX partners to draw upon in planning for the next pandemic and ensure faster and more equitable access for lower-income countries.

The Alliance is adapting its model and focusing on key priorities for the remainder of the strategic period

To protect the gains of the Alliance's first two decades, lessons from the pandemic are being incorporated into the core business through a refreshed Gavi 5.1 strategy. The Alliance model is a strength, but there is more to do to drive

FIGURE 2

Raising Generation ImmUnity – more than one billion unique children immunised

Image credits: *Gavi/2023/Khasar Sandag; Gavi/2013/Jiro Ose; Bill & Melinda Gates Foundation/2017/Sam Reinders; Gavi/2017; Gavi/2015/Sam Phillips; Gavi/2022/Asad Zaidi*

Below: Children in kindergarten in Ulaanbaatar, Mongolia
Gavi/2023/Khasar Sandag

efficiency and reduce fragmentation, including deepening our engagement with existing local, regional, and global partners, and building new partnerships. This will help the Alliance to double down on its mission to reach the most vulnerable. It will reduce the number of zero-dose children; protect women and girls; and reinforce the rebound in routine immunisation. The push to continue to strengthen health systems and increase access to primary health care will drive the climb towards universal coverage.

COVAX will be fully integrated into the Secretariat by the end of 2023. As the world's largest investor in vaccines and immunisation programmes, the Alliance will reinforce the role of immunisation as a pillar of pandemic preparedness, prevention, and response (PPPR) and ensure its work is complementary to other actors in the global health architecture. New innovative partnerships and instruments with multilateral development banks, CSOs, and private sector investors can leverage further resources for Gavi's mission.

The last few years have taught us many lessons – amongst them, the lifesaving power of vaccines. With the COVID-19 pandemic officially behind us, it's more evident than ever that we need to continue working to ensure everyone, everywhere can get immunized. Together, through Gavi and beyond, we are building a stronger, healthier future.

JUSTIN TRUDEAU
PRIME MINISTER OF CANADA

Looking ahead to help achieve a new global health dividend

Countries are entering what may be their most testing period since the Alliance was created two decades ago. And yet, the Mid-Term Review offers a chance to look ahead. Alongside the obvious challenges there are exciting opportunities for the Alliance to find new ways to support countries and save lives.

Dramatic improvements in vaccine science will provide an opportunity for Gavi to be at the heart of discussions on how to use that progress to deliver benefits for lower-income countries. Killer diseases like malaria can finally be addressed though immunisation. New vaccines in the development pipeline, such as Tuberculosis and Group B Streptococcus, can potentially offer new ways to save lives – including by reducing maternal infections and neonatal mortality. While disease outbreaks – fuelled by climate change, population growth, and migration – will be on the rise, new preventative approaches to vaccination can help to reduce their devastating impact.

It seems clear that Gavi implementing countries – as well as a large number of middle-income countries – will be faced by conflicting pressures and trade-offs to maintain the investment made in their immunisation programmes over the past 20 years. Here Gavi can look to see how its co-financing and transition models can best be adapted to support countries. And the Alliance itself, powered by its unique public-private partnership structure, can look once again to unleash a new wave of innovation to drive greater impact and return on investment.

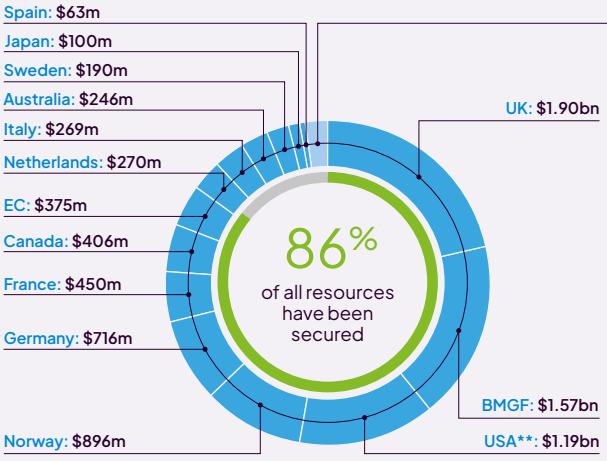
Discussions at the Mid-Term Review help raise the Alliance's collective ambitions; shape the post-pandemic world through a renaissance in vaccine technology; and work together to achieve a new global health dividend for the next Generation ImmUnity.

FIGURE 3

Resources mobilised for Gavi, 2021–2025

Gavi core (2021-2025) total resources

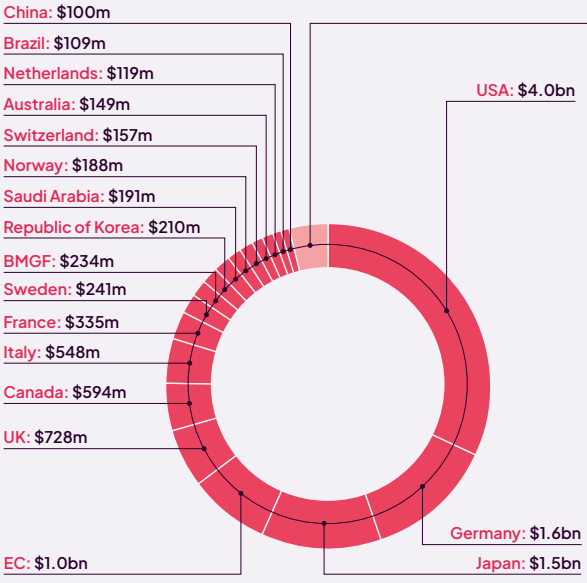
US$ 10.0 billion*



Republic of Korea	$30m
China	$20m
Ireland	$19m
India	$17m
Qatar	$10m
Russia	$10m
Mastercard	$10m
"la Caixa" Foundation	$8m
Brazil	$6m
Luxembourg	$6m
Finland	$4m
Denmark	$3m
Belgium	$3m
Alwaleed Philanthropies	$3m
Saudi Arabia	$3m
Wellcome Trust	$2m
Rockefeller Foundation	$2m
Unilever	$2m
Arm Limited	$2m
Airtel	$2m
UPS	$1m
South Africa	$1m
Burkina Faso	$1m
Cameroon	$1m
Niger	$0.9m
Scotland	$0.9m
Uganda	$0.8m
Monaco	$0.7m
ELMA Vaccines and Immunization Foundation	$0.6m
Switzerland	$0.4m
Portugal	$0.4m
IFPW	$0.2m
Other donors	$4m

Gavi COVAX AMC total resources, 2020-2025

US$ 12.5 billion



Kuwait	$50m
Reed Hastings and Patty Quillin	$30m
New Zealand	$29m
Denmark	$29m
Finland	$19m
Gates Philanthropies Partners	$18m
Mastercard	$18m
Belgium	$16m
Ireland	$15m
Qatar	$10m
Shell International B.V.	$10m
Twilio	$10m
Austria	$9m
Iceland	$8m
Google.org	$8m
WHO Foundation - Go Give One Campaign	$7m
Spain	$6m
Luxembourg	$6m
KS Relief	$5m
Procter & Gamble	$5m
Singapore	$5m
Cisco	$5m
TikTok	$5m
Visa Foundation	$5m
Thistledown Foundation	$4m
Bahrain	$3m
Gamers without Borders	$2m
Vaccine Forward Initiative	$2m
UBS Optimus Foundation	$2m
Portuguese private sector	$2m
Greece	$2m
Asia Philanthropy Circle	$2m
Portugal	$1m
Philippines	$1m
Oman	$1m
Vietnam	$1m
Stanley Black & Decker	$1m
Analog Devices Foundation	$1m
Poland	$0.9m
Toyota Tsusho	$0.9m
Salesforce	$0.7m
Liechtenstein	$0.6m
Croatia	$0.6m
Slovenia	$0.6m
Colombia	$0.5m
Coca-Cola Foundation	$0.5m
Spotify	$0.5m
Workday Foundation	$0.4m
Kerk in Actie	$0.3m
CODE(RED) Campaign	$0.3m
Mexico	$0.3m
SymAsia Foundation	$0.3m
Alight Solutions	$0.3m
Centene Charitable Foundation	$0.3m
Epiroc AB	$0.2m
Croda Foundation	$0.2m
Estonia	$0.2m
PagerDuty	$0.2m
BlackBerry	$0.2m
Etsy	$0.1m
Russell Reynolds Associates	$0.1m
Malaysia	$0.1m
AerCap Ireland Limited	$0.1m
Collins Aerospace (Goodrich Corporation)	$0.1m
Dolby Laboratories Charitable Fund	$0.1m
McHugh O'Donovan Foundation	$0.1m
SMBC Aviation Capital Limited	$0.1m
Pratt & Whitney	$0.1m
Malta	< $0.1m
Monaco	< $0.1m
Stadt Zug	< $0.1m
Palau	< $0.1m
Sovereign Order of Malta	< $0.1m
Bhutan	< $0.1m
Moldova	< $0.1m
Mauritius	< $0.1m
Other	$119m

Notes:
Data as of 28 February 2023, all amounts are in US$.

* This total includes all donor contributions received and pledged for the 2021–2025 period, income from investments and resources rolled over from the previous strategic period (incl. IFFIm strategic deferrals), but does not include any reasonably expected future contributions that have not been publicly announced or pledged.

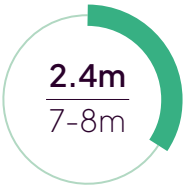
** The US President's Fiscal Year 2024 Budget includes an additional $300 million contribution to Gavi, subject to Congressional approval.

1 Extending the power of increased immunity

> **COVID-19 proved beyond a doubt the value of immunisation. We built our response on top of a tried-and-tested immunisation system. With Gavi support, we can strengthen this platform to ensure our health system can withstand future outbreaks**

BUDI GUNADI SADIKIN
MINISTER OF HEALTH INDONESIA

Immunise 300m additional children



Prevent 7–8m future deaths

Protect against 18 diseases

Vaccines delivered

Based on results from the first two years of the strategic period, Gavi is on track to meet key commitments to support countries to immunise an additional 300 million children by 2025, saving 7–8 million lives. The challenge of maintaining health systems during the pandemic led to a reduction in immunisation coverage of five percentage points, although the Alliance is working intensively with countries to help them recover from the pandemic. Encouragingly, based on early data, coverage has now increased by approximately three percentage points in one year.

Progress to date

- 130 million unique children immunised.
- There were 13 new vaccine introductions in 2021 and 16 in 2022.
- Breadth of protection across key Gavi vaccines has continued to increase, from 47% in 2019 to 51% in 2021.

Remaining challenges

- Need to accelerate recovery after pandemic.
- Delays to key vaccine rollouts (e.g. HPV) as countries have been forced to prioritise during the pandemic.
- Dramatic increase in outbreaks with 40 Alliance responses in 2022.

Prevent, protect, prosper – reporting on Gavi's 2021–2025 Investment Opportunity

Gavi committed in the Investment Opportunity to supporting countries to prevent disease with the most comprehensive package of vaccines ever offered to protect the next generation and build prosperity. This commitment was endorsed at the Global Vaccine Summit in June 2020 by 42 heads of state and government and other world leaders, who also called upon COVAX to respond to the pandemic by extending that protection to include COVID-19 vaccines. Donors committed funds to support Gavi from 2021–2025 in addition to support for COVAX. This report updates on progress based upon two years of data in the strategic period.

Immunisation programmes have proved more resilient than expected but many countries are still recovering after the pandemic

In 2021 Gavi implementing countries administered more vaccines than in any year in history – with

approximately three times more doses administered than in 2020, and almost five times as many as in 2010. But even as countries made extraordinary efforts to protect routine immunisation programmes in the face of the pandemic, millions of children have missed out on life-saving vaccines. However, recovery is now underway and Gavi is on track to exceed 1.1 billion children immunised through routine systems by the end of 2025.

Increased protection from more diseases

When the Alliance was founded, it supported vaccines against just three diseases; today it supports vaccines against 19[3]. Despite the significant disruption caused by the pandemic, the breadth of protection – the average coverage across key Gavi vaccines – has continued to increase, from 47% in 2019 to 51% in 2021. A further increase is expected in 2022.

~5×
more doses administered than in 2010

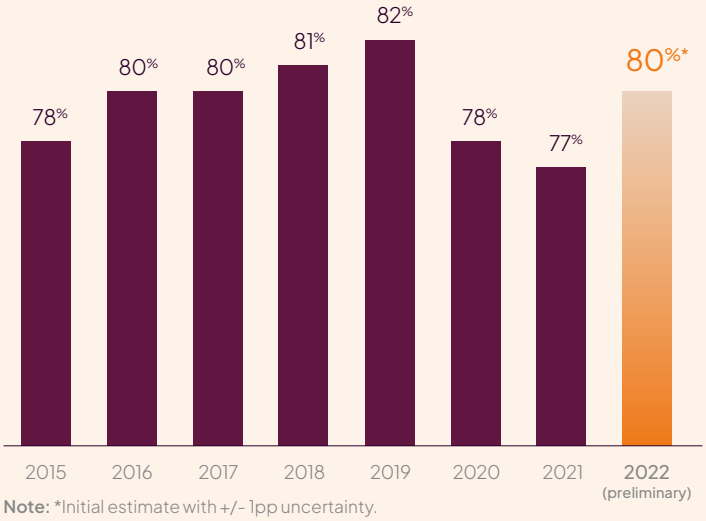
>1.1Bn
children are set to be immunised by Gavi by the end of 2025

2022 – the recovery begins for routine immunisation

Although during the pandemic immunisation has proved more resilient than other health services, there was nonetheless an average reduction in Gavi implementing countries of five percentage points in DTP3 coverage, an important marker for childhood immunisation. Countries are now recovering, with an estimated bounceback of three percentage points in one year (based upon an analysis of country administrative data with a range of 2–4 percentage points – see Annex 3), a promising indicator of recovery. "The Big Catch-up" – an effort spearheaded by Immunization Agenda 2030 and supported by the Alliance – was launched in 2023 to help countries restore routine immunisation, catch up children missed during the pandemic and strengthen immunisation programmes to reach new zero-dose children. This effort includes joint high-level advocacy, support to develop country-specific plans, simplified and expedited processes to allow reprogramming of Gavi funding, and consideration for additional vaccine support to ensure catch-up activities can reach older cohorts that may not be covered by existing country supply. Countries are preparing a record number of applications for support from Gavi's health system strengthening funding in 2023, with a sharper focus on key areas including reaching zero-dose children, strengthening demand generation, addressing gender-related barriers and engaging communities and civil society. This offers further evidence that the promising signs of recovery can be built upon in the remainder of the strategic period, recognising that there are many challenges ahead.

FIGURE 4

DTP3 coverage in 57 Gavi implementing countries



Note: *Initial estimate with +/- 1pp uncertainty.

Since 2019

9
countries increased coverage

13
countries are stable in coverage

35
countries reduced coverage

TABLE 1

Forecast vaccine costs and estimated future deaths averted

Vaccine	Expenditure (US$ millions)			Numbers immunised (millions)			Future deaths averted (thousands)		
	2021–22	2023–25	2021–25	2021–22	2023–25	2021–25	2021–22	2023–25	2021–25
Pneumococcal[a]	626	782	1,408	94	168	262	260	440	700
Inactivated poliovirus vaccine (IPV)[b]	369	504	873	185	373	558	-	-	-
Rotavirus	302	292	594	97	176	274	74	160	240
Human papillomavirus (HPV)[c]	114	409	523	9	75	84	180	1,100	1,300
Pentavalent	211	276	487	83	131	214	1,000	1,600	2,700
Yellow fever[d]	167	308	475	81	181	263	220	410	640
Measles and rubella[e]	118	237	355	224	207	432	520	490	1,000
Typhoid[f]	45	203	248	48	232	280	47	410	460
Cholera[g]	21	0	21	7.7	46	54	1.4	3.8	5.3
Meningitis and Meningitis A[h]	32	118	150	29	80	109	29	81	110
Japanese encephalitis	1	14	15	3.8	9.2	13	1.9	3.3	5.3
Malaria (cost-sharing mechanism)	35	154	189	-	-	-	-	-	-
Ebola[i,j]	0	54	54	0.02	-	-	-	-	-
Stockpile and outbreak response vaccines[g,k,l]	139	267	406	51.1	-	-	-	-	-
Other[m]	-15	60	45	-	-	-	-	-	-
Total	**2,165**	**3,678**	**5,843**				**2,400**	**4,800**	**7,200**

Notes: 2021 values for numbers immunised and deaths averted are actuals based on the WUENIC, July 2022 update. 2022 values are preliminary estimates, see Annex 3 for details. All values are rounded.

Forecast vaccine costs are per the financial forecast recommended for approval at the June 2023 Gavi Board meeting.

The table excludes US$ 352m of portfolio adjustments related to vaccine introductions effective schedule and other working capital efficiencies. The 2023–2025 forecast expenditures for hexavalent (US$ 28m) and the Global Virtual Pooled Inventory for Ebola and Marburg (US$ 10m), which are pending Board consideration, are also excluded.

a. Gavi-funded and AMC-funded combined

b. Numbers immunised represent sum of IPV1 and IPV2. In 2021–25, c. 336m vaccinated with IPV1 and c. 222m vaccinated with IPV2

c. Includes India HPV

d. Preventive (routine and SIAs), excluding stockpile

e. Preventive (routine and SIAs), excluding outbreak response

f. Preventive (routine and SIAs), includes India TCV

g. The 2023–2025 Forecast for cholera of US$ 221m, for both preventive and stockpile, is included in "Stockpiles and outbreak response vaccines" as the majority of funds are expected to address outbreaks, with the remainder for preventive campaigns

h. Preventive (routine and SIAs), includes multivalent meningitis in 2025 (pending SAGE recommendations)

i. Ebola stockpile: excludes a prepayment of US$ 89m disbursed in 2020 to procure Ebola vaccines during the 2021–2025 period

j. Numbers immunised represent the total number of doses shipped

k. Includes (a) outbreak response: measles/measles-rubella (b) stockpiles: cholera, yellow fever, meningitis

l. Numbers immunised represent total reached with measles and measles-rubella, and total targeted with meningococcal, cholera and yellow fever vaccines in the context of outbreak response. Note: For cholera outbreak response, total targeted is defined as the number of persons targeted for 1st dose reactive OCV vaccination based on approved requests.

m. Includes injection safety devices, diagnostics, co-financing waiver (2023–2025 co-financing waiver is for fragile countries only). The 2021–2022 amount is negative as it includes a refund received on a prepayment made in the previous strategic period for COVID-related injection safety devices and freight.

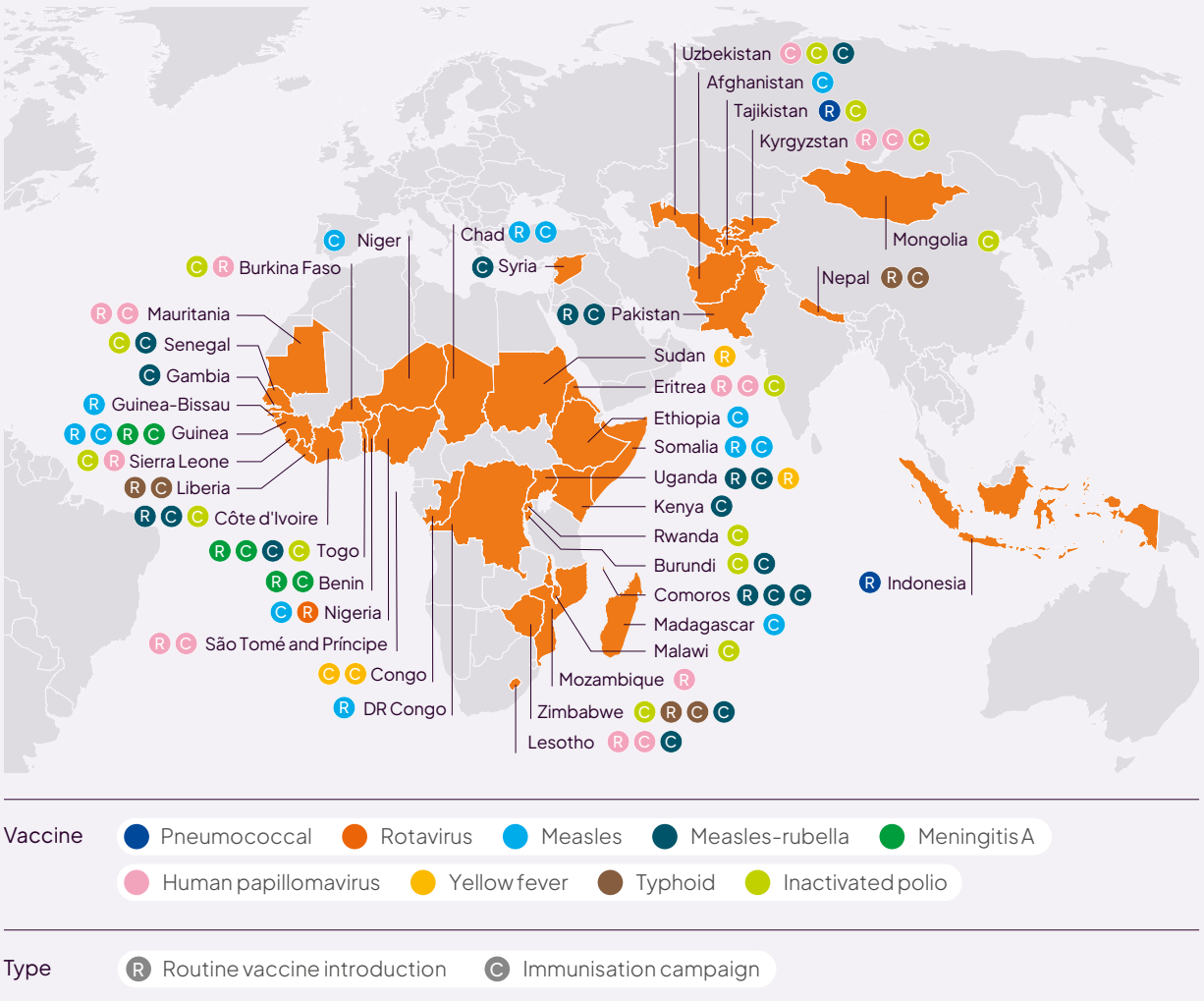
Gavi implementing countries still managed 29 introductions into routine programmes in 2021 and 2022 – in addition to the 55 COVID-19 programmes over the same period.

Increased coverage of rotavirus, pneumococcal, and IPV vaccines

The increase in breadth of protection has been driven by progress in introducing or scaling up key Gavi-supported vaccines. Pneumonia and diarrhoea remain major killers of young children, accounting for over 1.2 million deaths in 2019 – including 370,000 children from rotavirus diarrhoea. Despite the pandemic, coverage of pneumococcal vaccine increased by one percentage point from 2019 to 2021, and coverage of rotavirus vaccine increased by 12 percentage points. The Democratic Republic of Congo (DRC) made a significant contribution to this scale-up, increasing rotavirus vaccine coverage from 4% to 52%. Pentavalent vaccine coverage declined, but there are promising signs of recovery. Coverage levels in Gavi-supported countries for three major infant vaccines, Haemophilus influenzae type b (Hib), pneumococcal conjugate (PCV) and rotavirus, are higher than the global average. The global effort to eradicate polio has been set back by the

FIGURE 5

Immunisation campaigns and routine vaccine introductions in Gavi 5.0 to date



pandemic but routine coverage of the second dose of inactivated polio vaccine (IPV) in Gavi-supported countries has risen by ten percentage points, increasing the number of children protected against all types of paralytic poliovirus.

Preventing and controlling outbreaks

Outbreaks of vaccine-preventable diseases have continued to rise. In 2022, Gavi supported 40 vaccination campaigns in response, a 75% increase compared to 2021, primarily driven by measles and cholera. The trend has continued in 2023. The Alliance has stepped up its response, drawing upon the vaccine stockpiles, and where possible shifting towards preventive immunisation so that outbreaks are reduced.

For outbreak-prone diseases such as **yellow fever** and **cholera**, Gavi has helped countries adapt to increased risks, even as climate change is making outbreaks more prevalent. In 2022 yellow fever and cholera outbreaks were reported in areas that had not reported such diseases for years, if ever, such as cholera in Syria and yellow fever in central Kenya. Controlling outbreaks depends upon rapid detection – this remains challenging particularly in remote areas, but progress has been made. For example, Gavi support for yellow fever diagnostic testing capacity in Africa has reduced the time needed to confirm cases by 63% and has helped improve countries' abilities to target use of the vaccine. Gavi support for preventive oral cholera vaccine (OCV) campaigns and diagnostic tests available in 2023 will further reduce the risks of large disruptive cholera outbreaks.

Missed vaccinations during the COVID-19 pandemic have led to outbreaks of deadly, preventable diseases like measles and polio. Catching up must be a priority to make sure that every child has access to the vaccines they need to not only survive but thrive.

TEDROS ADHANOM GHEBREYESUS
DIRECTOR-GENERAL, WHO

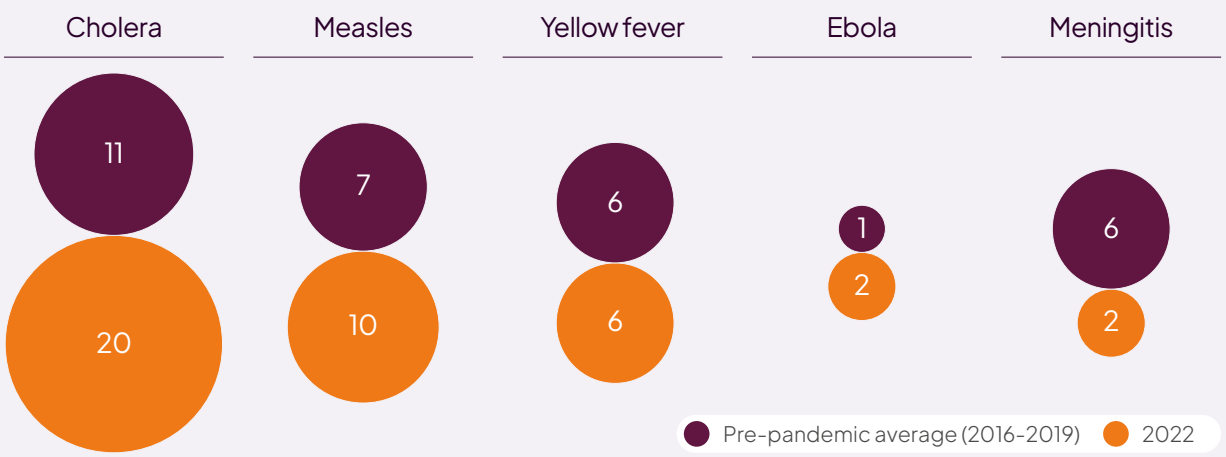
The success of **meningococcal A** vaccination across 24 sub-Saharan African countries shows what can be done to control climate-related disease. Thanks to Gavi-supported vaccination, no cases of meningococcal A meningitis have been reported since 2017, a marked contrast to the regularly occurring epidemics which predictably disabled and killed before the vaccine. In 2024 a new vaccine that protects against additional varieties of meningococcal meningitis that still affect many countries in Africa should become available for preventive and routine use. By 2025 Gavi support for meningococcal diagnostic testing should also begin to help targeting of the new vaccine. Meanwhile, Gavi continues to support the global meningococcal vaccine stockpile, which protects against a variety of meningococcal meningitis strains that continue to cause outbreaks across parts of Africa and elsewhere in the world.

Gavi implementingcountries experienced an increase in measles outbreaks associated with a decline in coverage in the first dose of **measles**-containing vaccine (MCV1), from 81% to 77% from 2019 to 2021, as well as the delay of some preventive measles campaigns. Nevertheless, nine countries added measles rubella vaccine or a second dose of measles-containing vaccine (MCV2) to their routine immunisation programmes in 2021 and 2022. Further improving the performance of routine immunisation and vaccination campaigns in preventing measles and rubella deaths, for example, by reaching zero-dose children, remains a high priority.

In February 2021 Gavi launched an **Ebola** vaccine stockpile, to be ready to protect against the Zaire Ebola virus. Since then, there have been five Zaire Ebola virus outbreaks. For all five, use of the vaccine began within 10 days of the confirmation of the outbreak, quickly containing them, with a total of 52 cases and 33 deaths. The high number of deaths relative to the number of cases provides a tragic reminder of the threat still posed by Ebola Virus Disease. Nevertheless, this marks a huge shift from the 2013–2016 west Africa Zaire Ebola virus outbreak in which vaccines were not available, even for use in field trials, for well over a year after the outbreak started, and during which 28,610 Ebola cases and 11,308 deaths were reported with a terrible health, economic and social impact on the most affected countries. Gavi is building on this

FIGURE 6

Outbreaks with internationally coordinated vaccine response are increasing



Marker of stresses on vital health services

success by supporting preventive vaccination for high-risk groups such as health care workers. This expanded use is expected to decrease the risk of Ebola infection among frontline workers, improve preparedness for outbreak control and generate evidence to help improve the use of Ebola vaccines. Second generation Ebola Zaire vaccines are in development that will improve the operational characteristics of the vaccine.

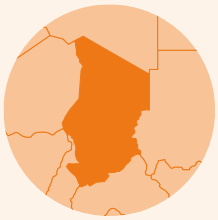
Strengthening health systems to increase equity in immunisation

With nine million more children born each year in Gavi implementing countries today than in 2000, health systems need to protect growing birth cohorts from infectious diseases while also being extended to reach communities with large numbers of zero-dose children. Strengthening health systems is essential to Gavi's mission and has become more urgent as systems have expanded to deliver vaccines against up 19 infectious diseases at more touchpoints across the life-course and keep up with growing birth cohorts.

Next year, the Expanded Programme on Immunization (EPI) will celebrate 50 years since it was launched as a World Health Assembly resolution to ensure all children, in all countries, benefit from life-saving vaccines. Building on this legacy and investment in immunisation programmes by governments, Gavi, and other donors and partners, many country health systems demonstrated remarkable resilience and capacity during the pandemic. In the early phase of the pandemic, Gavi provided flexibilities to countries to use their health systems strengthening (HSS) grants for their initial COVID-19 response. In 2021, Gavi launched three new windows of support – Equity Accelerator Funding (EAF) to help countries accelerate progress in reaching zero-dose children; COVID-19 vaccine Delivery Support (CDS) to rapidly scale up COVID-19 vaccination; and the middle-income countries' (MICs) Approach to support former Gavi-eligible countries and a number of never-Gavi-eligible countries to prevent backsliding and introduce key missing vaccines. Though CDS has the primary aim of supporting COVID-19 vaccine delivery efforts, many countries have reported benefits in various aspects of health system strengthening, including upscaled cold chain infrastructure, digitisation of health data, improved outreach capabilities, combined COVID-19 and routine immunisation delivery activities, and expanded vaccine supply chain capacity. Gavi invested approximately US$ 1.3 billion in health systems in Gavi implementing countries from 2021 to 2022.

↓24%

zero-dose children in Chad in 2021



Chad

While many countries' routine immunisation programmes suffered during the pandemic, the Republic of Chad has shown strong political commitment and made significant progress despite security challenges and the growing impact of climate change. Immunisation coverage rose from 41% in 2017 to 52% in 2020, and 58% in 2021. This was accompanied by a 24% fall in zero-dose children. Using Gavi funding the government worked with WHO and UNICEF and expanded partners to extend the reach of the health system to underserved areas with better collection and use of data and new management routines. These activities were underpinned by dedicated coaching, problem-solving and implementation support, to national and subnational Expanded Programme on Immunization (EPI) managers. Joint work with the polio programme, and an effective measles campaign that also provided vitamin A and deworming treatment for children also drove progress. This focused effort by the government and partners included additional support through Gavi's Fragility, Emergencies and Displaced Populations policy. This funded the recruitment of health workers and solarisation of the cold chain – with 1,115 units installed in 2021. As a result, vaccines are reliably stored in almost all health facilities, and stock-outs fell by 42% from 2020.

Countries' focus on pandemic response in the early part of this period did result in a delay in applications for and implementation of core health systems programmes. The Alliance has sharpened the focus of its investments on the core objectives of **equity, efficiency and sustainability**.

Gavi's health systems support aims to channel assistance through government systems wherever possible. The corollary of this is a renewed focus to support countries to **strengthen financial management and risk assurance** to improve in-country absorption and ensure disbursement of funding to sub-national levels. Thanks to this dedicated effort, Gavi is on track to meet the Board target to channel 55% of funds through government systems by the end of the strategic period – having reached 41% at the end of 2022, up from 29% at the beginning of the strategic period. Gavi also partners with the Global Fund to strengthen financial management and better manage risks at the country level.

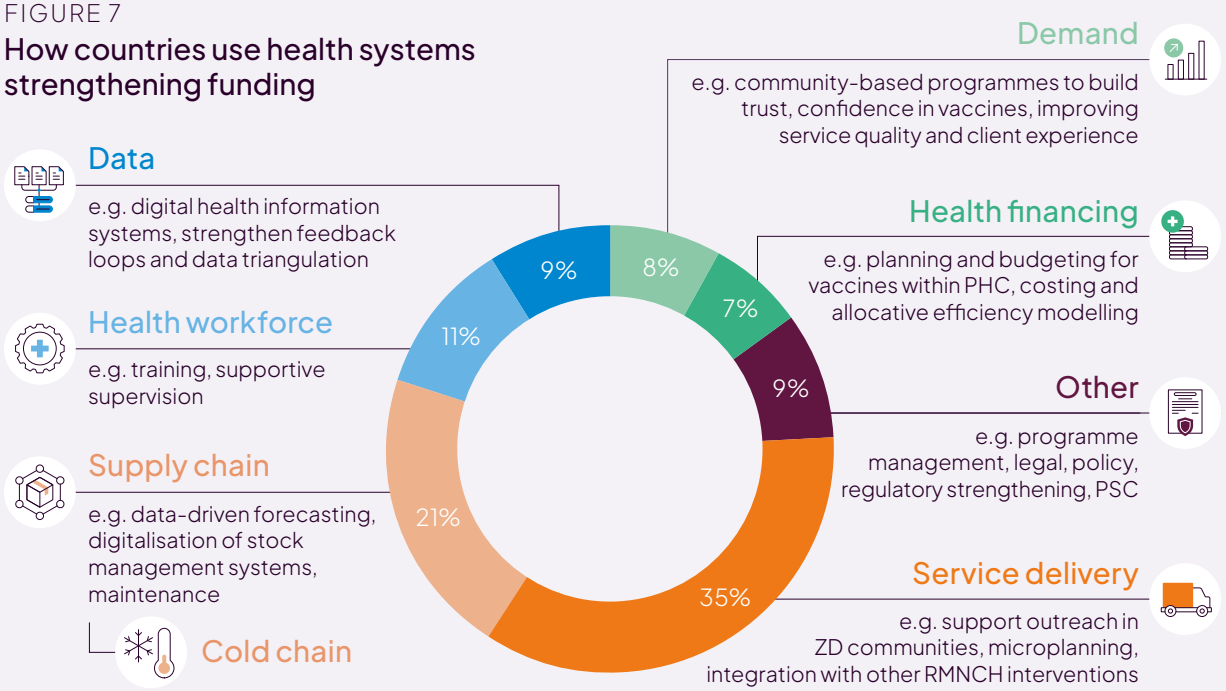
This new way of working goes hand in hand with an enhanced focus and investment **on demand and addressing gender-related barriers** including the scale-up of new tools and analyses to identify behavioural and social drivers of immunisation and inform tailored approaches to increase trust and confidence in vaccination.

Improved understanding and tailored interventions to address drivers of vaccine confidence and demand are especially critical in light of increased dis- and misinformation and hesitancy and mistrust of vaccination in many communities following the COVID-19 pandemic. However, many countries continue to rely on outdated approaches such as the printing of banners or mass media campaigns. Enhanced technical support from the Alliance will be required to design and implement appropriate and locally relevant interventions to improve demand. Gavi's partnerships with the private sector are also bringing new ways of tackling misinformation.

Gavi continues to look for opportunities to align its health systems strengthening efforts with other global health initiatives. In Ethiopia, pooled funding with the World Bank, Global Fund, and Global Financing Facility helps to coordinate investments in essential systems such as DHIS2 and eLMIS. In Chad and Mali, Gavi and Global Fund are coordinating approaches to remuneration and capacity building of the health workforce, and harmonising procedures for mobile money payments. Gavi has also strengthened its relationship with the Global Polio Eradication Initiative (GPEI) as a core partner and is working closely with WHO, UNICEF, BMGF, CDC, Rotary and expanded partners – to improve joint planning and coordination to reach zero-dose children in high-priority areas; advocate for and facilitate the integrated delivery of services, including multi-antigen campaigns; and support polio transition efforts.

FIGURE 7

How countries use health systems strengthening funding



Note: This represents HSS grants only and is based on currently approved budgets as of end 2022.

50%
of all vaccine-preventable deaths occur among zero-dose children

$500m
of funding has been allocated across this strategic period to help identify and reach zero-dose children

Zero-dose children

Zero-dose children are those children who have never received any routine vaccination. From 2015–2019, Gavi implementing countries achieved an impressive 20% reduction in the number of zero-dose children, to a record low of fewer than 10 million. Unfortunately, despite strong efforts by the Alliance, the number of zero-dose children rose in two consecutive years during the pandemic to reach 12.5 million in 2021. This is a heartbreaking statistic as nearly 50% of all vaccine-preventable deaths occur among zero-dose children, making Gavi's mission to reach them even more pressing.

Based upon preliminary data the rebound in immunisation coverage in 2022 and increase in Gavi programming in 2023 should reduce the number of zero-dose children. Returning to those pre-pandemic levels – and further reducing them – is now at the heart of Gavi's engagement with countries and aligned with the IA2030 agenda and the "Big Catch-Up".

US$ 500 million of funding has been allocated across this strategic period for the Equity Accelerator Fund (EAF) which provides dedicated resources to identify and reach zero-dose children and missed communities with a full course of vaccines on top of core health system strengthening (HSS) grants. Funding is available to countries that identify and develop tailored strategies to reach additional zero-dose children and missed communities that they could not reach using other available resources. Within the EAF a US$ 100 million Zero-Dose Immunisation Programme, a new partnership by Gavi, the International Rescue Committee and WorldVision supports children living in areas outside government reach, as well as mobile populations and refugees across the Sahel and Horn of Africa. WHO and UNICEF have developed new guidance, provided technical support, and facilitated capacity building to countries and partners on reaching zero-dose children.

Right: Boys and girls proudly showing finger marking after getting vaccination against polio, during the door-to-door campaign in Peshawar city, Pakistan.

Gavi/2023/Asad Zaidi

Immunisation can support the transformation of the role of women in society

Immunisation services provide a platform to transform gender roles and norms both in the community as well as in the health sector. In many communities, mothers are the primary caregiver and individual responsible for bringing their children for health care. Yet, women have limited mobility due to culture norms or safety issues and are restricted from taking decisions on their children's health. These negative gender norms disempower women with adverse impacts on the individual, family, and society.

Gavi's Gender Policy aims to help drive that transformation by identifying and overcoming gender-related barriers to reach more zero-dose children, individuals and communities. Capacity-building initiatives on addressing gender issues in immunisation programming have been designed and implemented and gender has been mainstreamed into all Gavi guidelines and grant applications in this strategic period. The approach is beginning to pay dividends with just under three quarters of HSS and EAF funding applications received from countries in 2021 and 2022 including specific gender-targeted interventions.

For example, in South Sudan, the analysis revealed a lack of men's involvement in immunisation despite their formal decision-making role, and that services were not available at appropriate times for women caregivers. In response, Gavi's HSS funds will now specifically target demand generation activities at men and there will be an increase in outreach and integrated service delivery. In the DRC, a gender focal point will be integrated into the management team of certain districts to ensure that immunisation activities are gender responsive and in Papua New Guinea, safeguarding measures will be developed and implemented to ensure the safety of health workers, particularly women health workers working in remote locations.

Moving forward, the Alliance will build on these positive early examples. There is a need for more government gender expertise, often not in the immunisation space, and increased in-country gender technical support from the Alliance to enable the translation of applications into strong programming. Further work is also required to work with countries to address the significant gender imbalance in leadership positions in immunisation and increase women's representation at decision-making levels.

Finally, the roll-out of the HPV vaccine provides a clear opportunity to promote and deliver

integrated immunisation services in a manner that creates more positive gender norms creating advantages at all levels, empowering young girls as well as improving health outcomes. With HPV, government programmes have an additional touch point with adolescent girls which can be used to provide health services such as nutrition, mental health, and sexual and reproductive health services, as well as other social services that historically have largely missed adolescent girls.

This section of the report has focused on how with Alliance support countries are introducing and scaling up vaccines and strengthening their health systems – the next section focuses on how the Alliance and countries are working to enhance the sustainability of immunisation systems.

Equipping community health workers with digital immunisation records has helped boost childhood vaccination coverage in supported communities:

+36%
in Uganda

+69%
in Kenya

The key role of Civil Society Organisations within the Alliance

"

Our links with communities help Gavi get vaccines to places that larger delivery partners simply can't reach

DR NDADILNASIYA ENDIE WAZIRI

CHAIR, GAVI CSO STEERING COMMITTEE & NATIONAL COORDINATOR, AFRICAN FIELD EPIDEMIOLOGY NETWORK (AFENET)

Under Gavi's Civil Society and Community Engagement framework, the majority of countries applying for new support involve at least 10% of funding going to Civil Society Organisations (CSOs), and Gavi is developing improved and simplified processes to facilitate greater engagement with local partners.

This new strategic initiative is about building an enabling environment for civil society. CSOs have unique reach, knowledge and influence at the community level and are already playing an essential role in the architecture of immunisation, from advocacy to service and delivery. By unlocking funds for civil society at a local level, the Alliance moves much closer to those communities and children who were previously out of reach. From working with women's groups to encourage the uptake of HPV, to locating the zero-dose child in hard to reach communities, civil society has the potential to help the Alliance reach its ambitious goals.

One example of such a partnership in action is in Uganda and Kenya. Gavi has worked with Living Goods to equip community health workers with digital immunisation records. This has contributed to boosting childhood vaccination coverage in supported communities by 36% in Uganda and 69% in Kenya since 2019, while reducing the number of zero-dose children.

Using health systems strengthening funding to extend immunisation in Djibouti

In the previous strategic period Djibouti worked with the World Bank and used its Gavi health systems strengthening funding to map health facilities focused on underserved groups, especially slum dwellers and nomadic populations, and to better understand the challenges of reaching these groups. As part of its pandemic recovery plan, Djibouti is now using its funding to organise mobile outreach to make home visits in urban areas, drawing on the lessons and microplans from polio vaccination campaigns, and finding opportunities to reach underserved people in livestock corridors, markets, and at celebrations.

Transforming digital health information systems

In 2022 the Alliance launched its first-ever **Digital Health Information Strategy** to enhance the digital transformation of immunisation information systems as an entry point and foundational investment in primary health care. That year Gavi also created a new Innovation Top-up fund to support countries to scale proven interventions, with two countries, Ethiopia and Madagascar, already approved for new support.

Since 2017, in collaboration with the University of Oslo, UNICEF and other partners, and in coordination with donors including NORAD, USAID, and the Global Fund, Gavi has supported more than 40 countries to integrate coverage data into DHIS2 (the world's largest health management information system). This has reduced the use of parallel systems, increased sustainability, and improved data quality and use. In 2018, countries and WHO identified another critical need: the modernisation of the surveillance information system to replace the obsolete, unsustainable, and fragmented systems used in many countries. Gavi supported WHO and the University of Oslo to develop a DHIS2 surveillance module. When the pandemic started, countries needed an agile and easy system to capture and respond to COVID-19 cases, and more than 40 countries chose to use the Gavi-supported DHIS2 module. Gavi also supported countries to further adapt DHIS2 to facilitate the planning, delivery, and monitoring of COVID-19 vaccines to improve stock visibility, track recipients, generate digital certificates, understand demand, and monitor any potential adverse events following immunisation.

Gavi is also supporting 20 countries to scale up electronic logistics management information systems (eLMIS). Under this effort Gavi is partnering with the Global Fund in 11 countries and USAID in two, with plans for further joint investment.

Bangladesh

Bangladesh demonstrated the resilience of its immunisation system by maintaining very high coverage of 98% for routine immunisation during the COVID-19 pandemic. At the same time, coverage of more than 70% for primary series has been achieved with COVID-19 vaccines during 2020–2022. Bangladesh also moved fast to take advantage of the innovative cost-sharing mechanism designed by Gavi, the Asian Development Bank (ADB) and the World Bank to purchase additional vaccines with ADB resources, while also successfully responding to a large cholera outbreak in 2022. These achievements drew upon an effective digital information system, first established in 2013, that allows immunisation leaders to target resources where they are needed and ensures health workers have the tools they need to monitor implementation. Bangladesh's immunisation leadership, in close collaboration with WHO, UNICEF and the University of Oslo, led to the deployment of an enhanced digital information system in 2020 during the pandemic to conduct a measles-rubella vaccination campaign, supported by Gavi funding, which succeeded in reaching over 30 million children in six weeks, achieving the levels of coverage necessary to bring both diseases under control.

Right: Mohammad, a 35-year-old lumberjack, lives in Ujirpur, Bangladesh, with his wife and two children. "I have seen children getting bullied for physical disabilities. So I have always made sure my kids will be fully immunised and have a healthy, active life."

Gavi/2023/Ashraful Arefin

2 Driving sustainable co-financing and transition

> With the support of Gavi, Honduras reached its immunisation goals. Following the pandemic, we are facing severe backsliding. Gavi's commitment to helping middle-income countries build sustainable programmes will help us recover and build back stronger

DR JOSÉ MANUEL MATHEU
MINISTER OF HEALTH, HONDURAS

Country co- and self-financing (US$)

Transition 10 further countries

Engage 18 transitioned countries

Countries are supported by the Alliance to take increased ownership of their immunisation programmes by contributing more domestic resources over time. Progress has continued with former and current Gavi implementing countries on track to contribute 39% of the costs of their vaccination programmes between 2021 and 2025, doubling the levels mobilised between 2016 and 2020 – albeit at slightly lower levels than predicted in the Investment Opportunity. A small number of countries have had their transition away from Gavi support delayed, with Board approval, due to deteriorating macro-economic conditions. Moving forward concerted efforts will be required to maintain levels of domestic resource mobilisation in the remaining Gavi-supported countries.

Progress to date

- 19 countries have now transitioned to become fully self-financing.
- Current and former Gavi implementing countries raised US$ 1.1 billion in co- and self-financing for vaccines in 2021 and 2022 – including a record US$ 323 million of co-financing.
- Despite the disruption caused by COVID-19 100% of Gavi implementing countries met their co-financing obligations with exceptional waivers approved by the Board limited to 3% of the total expected volumes.

Remaining challenges

- Only six countries in total are now expected to graduate from Gavi support in this strategic period.
- Countries are currently predicted to fall US$ 0.2 billion short of the US$ 3.6 target for co-financing and self-financing contributions by 2025.
- A series of crises, as well as newer vaccines with increased prices, are putting pressure on the sustainability of Gavi's co-financing model.

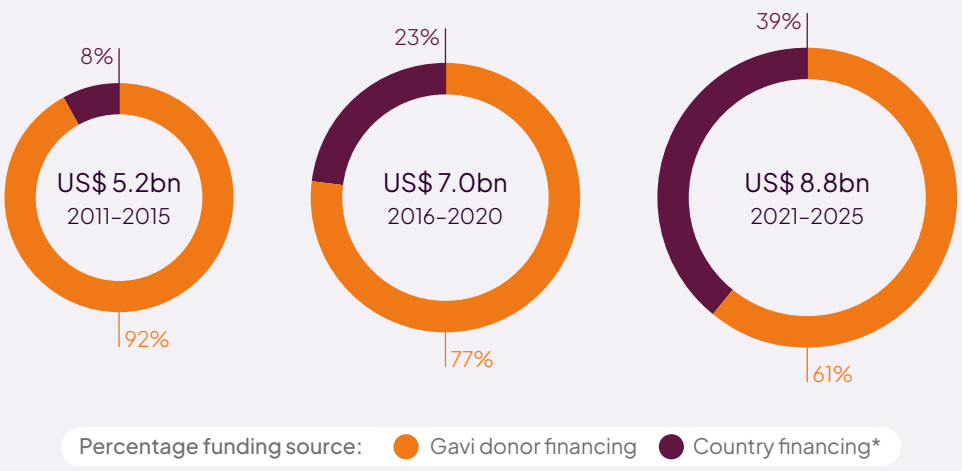
+31%

increase in country financing of vaccines since the Gavi 3.0 strategic period (2011–2015)

FIGURE 8

Countries are spending more of their domestic resources on vaccine financing

Total vaccine financing (Gavi and countries)



Note: *Includes co-financing, self-financing and India

In challenging times countries are prioritising their co-financing commitments

Despite the disruption to public finances and health systems caused by the pandemic, in the first two years of this strategic period most Gavi implementing countries maintained or increased domestic resources for vaccine co-financing. Countries contributed a record US$ 323 million – US$ 50 million more than the first two years of the last strategic period. Furthermore, since 2020, countries transitioning from Gavi support have paid an estimated additional US$ 804 million towards the cost of fully self-financing their vaccine programmes – bringing to US$ 1.1billion the total raised by current and former Gavi implementing countries.

Most co-financing is being paid from domestic resources (96% in 2022). In challenging times, this is a strong indication of countries' continued commitment to immunisation financing, with policy dialogue actively supported by the Alliance, in particular the World Bank. While nine countries were granted an exceptional COVID-19 waiver in 2020, active engagement by countries and the Alliance helped to reduce that number to six in 2021 and two in 2022 (for humanitarian distress). For the first time, South Sudan made a partial co-financing contribution (42%) in 2022.

While the share of co-financing and self-financing has continued to increase, this has happened at a pace slower than was anticipated for the 5.0 period. The reduction in economic growth caused by COVID-19 and the one-year freeze in co-financing levels and eligibility approved by the Gavi Board in 2020 have reduced the expected total contributions from 2021–2025 to US$ 3.4 billion, slightly less than the US$ 3.6 billion originally expected.

Transitioning countries are being hit by fiscal and economic challenges

Despite these positive signs of commitment, deteriorating macro-economic conditions are threatening the capacity of countries to invest in strengthening their immunisation programmes. World Bank projections suggest that Government health spending per capita is expected to stagnate or decline in 65% of Gavi-eligible countries compared to pre-COVID-19 levels.[4] More than half of low-income countries are either at a high risk of, or already experiencing, debt distress. Middle-income countries, including former Gavi implementing countries,

Right: Jackeline is a 31-year-old dancer and new mother living in Adenta, Ghana. Her career has taken her to different countries and being vaccinated ensures that she is protected from life-threatening diseases. She looks forward to having her newborn child vaccinated to promote a healthy and long life.

Gavi/2023/Michael Aboya

are also impacted by these economic challenges and pandemic-related disruptions, resulting in backsliding in some routine immunisation programmes. These economic conditions and unprecedented fiscal challenges are putting Gavi's co-financing and transition model at risk.

These trends have had a clear impact on the countries due to transition from Gavi support during the current reporting period; this is in line with trends in other international organisations, such as the graduation of World Bank IDA countries.[5] This has been recognised by the Gavi Board, which in 2020, first approved a one-year freeze in eligibility due to the economic impact of COVID-19, and then agreed an update to Gavi's transition policy to allow countries in the accelerated transition phase an additional three years to complete the journey to self-financing of their vaccines. This update reflected the fact that the countries currently in accelerated transition have a significantly lower level of economic growth per capita than those that previously transitioned. Their programmatic capacity is also weaker and has been further stretched by the COVID-19 pandemic. More than half of the countries have coverage of the third dose of diphtheria-, tetanus-and pertussis-containing vaccine (DTP3) below 85%. As a result only six additional countries are now expected to transition by the end of this strategic period, as opposed to ten originally forecast.[6] In the remainder of this strategic period, Gavi will work closely with transitioning countries to underline the strong political commitment needed to lay financial and programmatic foundations for sustainable immunisation programmes.

The European Union is proud to support Gavi. Gavi's essential work in providing access to life-saving vaccines contributes to building resilient societies, together with our Global Gateway efforts to boost health manufacturing. By ensuring vaccination for the most vulnerable, in line with the EU Global Health Strategy, we can overcome health challenges and pave the way for a healthier world for all.

JUTTA URPILAINEN
EUROPEAN COMMISSIONER FOR INTERNATIONAL PARTNERSHIPS

Post-transition engagement and building new partnerships with middle-income countries

Since 2020, Gavi has developed new relationships with former and never Gavi-eligible middle-income countries through

Factors negatively impacting country investments in their immunisation programmes:

65%

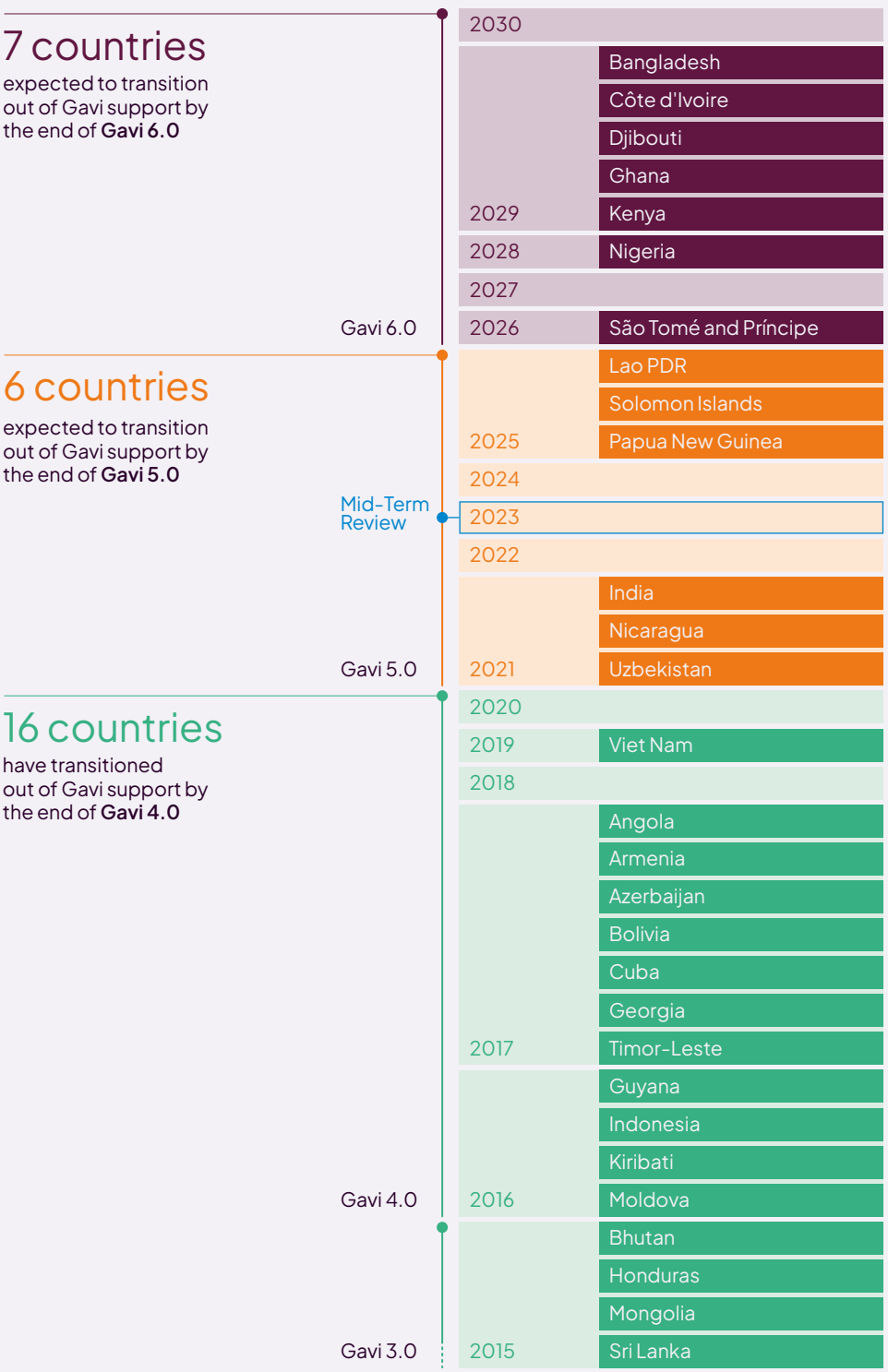
of Gavi implementing countries are projected to experience stagnating or declining goverment health spending compared to pre-COVID-19 levels

>50%

of low-income countries are either at a risk of, or already experiencing, debt distress

FIGURE 9

19 countries have already transitioned out of Gavi support and 10 more are expected to do so by 2030



the COVAX Facility, creating opportunities to drive immunisation while continuing to focus scarce official development assistance (ODA) resources on lower-income countries with the greatest challenges. To help avoid backsliding in immunisation coverage in former Gavi implementing countries and to promote the introduction of key vaccines in both former and a select number of never Gavi implementing countries – the Gavi Board approved an augmented middle-income countries (MICs) Approach in June 2021. In line with Gavi's country-driven focus, countries were closely involved in the design, including through virtual and in-country consultations, which were important in ensuring the approach included common solutions, while recognising the heterogeneity of MICs Approach-eligible countries, including Small Island Developing States (SIDS).

The approach is being introduced at a challenging time as one in four middle-income countries have seen a drop in health spending and are projected to remain below pre-pandemic levels until 2027.[7] Many MICs' immunisation programmes perform below the levels reached by countries that receive systematic support from Gavi. The MICs Approach provides US$ 300 million in targeted funding to restore coverage, drive the sustainable introduction of PCV, rotavirus and HPV vaccines – as well as respond to cases of fragility.

This funding will be critical to address immunisation gaps in former Gavi-eligible countries as they rebuild from the pandemic. Of the 16 former Gavi middle-income countries that had transitioned from Gavi support to fully self-financing as of 2020, 7 were able to sustain routine coverage (measured by DTP3) above 90% from 2019–2021. The remaining nine countries experienced declines in DTP3 coverage between 2–18 percentage points. In a first wave, Gavi has already prioritised support for Angola, Bolivia and Honduras.

One in four middle-income countries have seen a drop in health spending and are projected to remain below pre-pandemic levels until 2027

The MICs approach also provides more opportunities for partnerships with multilateral development banks (MDBs). For example, our partnership with Honduras includes Gavi and the World Bank co-financing an initiative known as Restoring Essential Services for Health and Advancing Preparedness for Emergencies Progress. The project is improving the use of reproductive and child health services in priority regions; strengthening public health capacities for emergency preparedness; and, in crisis, ensuring responses are prompt and effective.

The success of the Alliance's efforts to improve the sustainability of immunisation depends upon having vaccine markets with secure supply, reduced prices, with innovative products and this is the focus of the next section.

13m

doses of COVID-19 vaccine were supplied to Ukraine through COVAX

Flexible support provided to Ukraine

Early in the history of the Alliance, Ukraine received Gavi support for routine immunisation. In the face of the COVID-19 pandemic and the war that began in February 2022, Ukraine has once again received Gavi support. Ukraine was hit hard by the pandemic, with 300,000 estimated deaths. COVAX supplied 13 million doses to Ukraine, including dose donations, as well as supporting procurement of cold chain equipment and US$ 10 million of COVID-19 delivery support. Under the MICs Approach Ukraine is eligible to apply for support for pneumococcal conjugate vaccine (PCV) introduction. While the application was delayed by the war, discussions are now underway to proceed with the introduction. Ukraine is also benefitting from technical assistance from the Alliance, provided by UNICEF and WHO under the MICs Approach regional envelopes.

3 Actively shaping the market for future generations

Healthy vaccine markets lead to more product choices, greater innovation and lower prices – helping us to deliver immunisation programmes that can save more lives

DR LIA TADESSE
MINISTER OF HEALTH, ETHIOPIA

Vaccine price savings (US$)

New vaccine products

At the mid-point of the reporting period, Gavi has already made good progress against its market-shaping goals – with over 50 different vaccine presentations now available to Gavi implementing countries, price reductions across major vaccine categories and new innovative products. However, active market shaping is required across a number of sensitive markets with particular challenges – including in the malaria, oral cholera vaccine (OCV), human papillomavirus (HPV) and rotavirus vaccine markets. The pandemic has helped drive new technologies – with exciting possibilities for new vaccines – and highlighted the need for greater diversity of vaccine production, including at a regional level, and in particular in Africa.

Progress to date

- A record number of 11 vaccine markets demonstrated acceptable levels of healthy market dynamics in 2021.
- Nineteen different vaccine manufacturers across 12 different countries now supply Gavi's core portfolio. Six additional manufacturers across three more countries have supplied COVAX with COVID-19 vaccines.
- Significant price decreases achieved in the PCV, HPV, IPV and Rota markets – with a slight increase in the Penta price to preserve market health.

Remaining challenges

- Supply issues in several vaccine markets in 2022 demonstrate the need for continuous market shaping – including to access new technologies.
- Whilst US$ 300 million of vaccine price savings delivered so far, Gavi implementing countries need assistance to evaluate switching to cheaper products between now and 2025 to achieve the US$ 900 million target.
- The pandemic has highlighted the need to further diversify regional vaccine market manufacturing, particularly in Africa.

Market shaping goals

Gavi's market-shaping strategy helps to build healthy global vaccine markets critical to the long-term success of Gavi's mission. It enables manufacturers to produce appropriate vaccines and immunisation products in quantities, and at prices, that are sustainable and affordable for lower-income countries. These activities allow donor investments to go further, support

countries to graduate from Gavi support with affordable prices and maximise the Alliance's impact. Gavi's work pools demand across eligible countries, providing demand visibility and guaranteed funding that encourages vaccine manufacturers to respond to the needs of lower-income countries in an industry where barriers to entry and market uncertainty can be very high.

Since 2020, new suppliers have entered three markets offering further product choices for Gavi countries. A new IPV supplier contributes towards polio eradication goals by further strengthening the supplier base as 2nd dose IPV introductions continue. The HPV market saw the first market entrant from a developing country manufacturer, offering a significantly lower price per dose. Conjugated typhoid vaccine, a new vaccine class, also saw a second supplier enter the market.

Across Gavi's portfolio, the lowest available price has decreased steadily for multiple vaccine markets since 2010, including in this strategic period. The decrease is especially significant for the most expensive vaccines at the time of programme launch. Although, price decreases are not always a desirable market shaping outcome. For example, the Pentavalent market entered a phase of hyper competition at the beginning of the previous strategic period with unsustainable prices that risked premature exit of suppliers and reduced competition. They have subsequently increased to more sustainable, yet still affordable, levels with improved overall market health.

Routine vaccines are a child's first entry into their health system, which is why we can't allow any child, no matter where they live, to fall through the cracks.

CATHERINE RUSSELL
EXECUTIVE DIRECTOR, UNICEF

Right: Zipporah, 33, is a small-scale businesswoman in Kibera, Nairobi. "I have three children and all of them have received their vaccines. I would love to see my children through their education and have them grow in a healthy manner."
Gavi/2023/Kelvin Juma

TABLE 2

Lowest price on Gavi menu for selected vaccines[8]

Vaccine	2010	2015	2020	2022
HPV	N/A	$4.50	$4.50	$2.90
IPV	N/A	$0.82*	$2.22**	$1.50
PCV	$3.50	$3.30	$2.90	$2.00
Pentavalent	$2.25	$1.19	$0.65	$0.75
Rotavirus	N/A	$2.06*	$0.85	$0.60

Notes: Vaccines selected have been at over US$ 1 a dose, data from: https://www.unicef.org/supply/vaccines-pricing-data (converted from euros using UN Treasury operational exchange rate)

* Converted from euros using UN Treasury operational exchange rate for December 31, 2015

** Converted from euros using UN Treasury operational exchange rate for December 31, 2020

The number of vaccine presentations available to countries has increased to over 50 and further innovation continues. During the 2021–2022 period, 2 new and improved products have been procured that improve ease of use and cold chain capacity for countries. The increase in suppliers and lower cost product choices has improved access to life-saving vaccines, enhanced supply security and ensured product choices can be more suitable to individual countries' needs.

Price reductions have contributed more than US$ 300 million in cost savings across Gavi's core portfolio of vaccines in 2021–2022. This is forecast to rise to US$ 760 million by 2025, slightly behind the Investment Opportunity target of US$ 900 million. However, an additional US$ 100 million of cost savings are available if Gavi implementing countries choose to adopt a greater number of products from some of the newer market entrants with the lowest prices – although this will be challenging. Alliance market shaping partners are working jointly to support countries' full vaccine portfolio planning, which aims to see more Gavi implementing countries evaluate and adopt these lower-cost options.

$760m
of cost-savings across Gavi's core portfolio are expected by 2025

TABLE 3

Gavi's market shaping helped secure lowest global vaccine prices for COVID-19 vaccines for COVAX

Manufacturer[9]	Gavi COVAX AMC price (US$, 2022)	Global mean price (US$)
AstraZeneca	4.00	5.10
JNJ	7.50	10.70
Moderna	7.00	24.49
Pfizer/BioNTech	*	22.40
SII – Covishield	3.00	5.32
SII – Covovax	3.00	9.00
Sinopharm	5.50	16.59
Sinovac	*	15.87

Note: * Manufacturer has not agreed to the publication of prices.

FIGURE 10

Impact of Gavi market shaping

3 **vaccine product presentations** in Gavi 1.0 to **more than 50** in Gavi 5.0

More than 50% decrease in cost of Penta, PCV and Rota vaccines to immunise a child from 2010 to 2022

5 suppliers from 5 countries, to **19 suppliers from 12 countries** in 2022. 6 more suppliers from 3 additional countries supplied COVAX in 2021-2022.

Challenges call for new ways of shaping markets

Complex and ever-changing global vaccine markets require constant monitoring to ensure healthy markets. Currently, 10 out of Gavi's 14 markets are judged as having acceptable levels of market health – four vaccine markets have presented specific challenges and serve as illustrative case studies of how the Alliance is primed to respond.

Rotavirus vaccine

Market dynamics improved through 2016–20 with the establishment of three competing suppliers, offering improved presentations and choice into Gavi 5.0. Nevertheless, unforeseen issues impacting all three suppliers in 2021–22 led to limitations in country access to preferred product presentations, forced product switches, and in the case of seven Gavi countries resulted in missed or delayed vaccinations. The Alliance is now closely monitoring suppliers' production planning to understand and further mitigate ongoing risks, and working on improving tools to support countries in assessing different product presentations and optimising their vaccine portfolio. The market shaping strategy aimed at ensuring at least three viable Rotavirus vaccine suppliers and helped to limit the impact of shortages to a small number of countries.

Malaria vaccine

In December 2022, the Gavi Board made history by approving funding to support the roll-out of the world's first malaria vaccine, after nearly 35 years in development. Eighteen million doses of the RTS,S vaccine will be available in 2023–2025 - which unfortunately falls short of the demand expressed by 14 Gavi-supported countries. Accelerated availability of a second candidate vaccine could go a long way to alleviating the supply pressure. Gavi has been working with the manufacturer, WHO and UNICEF to ensure no time is wasted in any of the regulatory, policy or procurement steps for this widely anticipated second vaccine. This is well documented in the Alliance's first Malaria Market Shaping Roadmap (published January 2023), which in addition to targeting a dramatic supply ramp-up, also aims to significantly reduce prices from the 2023 baseline.

18m

doses of the world's first malaria vaccine will be available in 2023–2025, but this falls short of demand

Human papillomavirus (HPV) vaccine

Conditions are finally in place for a rapid market health improvement after several years of overall supply limiting Gavi's HPV programmatic ambitions, with the supply picture drastically improving. Alliance market shaping work has hastened the market entry of a lower-price option from a new manufacturer and enabled the main incumbent supplier to invest heavily in capacity expansion. Continued commitment from manufacturers will be an essential ingredient for achieving Gavi's ambition of 86 million girls protected by 2025. Three challenges remain – supply and demand imbalance across Gavi-supported products; one-dose schedule not yet adopted by all countries, making demand forecasting challenging; and programmatic delays due to the COVID-19 pandemic. A new Market Shaping Roadmap to address these challenges is being targeted for late 2023 launch , which together with the programme implementation aims to address these challenges.

Oral cholera vaccine (OCV)

Gavi's Cholera Market Shaping Roadmap was published in May 2023. Global supply is anticipated to increase by the end of 2025, fuelled by the expected entry of a new manufacturer and investments by suppliers, Gavi, and the Bill & Melinda Gates Foundation in vaccines that can be produced in higher volumes. However, if the current trend in outbreaks continues, supply for preventive vaccination will likely be limited during this period and will need to be allocated transparently and equitably. Gavi has supported ad hoc preventive campaigns in 13 countries to date, generating vital lessons that are being drawn upon to plan for multiyear preventive cholera vaccination programmes. The ultimate solution to both sustainable OCV supply and cholera control lies in stepping up prevention programmes. In 2023, Gavi officially launched its multi-year preventive OCV programme support window, with the first countries expected to apply later this year.

A renaissance for vaccine technology

Despite these supply challenges, which are a feature of complex global vaccine markets that requires constant monitoring, the COVID-19 pandemic has triggered a renaissance in vaccinology with unprecedented investment in research, development, and manufacturing. Public and private actors have spurred the development of more than 400 candidate vaccines.

Right: "I can't imagine the improvements in health, longevity, and well-being we currently enjoy being possible without vaccines," says Uudus Unubold, father of Amgalanbaatar, age 2, and Amgalanbayar, age 5 (pictured).

Gavi/2023/Khasar Sandag

FIGURE 11

Pushing the frontiers of vaccine innovation

Vaccine-microarray patches (MAP)

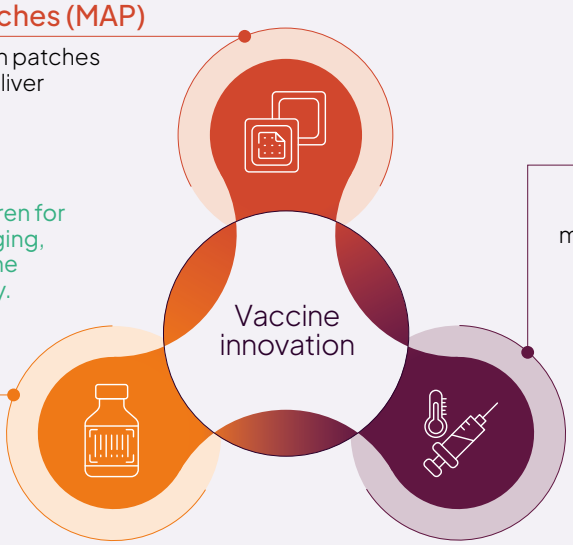
Vaccines administered through patches are easier to administer and deliver and can transform access.

First clinical trial results in children for measles-rubella very encouraging, first patches for another vaccine could be less than 5 years away.

Barcodes

Putting barcodes on vaccines makes them easier to trace, manage and monitor.

Barcodes now on packaging for most Gavi vaccines.



Thermostability

Vaccines that can be kept at higher temperatures are much more suitable for delivery in lower-income countries.

2 new vaccines (typhoid + HPV) have Controlled Temperature Chain qualification since 2022.

Within a year, the annual production of COVID-19 vaccines soared from zero to 11.2 billion doses, on top of the pre-pandemic global vaccine output of 3.5 billion doses. The mRNA vaccine technology has demonstrated its potential for rapid and scalable manufacturing. This technology could yield tremendous impact in the future by enabling faster development and production of vaccines against new COVID-19 variants, other pathogens and, potentially, non-communicable diseases. Beyond COVID-19, upcoming vaccines – including new vaccines against malaria, tuberculosis (TB), dengue or respiratory syncytial virus – could be game changers. Through its Vaccine Investment Strategy (VIS), the Alliance plays a critical role in selecting and shaping the market for new vaccines to be made available to countries through Gavi support.

Increasing supply security through more diverse regional vaccine manufacturing

The pandemic has highlighted new and pressing challenges to regional vaccine supply resilience as a critical factor in global health security – particularly on the African continent. There is now an opportunity to evolve global vaccine markets in response. Well-managed, regional manufacturing diversification can support equitable pandemic access, while sustaining affordable prices for, and expanding access to, routine immunisation.

Gavi can play a critical role by capitalising on the power of its pooled procurement model – not just in Africa but in all regions of the world – including through long-standing suppliers across Asia and South America.

In December 2022, following calls from the African Union for Gavi to support their ambitious goal to produce more than 60% of the vaccine doses required on the continent by 2040 from less than 1% today, the Gavi Board approved a new regional manufacturing strategy with a particular focus on Africa. Supported by the G7, which under Germany's presidency called for Gavi to present a new Market Shaping Strategy, this vision focused on using Gavi's market shaping power to build more sustainable and regional distributed vaccine markets. It also set out a set of recommended actions that

other local, regional, and international partners will need to take to develop a sustainable vaccine manufacturing ecosystem, including on critical issues such as regulatory standards and approval. The strategy involves close partnership with the African Union, including Africa CDC, to help analyse and provide assurance on future levels of demand.

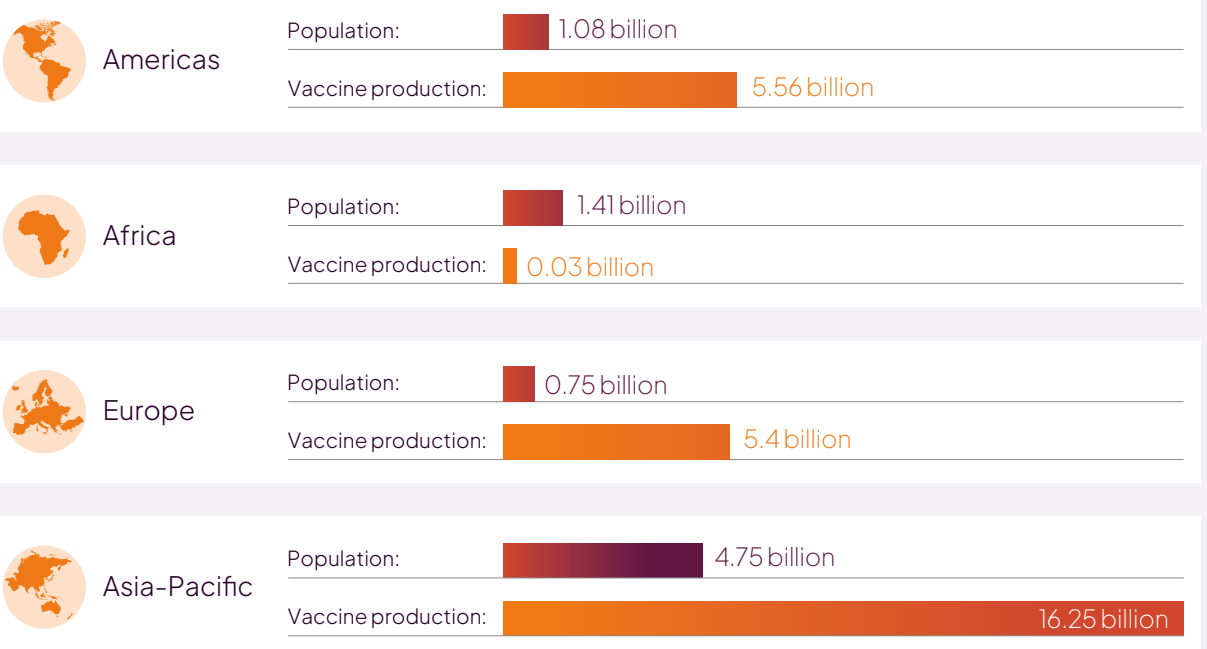
The strategy includes a proposal to explore a new financial instrument or Advance Market Commitment (AMC) specifically targeted to allow African manufacturers to secure access to Gavi vaccines on a sustainable and competitive basis. Given that the initial cost of production of vaccines made on the African continent is likely to be higher than elsewhere, the proposed AMC would aim to provide targeted and time-limited support to help offset some of these initial price differentials. The AMC is being designed in close collaboration with African partners and will be carefully structured to ensure any volume targets and payments are set at the right level to incentivise market entrants in Africa, while avoiding adverse impacts on prices or supply security in the global vaccine markets supported by Gavi.

The context for the Alliance's efforts to shape vaccine markets is a world facing multiple interrelated crises and the next section focuses on the vital role of immunisation in helping countries to manage those crises.

Robust and reliable vaccine production capacity in Africa is a global public good, deserving of global support – Gavi's market-shaping experience can help drive a truly sustainable African vaccine manufacturing industry

DR SABIN NSANZIMANA
MINISTER OF HEALTH, RWANDA

FIGURE 12
Annual vaccine production by region of manufacture (all vaccines) 2019–2021 (total doses over three years)[10]



4 Staying strong on ImmUnity in an era of polycrisis

> Immunisation programmes are an investment in human capital. They improve public health, life expectancy, and work performance. They are a down payment for future economic prosperity.
>
> AUSTIN DEMBY
> MINISTER OF HEALTH AND SANITATION, SIERRA LEONE

US$ 80–100bn of economic benefits (US$)

1.4 billion touchpoints

The full value of vaccination extends far beyond health, with broader impacts on global development. The Alliance is on track to generate more than US$ 80 billion in wider economic benefits through Gavi-supported vaccines over this strategic period – with billions more realised through the COVID-19 vaccines delivered through COVAX. But a combination of climate change, increasing fragility, food insecurity, population growth, displacement and fiscal challenges means that countries will need further support to protect and drive forward the tremendous progress made across the first two decades of the Alliance.

Vaccines are a boost to health, wealth and development

The experience of the past few years has served as further proof that immunisation is one of the best buys in global health and is key to the achievement of the UN SDGs. Each US$ 1 of investment in immunisation delivers broader societal benefits worth US$ 54. Indeed, within two decades of Gavi's creation, child deaths from vaccine-preventable diseases have reduced by approximately 70% in Gavi-supported countries. Immunised communities are healthier and better educated, their household economics are bolstered, and the next generation of children will grow up to become more productive members of society. So far in this strategic period, Gavi-supported vaccines have provided over US$ 32bn of direct economic benefits and are on track to reach the target of US$ 80–100 billion by 2025.

COVID-19 also provided clear evidence of the broader benefits of immunisation for development. Vaccines provided the pathway for governments around the world to mitigate severe disease in high-risk groups and therefore end the acute phase of the pandemic, protect lives, re-open economies, send children back to school and begin to rebuild lost prosperity and were described as the highest-return public investment ever.[11,12]

Vaccines are a fundamental pillar of primary health care and a foundation for Universal Health Coverage

Routine immunisation reaches around 90% of the world's children, bringing families into contact with primary health care (PHC) up to five times during the first year of life – more than any other health intervention. With most children brought in by their mothers, this platform can be used to empower women and particularly adolescent girls. By reaching communities with life-saving vaccines, the Alliance is helping to create the building blocks for strengthening health systems through a focus on primary health care and to work towards Universal Health Coverage (UHC) – a key SDG goal. Although the pandemic disrupted health systems, it also created opportunities: in addition to the 542 million touchpoints through routine immunisation in 2021 and 2022, there were 5 billion through COVID-19 immunisation. The challenge now is to turn what were largely

campaign touchpoints into sustained efforts in reorienting health systems and opportunities to provide equitable access to new vaccines.

This means supporting, as much as possible, integrated service delivery approaches that can support routine immunisation and reach zero-dose children through strengthened PHC. As a core Alliance partner in health system strengthening, the World Bank has a significant and expanding track record working with Gavi in this kind of integrated approach – spanning, most recently, Angola, Bangladesh, Burundi, Honduras, Democratic Republic of the Congo, Pakistan and Tajikistan.

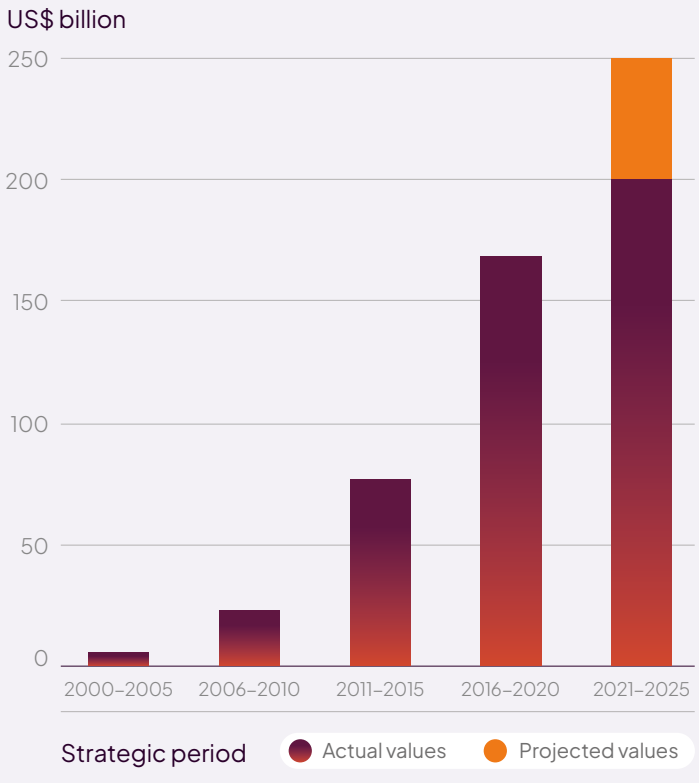
In Pakistan, Gavi and the World Bank are collaborating to strengthen the equitable delivery and quality of essential health services at the primary care level. Gavi is attaching US$ 25 million in funding to a US$ 258 million World Bank programme to support Pakistan's progress towards achieving UHC. The three provinces covered by the programme are selecting essential services to be strengthened, using a PHC-oriented model focused on districts with the greatest need. The aim here is to promote more equitable access to health services, including the use of disbursement-linked indicators to accelerate progress in reaching zero-dose children.

Gavi's zero-dose agenda is increasingly being recognised as critical pathfinder for reorienting health systems towards PHC outside the immunisation community. A growing number of initiatives and stakeholders, including the Global Action Plan for Healthy Lives and Well-being, see this as an opportunity to reach missed communities with a broader package of essential health services. The Alliance alone cannot deliver primary care services, but our investments, advocacy, and country-driven dialogue can pave the way for other services and shine a light on those communities who are being left behind – such as in South Sudan, where Gavi's contribution to a health pooled fund and engagement have led to the prioritisation of zero-dose counties with the most acute needs and delivery of a comprehensive package of services. While promising examples are emerging much more can be done to strengthen alignment of PHC investments at the country level, including the further integration of immunisation programmes. This will require even stronger commitment and collaboration across government programmes and among partners and donors at country level.

Vaccine policy is economic policy

KRISTALINA GEORGIEVA
MANAGING DIRECTOR, INTERNATIONAL MONETARY FUND

FIGURE 13
Cumulative estimated economic benefits of Gavi-supported vaccines



Protecting the gains of the past 20 years of the Alliance from cross-cutting global challenges

The Alliance is operating in a profoundly challenging time for global health. A series of interconnected drivers of vulnerabilities are

FIGURE 14

Gavi's work through immunisation contributes to each one of the UN SDGs

Immunisation is one of the best buys in global health and key to the achievement of the SDGs

1 No poverty
Healthy children and families increase prosperity

2 Zero hunger
Immunisation platform supports nutrition interventions as infections can trigger malnutrition

3 Good health and well-being
Immunisation promotes good health and well-being

4 Quality education
Immunisation increases educational attainment

5 Gender equality
Tailored interventions to empower women and improve child vaccination

6 Clean water and sanitation
Vaccines and water, sanitation, and hygiene prevent diseases

7 Affordable and clean energy
Efficient equipment for immunisation contributes to a cleaner environment

8 Decent work and economic growth
Healthy population is a more productive workforce

9 Industry, innovation and infrastructure
Healthy vaccine markets through innovative products

10 Reduced inequality
Better health increases equality

11 Sustainable cities and communities
Urban immunisation programmes promote healthier cities

12 Responsible consumption and production
Immunisation technology promotes responsible vaccine consumption and production

13 Climate action
Immunisation is a cost-effective intervention to adapt to climate change

14 Life below water
Vaccines can reduce levels of antibiotic effluent in waterways and protect those living nearby

15 Life on land
Vaccines protect against diseases made more common by changes in land use

16 Peace, justice and strong institutions
Strong health systems create long-term stability

17 Partnerships for the goals
Gavi's public-private partnership model drives progress in immunisation

Below: Ajmal, 37, with his three-year old daughter, Ada, in Kabul, Afghanistan. He is a father of three and all of his children have been vaccinated against DTP and polio.

Gavi/2023/Oriane Zerah

putting a strain on health and immunisation systems in Gavi implementing countries. Without a concerted effort to address them, these drivers will place at risk the broader benefits delivered through the Alliance. Climate change, population growth, urbanisation, growing fragility, and conflicts, as well as migration and displacement are disrupting health and immunisation programmes, exacerbating inequity in access to health services, and increasing the risk of outbreaks and their spread.

Although population growth is levelling off in most parts of the world, the population of Africa is expected to double by 2050 and triple by the end of the century. This will coincide with the ongoing rapid urbanisation of the continent, with urban populations expected to nearly triple by 2050 to 1.34 billion. Taken together, these trends put upward pressure on the total number of vaccines and complexity of vaccine delivery in Gavi implementing countries over the short term, even as more countries move to transition.

Routine immunization by Gavi has enhanced the foundation of UHC that Japan has pursued. At the G7 Hiroshima Summit, the G7 announced the G7 Hiroshima Vision for Equitable Access to MCMs, stressing the importance of equity, inclusivity and other principles. Based on this Vision, the G7 launched the MCM Delivery Partnership. Japan will work with and within Gavi, an essential actor for these efforts

FUMIO KUSHIDA
PRIME MINISTER OF JAPAN

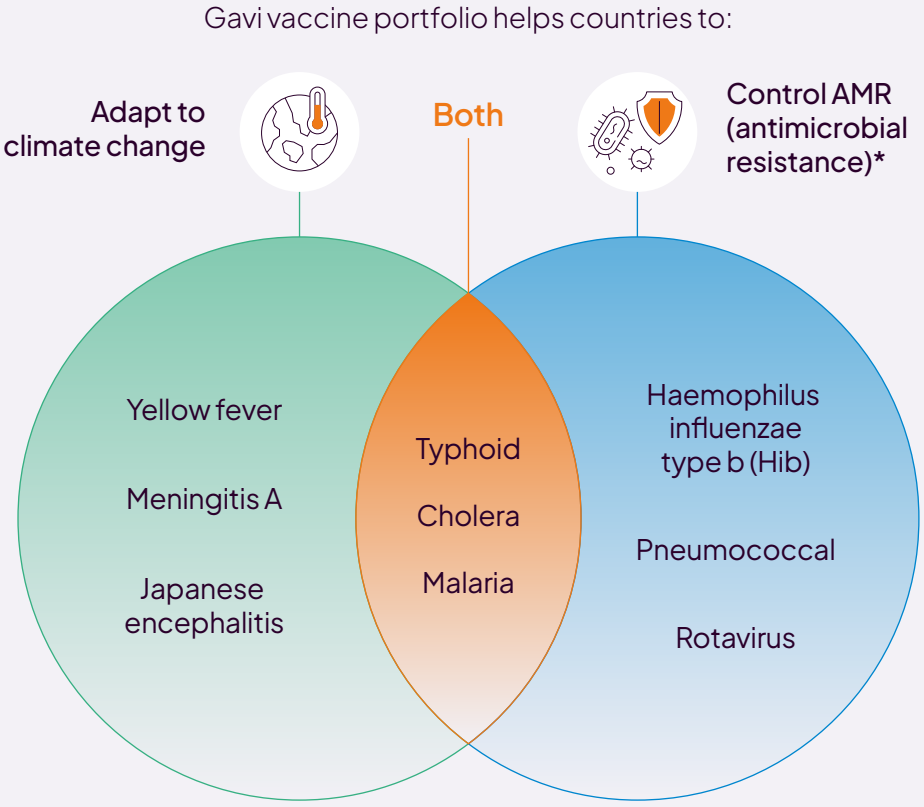
Responding to the climate emergency by addressing outbreaks and vector-borne diseases

Climate change is creating the conditions for vaccine-preventable diseases to spread, damaging local health infrastructure and increasing disruptions to essential health services and immunisation programmes – at an estimated cost of US$ 2–4 billion a year by 2030.[13] Mosquitos that cause malaria, yellow fever and dengue are thriving and spreading to new regions, and meningitis is spreading as arid regions around the Sahara grow.[14,15,16,17] Climate disasters are increasing the risk of waterborne diseases, including diarrhoea caused by rotavirus, typhoid and cholera. The increase in cholera transmission over the last two years – with further increases so far in 2023 – is likely to have been fuelled by the same climate disasters that also damage health infrastructure and limit access to safe water: flooding in Pakistan; cyclones affecting several parts of the world (e.g. Malawi and Mozambique); and severe drought (e.g. Somalia and Kenya). Climate change, along with urbanisation, is also increasing the risk of pandemics by bringing wild mammals, particularly bats, into greater contact with humans.[18] Finally, climate change exacerbates anti-microbial resistance (AMR), which could result in ten million annual deaths globally by 2050.[19]

The Alliance is already helping countries adapt to the impacts of climate change by rolling out vaccines that protect against many of these diseases. The Alliance's model means that as diseases spread, and demand from countries grows, the vaccines are deployed more widely to control disease. Gavi's newly launched malaria programme is a key response to a disease encouraged by climate change.

FIGURE 15

Vaccines help countries mitigate and adapt to global challenges



Note: *Many other Gavi vaccines also reduce antibiotic use, whether unnecessary or against secondary infections.

For outbreak diseases such as yellow fever and cholera, Gavi is shifting towards prevention to avoid the disruption to health systems caused by outbreak response. Countries face different levels of climate change-related disease incidence and require tailored responses – for example, Small Island Developing States have particular challenges.

Six Gavi vaccines also protect against antimicrobial-resistant (AMR) diseases by reducing transmission of sensitive and resistant strains and prevent people coming down with hard-to-treat infections, and many other Gavi vaccines including against measles and COVID-19 also contribute to the battle against AMR diseases by reducing unnecessary antibiotic use and predisposition to secondary bacterial infections, which then require antibiotic use.

Globally, the health sector is responsible for around 5% of total greenhouse gas emissions, and the Alliance, including through UNICEF procurement, is focused on helping countries mitigate emissions related to their immunisation programmes – including through the solarisation of cold chain equipment and health facilities; work with manufacturers to reduce emissions from vaccine-related equipment, processes and transportation; and including incentives to track and deliver environmental, social and economic sustainability as criteria in the tenders and awards of vaccine contracts. The Alliance is also placing a focus on healthcare waste management - including through reducing the carbon footprint of syringes - and supporting countries to plan and implement interventions in coordination with other partners, including Africa CDC and the Global Fund.

Tailored immunisation support for those affected by conflict, fragility and displacement

The number of conflicts across the world is on the rise as well as the number of countries experiencing chronic fragility. Forced displacement has been increasing, with a record 36 million forcibly displaced people in Africa alone in 2021. This creates significant risks that more vulnerable children and adults will miss out on key vaccines. As part of a concerted policy response to broader challenges of conflict and fragility, the Gavi Board has approved a revised Fragility, Emergencies and Displaced Populations (FED) Policy that provides tailored support to help increase levels of immunisation in the most challenging of circumstances. The policy also encourages Gavi to look beyond traditional partners for delivering programmes including humanitarian partners with deep expertise and comparative advantage in these environments.

33,000
units of cold chain installed in 40 countries through CCEOP

Solarising the cold chain and managing waste to reduce the carbon footprint of immunisation and increase reach and resilience

Historically much of the off-grid vaccine cold chain in implementing countries has been gas or kerosene powered – unreliable, expensive and carbon intensive. Launched in Gavi 4.0, the Cold Chain Equipment Optimisation Platform (CCEOP) is an important element of the Alliance's support to strengthen country health systems. Forty-seven Gavi-supported countries have installed more than 66,000 units of cold chain equipment procured by UNICEF through CCEOP, addressing nearly 50% of their needs, including more than 33,000 units installed between 2021–2023 in 40 countries. The vast majority is being deployed on the front lines to equip health facilities to offer more reliable services and extend the reach of immunisation services to missed communities. Since many health facilities in Gavi implementing countries lack access to reliable electricity, there has been a particular focus on scaling up climate-friendly solar-powered refrigeration technologies, which account for 60% of all units installed to date. This represents one of the world's largest-scale initiatives to solarise health facilities with nearly 19 solar units being installed in health facilities in Gavi implementing countries every day.

Despite incredible progress, the COVID-19 pandemic and political instability have contributed to delays in new CCEOP applications in Gavi 5.0, pushing many new installations to later in the period or extended into 6.0. Strengthening country systems to maintain new equipment and dispose of obsolete equipment also remain key priorities within the Gavi 5.0 period and the Alliance's Immunisation Supply Chain Strategy.

The Alliance is now exploring how to build on the CCEOP investment, platform, and know-how to support full-scale health facility solarisation at scale, working with other donors and partners – including from promising early examples from UNICEF's work in Haiti and Nigeria. This work will build on the lessons from Gavi's partnership with Orange, USAID Power Africa, World Vision and others in Sierra Leone, which is helping to solarise 26 health facilities with co-investment using Gavi HSS funding.

The roll-out of COVID-19 vaccines drove additional investment, with COVAX support from 2020 enabling countries to strengthen higher levels of the supply chain: more than 4,200 units of cold chain and 177 cold or freezer rooms were successfully installed across 53 countries. The Alliance also built on the CCEOP platform to rapidly deploy nearly 500 ultra-cold chain units, installed by UNICEF, given very few immunisation programmes had this capacity prior to the pandemic.

Recent analysis by UNICEF indicates that immunisation waste disposal is the number one contributor to CO_2 emissions in an immunisation programme. The Alliance is enhancing focus on healthcare waste management and supporting countries to implement interventions with other partners including Africa CDC and The Global Fund, to address this increasingly urgent issue.

The first use of the revised policy was in response to the devastating floods in Pakistan. In 2021, Pakistan made impressive progress, restoring immunisation coverage to pre-pandemic levels and nearly halving the number of zero-dose children, while conducting one of its largest-ever introduction campaigns – administering more than 90 million doses of measles-rubella vaccine and reaching 44% of its population with at least one dose of COVID-19 vaccine by December 2021. However, in 2022 the floods caused wide-scale damage, and immunisation services halted in flood-affected areas due to accessibility issues, cold chain failure and displacement of health workers. In line with the FED Policy, an emergency was declared for Gavi operations, which allowed the Alliance to operate with a greater risk appetite. Surge support provided under the FED included additional district level surveillance enabling provinces and partners to target the response based on current and real time information. Additional funding also helped to mobilise community groups.

Due to the ongoing humanitarian crisis in Myanmar, routine immunisation rates have fallen from 87% in 2020 to 45% in 2021, resulting in 520,000 zero-dose children. The Alliance continues its efforts to engage constructively with the administration and extended partners for a renewed focus on building back critical systems, with uptake of technical assistance support by WHO and UNICEF to support Expanded Programme on Immunization (EPI) implementation. Coverage rates have improved to around 70% in 2022, and the Alliance continues to identify all feasible activities to improve immunisation, in the fragile political and high-risk context of the country.

Gavi is acutely aware of the unique needs of women and girls in humanitarian settings. Recent gender analysis in the Middle East and North Africa region has illustrated the dilemma that women caregivers face in bringing children for immunisation services, while also recognising the security risk that travel entails. For example, in Yemen, mother-to-mother clubs are a platform to learn and share information on health practices including immunisation. The club member is expected to share what she has learned with at least five houses in her neighbourhood, and home visits also support information dissemination to other family members including spouses, in-laws and older children. Receiving information from trusted messengers from their own communities increased acceptance and uptake of recommended practices.

The achievements outlined in this report so far depend upon the power of the Alliance and its capacity to renew itself, and this is the focus of the next section.

$900m

contribution from Gavi to the GPEI programme of work to help protect children against paralytic polio

76%

coverage of at least one dose of IPV has been achieved so far

Insuring the world against paralytic polio

The achievements of wild poliovirus type 3 eradication in 2019 and the certification of a wild poliovirus-free Africa in August 2020 have been set back by the continued emergence and spread of vaccine-derived poliovirus as well as the detection of wild poliovirus type 1 (WPV1) in Malawi and Mozambique (imported from strains originating in Pakistan). The ongoing WPV1 transmission in Pakistan, compounded by the flooding, underlines the urgency in achieving polio eradication.

Gavi is contributing US$ 900 million to the Global Polio Eradication Initiative (GPEI) programme of work during this strategic period to help protect children against paralytic polio with inactivated polio vaccine (IPV). All countries have introduced at least one dose of IPV into their routine immunisation programme, with 76% coverage achieved so far. Gavi's support for IPV – the only vaccine in Expanded Programme on Immunization (EPI) programmes to provide protection against all three poliovirus types – is vital to protecting children from paralytic polio and supporting polio eradication; this support was extended by the Board in December 2022. Gavi has supported the introduction of the second dose of IPV (IPV2) into routine schedules in 34 countries, with coverage of 35% so far among Gavi implementing countries; and is collaborating closely with GPEI and EPI partners to support IPV2 introduction in the remaining countries with an IPV1–only schedule. With the prospect of inclusion of IPV in hexavalent vaccine, routine immunisation's contribution to polio eradication will be further strengthened.

5 A renewed model ready to raise the next Generation ImmUnity

> **Immunisation is undoubtedly one of the best buys in global health and Gavi's childhood routine immunisation programmes have saved more than 17 million lives since 2000. As one of Gavi's largest donors the UK remains committed to equitable access to vaccines and saving lives.**
>
> THE RT HON JAMES CLEVERLY
> SECRETARY OF STATE FOR FOREIGN, COMMONWEALTH AND DEVELOPMENT AFFAIRS OF THE UNITED KINGDOM

The COVID-19 pandemic has been the greatest test of Gavi's model in its 23-year history. As this report has demonstrated, the robustness and flexibility built into the Alliance has ensured most commitments for the 2021–2025 strategic period remain on track. But to respond effectively to a challenging global environment over the next two and a half years, Gavi is taking concrete steps to further adapt its model, actively learn from the pandemic, and unlock new tools and partnerships to catch up and expand immunisation for the world's most vulnerable people.

Updating Gavi's strategy

As global health and immunisation programmes begin to recover from the disruption caused by the COVID-19 pandemic, Gavi recognised that the strategy for the 2021–2025 strategic period – established before the pandemic struck – needed to be updated to reflect the lessons from the pandemic and ensure the work of the Alliance was focused on supporting countries where they need it most. As a result, the Board-approved 'Gavi' 5.1 strategy reaffirms core 5.0 priorities such as catching up on missed children, reaching zero-dose children and ensuring introductions of priority vaccines at pace, including revitalising the human papillomavirus (HPV) vaccine programme and accelerating the launch of the malaria vaccine programme. It also includes targeted additions from the pandemic and its lessons including from the first phase of the COVAX evaluation[20] with a potential COVID-19 vaccine programme from 2024 and an evolution of Gavi's role in Pandemic Prevention Preparedness and Response (PPPR), including support to regional manufacturing diversification.

Accelerating access to key priority vaccines – HPV and malaria

Cervical cancer is one of the leading causes of cancer death among women in Gavi implementing countries. A powerful vaccine is available – which saves more lives per person vaccinated than any other in Gavi's portfolio. But progress in fully rolling out the vaccine has been too slow as supply to Gavi has been constrained and, most recently, as a result of school closures and other disruptions linked to the pandemic. As a result, in 2022 there were five introductions compared to eight in 2019.

However, 2022 brought the welcome announcement by WHO's independent technical advisory body that one dose of HPV vaccine is sufficient to protect against

cervical cancer. In addition, because of market shaping, new producers are bringing new supply, creating an opportunity to accelerate roll-out. Existing and new Alliance partners are reinforcing their efforts to accelerate introductions and coverage with the aim of immunising 86 million girls by 2025. This would increase routine HPV coverage to 39% across the 57 Gavi implementing countries from the current level of 9% (for HPV second dose), preventing an estimated 1.4 future million deaths through Gavi implementing HPV vaccination in 2021–2025. The revitalisation of Gavi's HPV vaccination programme is grounded in the knowledge that reaching women and young girls requires a different, tailored approach. Working with new partners and taking innovative approaches can unlock new ways to do this. There are also great opportunities for middle-income countries to introduce HPV vaccine under Gavi's MICs Approach. Currently 21 out of the 45 MICs Approach-eligible countries are yet to introduce HPV nationwide, including Indonesia, Vietnam and the Philippines, and there is renewed interest to make this a shared priority.

Recipients of the malaria vaccine

Above (top to bottom): Winnie with her 9–month-old daughter Sherline at their home in Malava, Kenya

Gavi/2021/White Rhino Films-Lameck Orina

Sylvia and 7–month-old Beverly at the Malava County Hospital, Kakamega, Kenya

Gavi/2021/White Rhino Films-Lameck Orina

Launch of the Malaria pilot vaccine in Ghana, 2019

2019/Fanjan Combrink

The first generation to benefit from a malaria vaccine

> **"The malaria vaccine can end years of suffering in Ghana from this terrible disease – in communities across my country, people are excited and demand is high. Now is the time to deliver**

KWAKU AGYEMAN MANU
MINISTER OF HEALTH, GHANA

Gavi was created to address the lack of incentives for vaccine manufacturers to develop and supply products that tackle diseases prevalent in lower-income countries. An estimated 475,000 children under the age of five died of malaria in Africa in 2021, making it the biggest killer of children on the continent – but until recently no vaccine has been available. Although the global death toll has fallen by almost a third since 2000 thanks to the use of mosquito nets, insecticides and drugs, deaths in 2020 and 2021 increased by more than 10% compared to 2019.

In 2021 an innovative financing agreement between Gavi, GSK, and MedAccess guaranteed the continued production of a key vaccine ingredient, which prevented a delay of an estimated two years in the availability of the vaccine. The subsequent WHO approval and Gavi Board decision created a malaria vaccine programme that sent a signal to manufacturers that there was a market, and a second vaccine is now becoming available. The malaria vaccine development pipeline is robust, with more than 100 studies underway and there are efforts to use mRNA technology to develop future malaria vaccines.

Gavi, along with Unitaid and the Global Fund, has funded the WHO-coordinated Malaria Vaccine Implementation Programme, generating key evidence on use of the vaccine and programme design. Since the launch of the malaria vaccine pilots in 2029, more than 1.5 million children at high risk of illness and death from malaria in Ghana, Kenya and Malawi have been reached. Demand for a malaria vaccine is high, with at least 28 countries in Africa planning to introduce it through Gavi support and 14 countries already approved. Gavi, the Global Fund and other partners are working to ensure the complementarity of vaccines and other recommended interventions to prevent and treat malaria as well as technical assistance to countries.

2bn

COVID-19 vaccines have been shipped to 146 economies through COVAX

Integrating COVAX

COVID-19 tested Gavi's model as never before. At the heart of the worst pandemic in a century, Gavi worked with our Alliance partners to establish the COVAX Facility with the aim of ensuring the benefits of COVID-19 vaccines were shared equitably around the world. Once the Access to COVID-19 Tools Accelerator (ACT-A) was launched at the end of April 2020, COVAX worked with diagnostic and treatment partners as part of a broader global response to the pandemic. The first COVAX dose was administered 39 days after the first vaccination in a high-income country in January 2021. Within four months deliveries were made to over 100 countries. However, vaccine nationalism, export bans and manufacturer delays meant that COVAX faced significant challenges during much of 2021, with the supply of COVID-19 vaccines constrained - delaying the benefits of immunisation to lower-income countries. It has now shipped two billion COVID-19 vaccines to 146 economies, of which 1.75 billion have gone to lower-income economies in the COVAX AMC, preventing nearly 3 million deaths.[21]

Over time COVAX's efforts have helped raise the proportion of people in AMC-eligible economies protected by a primary course of vaccines to 55%. Importantly, this is moving towards the global average of 66%. Of course, the pandemic itself and the focus on COVID-19 vaccines has disrupted health systems and routine immunisation but also represents an opportunity for countries to invest in and to extend their systems' reach to priority populations that can often be left out of routine health care programmes.

The key challenge for Gavi now is to integrate COVAX into Gavi's core business, while continuing to support countries to prioritise high-risk populations and integrate COVID-19 vaccination into their health systems for 2023, and, subject to Gavi Board approval, for 2024 and 2025. Within the Secretariat, this also means examining which of the key innovations from COVAX should be mainstreamed into Gavi's core toolkit to help equip a response to future pandemics.

FIGURE 16

Mainstreaming innovations from COVAX into Gavi's toolkit

COVAX innovation	Gavi core tools
Cutting-edge **technology to accelerate COVID-19 Vaccine development** and manufacturing	Explore avenues for Gavi to accelerate the use of new vaccines during outbreaks including working closely with R&D organisations
Data and analytics to **monitor COVID-19 Vaccine distribution and uptake** at unprecedented speed and scale	Drive evidence-based vaccine delivery strategies and equitable access in the next pandemic
Optimised process to **engage and leverage strengths of partners** for rapid joint decision-making	Use cross-organisational decision-making structures to ensure swift and collaborative response
Developed and deployed **model indemnity and novel NFC programme** to enable access to vaccines with EUA	Enable more appropriate use of indemnity and NFC programmes in the future using lessons from COVID-19
Implemented a **novel mechanism to provide COVID-19 Vaccine access in humanitarian and fragile settings**	Use Humanitarian Buffer lessons to drive the next Gavi and global humanitarian/emergency response

Note: Gavi's model has and will continue to adapt, actively learning from the pandemic to unlock new tools and partnerships to catch up and expand immunisation for the world's most vulnerable people.

Defining Gavi's role in Pandemic Prevention Preparedness and Response (PPPR)

COVID-19 demonstrated that countries with strong immunisation programmes were best placed to respond to the pandemic and that vaccines are central to global health security. Every Public Health Emergency of International Concern declared since 2007 except one has eventually used vaccination to help address the disease prompting the emergency. Going forward, it is to be expected that vaccines, and thus the Alliance, will continue to play a central role in PPPR. The Secretariat is closely engaged in the discussions taking place through the WHO, G20 and G7 led processes which are reshaping the Global Health Architecture.

COVID-19 demonstrated that countries with strong immunisation programmes were best placed to respond to the pandemic and that vaccines are central to global health security.

The Board has discussed four important expanded roles that Gavi plays within PPPR. First, delivering Gavi's core work will continue to build countries' capacity to prepare for and respond in emergencies by strengthening routine immunisation programmes, responding to outbreaks, increasing efficiency, focusing on equity and reaching missed communities. Gavi can explore new ways to partner with other organisations to build resilience at country level, including through the Pandemic Fund with other implementing entities.

Second, the Alliance, together with CEPI (Coalition for Epidemic Preparedness Innovations) and other R&D organisations, can provide a unique, networked end-to-end view, from 'lab to jab', across an extensive portfolio of diseases and vaccines and can build on the lessons from COVAX to retain and enhance the required capabilities to help drive a global response to the next pandemic. This includes retaining and enhancing tools such as the provisions for Indemnity and Liability, a no fault-compensation mechanism and a dose sharing platform and providing vaccine access to populations living in humanitarian settings through humanitarian agencies as well as governments.

Third, a key lesson from COVID-19 is that rapidly accessible, risk-tolerant, surge and contingent funding is critical to ensure equitable vaccine access for lower-income countries early in emergencies. Further developing Gavi's financial tools and capacity to innovate at pace will be important in driving future responses.

And finally, Gavi has a core role to play in addressing inadequate manufacturing diversity in the face of COVID-19, and Gavi's experience in market-shaping for vaccines can be used to build greater global and regional resilience.

Strengthening the Alliance

To deliver this ambitious agenda, an Alliance-wide effort has been launched to help countries restore routine immunisation, catch up children missed during the pandemic and reach new zero-dose children. This effort includes joint high-level advocacy and outreach to countries; support to develop tailored, country-specific plans; simplified and expedited processes to allow reprogramming of Gavi funding; and consideration for additional vaccine support to ensure catch-up activities can reach missed cohorts that may not be covered by existing country supply. The Alliance is working with countries to align zero-dose and catch-up activities to reduce competition for resources and ensure complementary and efficient planning and implementation.

And while Gavi's unique partnership structure is a core strength the COVID-19 pandemic also exposed some areas where ways of working were complex and where imperfect collaboration mechanisms led to a weakening of the Alliance's health at global, regional and country levels. This situation has been recognised and a concerted effort is now

Reinforcing Gavi's work with regional partners

Since its inception, Gavi has forged links with regional organisations in support of our mission. The Alliance's market-shaping strategy has encouraged greater diversification in the vaccine manufacturers that supply Gavi's vaccines – moving from just two regions of the world (Europe, North America) supplying vaccines to Gavi in 2000 through to five (Europe, North America, South America, Asia and Africa) during the 2021–2025 strategic period.

The stark inequalities across different regions for access to COVID-19 vaccines during 2021 – particularly in Africa – have driven a wave of interest in strengthening regional institutions to play a greater end-to-end role in the development, regulation, procurement, and delivery of vaccines. The African Union has established a New Public Health Order for Africa to drive greater investment in Africa's health institutions, workforce and manufacturing capacity through new action-oriented partnerships, and help drive global health security. The Pan American Health Organization (PAHO) collaborated with COVAX and expanded its pooled procurement of vaccines during the pandemic to help source COVID-19 vaccines for its members. The ASEAN nations have developed a regional action plan for vaccine security and self-reliance.

As Gavi learns from the COVID-19 pandemic and builds towards the next period, the strategy will need to evolve to deepen our links with these existing and emerging regional entities for example by building upon the Memorandum of Understanding signed with the African Union in May 2023. This will include examining how Gavi's global approach to supporting lower-income countries can reinforce the development of strong institutions and act in a complementary way to strengthen both regional and global health security. Gavi's tried and tested model of aggregating procurement on behalf of all Gavi-supported countries at a global level remains a powerful tool. In working with regional bodies and institutions it will be important to preserve these benefits, and to avoid the development of bifurcated set of regional markets competing against each other and raising prices – both during interpandemic periods and at moments of crisis.

underway to invest in making the Alliance stronger than ever to meet Gavi's core mission and to address the growing challenges at country level. Following intensive discussions between countries and Alliance partners, a ways-of-working Action Plan has been developed with concrete steps to reaffirm a healthy, effective Alliance with a focus on country needs at the centre. The Alliance partners agreed on focusing on roles and responsibilities at country, regional and global level to ensure effective support to countries.

One example of this renewed approach will be the further strengthening of Gavi's vaccine delivery work during pandemics, which will build on the Alliance's historical and coordinated approaches. It will integrate lessons from COVAX and the COVID-19 Vaccine Delivery Partnership (CoVDP) workstream – an Alliance construct that was launched to accelerate COVID-19 vaccination in 34 countries by providing them with targeted delivery support. This will include the focus on an agreed Alliance approach to deliver for country immunisation needs, a combined approach to resource mobilisation and strengthened coordination across delivery partners under one roof (including UNICEF, WHO, international NGOs and local partners). It will have the ability to bring an end-to-end approach from market shaping and procurement to delivery support in-country, and build on what the Alliance learned through COVAX on political advocacy, high-level leadership and agile decision-making.

Another example of where lessons from the pandemic are being applied to drive change is in work being piloted in seven countries to scale up vaccine traceability to ensure the safety and quality of vaccines throughout the supply chain. Alliance partners are working with global partners including Global Fund, USAID, the Bill and Melinda Gates Foundation, the World Bank, and the European Union to develop digital global goods and standards, including target software standards and GS1 serialised barcodes.

34
countries' vaccination accelerated by COVAX and the CoVDP workstream

Innovative financing at the heart of Gavi's response to global health needs

Over the past 22 years, Gavi has consistently pushed against the frontiers of innovative financing for development to get the best value-for-money for every dollar committed to our mission. In the first two years of this strategic period – faced with the unprecedented challenges posed by COVID-19 – Gavi was able to leverage existing financial mechanisms and create new ones to address emerging global needs.

Gavi moved quickly to launch the **Gavi COVAX Advance Market Commitment (AMC)** in June 2020, less than three months after the WHO characterised COVID-19 as a pandemic. The experience that Gavi had gained in making advance commitments to manufacturers to bring forward **Pneumococcal** and **Ebola** vaccines for use in lower-income countries proved vital in designing key features of the Gavi COVAX AMC.

As the COVID-19 pandemic intensified, Gavi realised that further instruments would be required to facilitate access to the record funding pledged and committed by donors. To respond to this need, Gavi worked with the **European Investment Bank (EIB)** and the **U.S. Development Finance Corporation (DFC)** and established new frontloading instruments worth up to US$ 2 billon which provided greater flexibility to accelerate funding for COVID-19 vaccines.

COVID-19 also strengthened Gavi's links with **multilateral development banks (MDBs)**. The **COVAX cost-sharing mechanism,** designed with the **Asian Development Bank**, the **World Bank** and the **EIB**, helped countries on a voluntary basis to access US$ 800 million of additional high-quality, low-cost COVID-19 vaccines within the COVAX portfolio.

An US$ 200 million guarantee scheme with **MedAccess** and the **Soros Economic Development Fund** helped ensure Gavi could efficiently manage some of the residual demand risks associated with MDB funding rules.

Looking ahead, many of the new innovations and partnerships formed over the first two years of this strategic period can be repurposed to serve in support of Gavi's core mission, offering exciting new ways to save lives. Gavi's frontloading partnerships with the **EIB** and the **US DFC** could be further strengthened by looking at ways to provide greater access to liquidity for Gavi core vaccination programmes as well as in response to future outbreaks or pandemics.

Combined with the work underway to develop a contingent financing feature for **IFFIm**, these existing instruments offer Gavi the prospect of putting together a '**Day Zero Financing Facility**' for vaccine procurement – which could form a key part of the global surge finance defence for a new pandemic, currently under discussion at the G20, G7 and WHO levels.

As set out in Chapter 3 Gavi is also working in close collaboration with partners to explore options for a new **Advance Market Commitment** to support vaccine manufacturing in Africa as part of its broader regional manufacturing strategy. The new partnerships and instruments with **MDBs** also offer exciting ways to leverage development finance to achieve greater outcomes in support of Gavi's mission – for example by combining with other implementing entities of the new **Pandemic Fund** to support countries with programmes to build greater resilience to future pandemics.

Right: Father of four, Hussain, 55, with his son Usman, 12, in Kabul, Afghanistan

Gavi/2023/Oriane Zerah

Private sector innovation continues to support Gavi's mission

"

Our goal is to help empower a generation of girls to live healthy and prosperous lives – it's time for a 'new normal'

JESSICA POSNER ODEDE
CEO GIRL EFFECT

At the start of this strategic period, the Board approved a fresh private sector strategy, drawing upon the lessons from Gavi's private sector engagements since 2011. This strategy, geared to intensify our collaboration with the private sector, starts with countries' needs – how to get better data, how to improve supply chains, how to train health workers more effectively. Gavi develops partnerships that marry private sector expertise with these needs.

Catalysed by increased support from the governments of Japan, the Netherlands, and the United Kingdom, along with the Bill & Melinda Gates Foundation, the Gavi Matching Fund continues to play a crucial role as an incentive mechanism to crowd in private sector investments for immunisation. The Fund is complemented by Gavi's Innovation for Uptake, Scale and Equity in Immunisation (INFUSE) initiative which continues to identify innovations to improve vaccine delivery at scale.

The pandemic brought a new focus on the power of immunisation from the private sector; today, there are over 80 private sector partners across industry sectors and geographies providing expertise and funding. Since 2020, Gavi and Zipline, leveraging expertise and catalytic funding from UPS, have enhanced supply chain performance in Côte d'Ivoire, Ghana, Kenya, Nigeria, and Rwanda, expanding health access especially in areas that are traditionally the most underserved. Zipline makes drone deliveries of vaccines 24/7, serving 4,000 facilities on-demand with the average delivery taking 25 minutes. More than 11 million vaccines have been distributed in this period, including nearly three million COVID-19 vaccines.

Gavi teamed up with Unilever and Girl Effect for effective demand generation interventions leading to behavioural shifts among parents and young people. In India, the partnership with Unilever Lifebuoy reached 3.8 million people and brought about a five-fold increase in handwashing with soap and a greater than 30% increase in uptake of rotavirus and measles vaccines among children under two.[22] Gavi and Unilever Lifebuoy, with new partner Power of Nutrition, are expanding to Indonesia with a two-year US$ 8 million programme to reach over 1 million Indonesian children to raise awareness of the power of combining immunisation, handwashing with soap, and nutrition to prevent diseases.

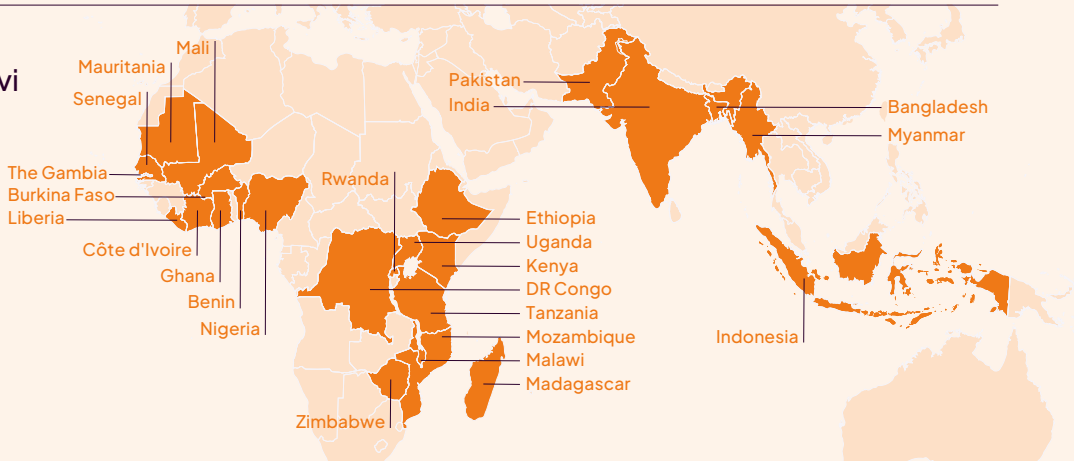
Gavi and Girl Effect are working to increase uptake of HPV and routine immunisation in Tanzania and Ethiopia. Closely collaborating with the Ministries of Health in both countries, Gavi and Girl Effect design behaviour change communication to generate demand for vaccination amongst young people and to tackle gender-related obstacles restricting the adoption of vaccines.

Leveraging the power of data, Zenysis Technologies is harnessing big data analytics to sharpen the accuracy of vaccine planning for under-immunised children in Pakistan and Mozambique. Meanwhile to ensure every child is registered in the health system and receives critical vaccines, Simprints is pioneering biometrics in Bangladesh, Ghana and Tanzania.

To build vaccine confidence through listening and engagement, Gavi is partnered with major social media platforms, such as Facebook, LinkedIn and Google. For example, since 2020, Google has offered to Gavi more than US$ 75 million in Ad Grants for Gavi's COVID-19 vaccine awareness campaign – helping reach over 50 million people with targeted content.

FIGURE 17

Countries where Gavi has implemented partnerships with the private sector since 2016



Gavi funding through the IFFIm since 2006:

$4.6Bn

towards Gavi's core programmes

$1Bn

through the COVAX AMC

The International Finance Facility for Immunisation (IFFIm)

IFFIm is a pioneering innovative finance mechanism launched in 2006. It provides long-term predictable and flexible funding to Gavi. IFFIm converts long-term government commitments into immediately available cash by selling Vaccine Bonds in the capital markets and provides funding for Gavi's programmes. Through its flexible structure, IFFIm allows Gavi to shift predictable donor funding through time – making resources available quickly when they are most needed, including to frontload funds where necessary.

Since its inception, IFFIm has attracted more than US$ 9.6 billion in sovereign pledges. In this strategic period IFFIm is financing Gavi's core programmes with US$ 4.6 billion and the Gavi COVAX AMC with US$ 1 billion. IFFIm was among the earliest funding sources available to the Gavi COVAX AMC – as well as to CEPI – as part of its pandemic response.

Learning from the Gavi COVAX AMC, Gavi is building on its existing innovative financing tools to enable the provision of rapidly available financing for a future pandemic. Together with donors and the IFFIm Board, Gavi is developing an IFFIm contingent financing feature to allow donors to pre-position funding today via contingent grants, to be activated if needed during a future pandemic.

Delivering operational excellence in the Secretariat to meet Gavi's goals

Over the last 20 years one of the strengths of the Alliance has been the networked approach of a small and efficient Gavi Secretariat working hand in glove with Alliance Partners. That approach will continue in the remainder of this strategic period, with 97 cents in every dollar invested in Gavi going to support vaccine programmes. The overhead ratio within the Secretariat will remain at or below 3% of our total budget.

As Gavi strives to deliver on its goals and commitments and address the challenges set out in this report, the Secretariat will continue to prioritise effective ways of working to maintain low overheads, increase efficiency and enhance Gavi's culture, which will all lead to an engaged and motivated workforce. Gavi has therefore launched an ambitious Operational Excellence initiative, which must become part of its DNA. This multi-year change management process, across strategic periods, will build on Gavi's strengths while at the same time addressing weaknesses in its operational set-up, processes, systems and ways of working. The initial phase will integrate COVAX work, innovate and redesign grant management processes while leveraging technology, further simplify and streamline the Secretariat's structure and ways of working, and enhance its culture. The aspiration is for Operational Excellence to become a stronger part of the Secretariat's culture to ensure Gavi is as efficient and effective as possible to deliver on Gavi 5.1 and get ready for the next set of challenges in Gavi 6.0. It will transform how Gavi supports countries and works with partners by creating a faster, more effective Gavi Secretariat that is able to react better to country needs, with a key focus on Alliance health and Alliance ways of working. How we implement Operational Excellence is critical. For this reason, new leaders with relevant expertise have been recruited and we are in the process of refining our Ethics and Compliance framework.

CIFF is proud to partner with Gavi, the Ethiopian Government and UNICEF to reach zero-dose and malnourished children with integrated services. This partnership can generate evidence to pave the way for more integrated programming across the sector.

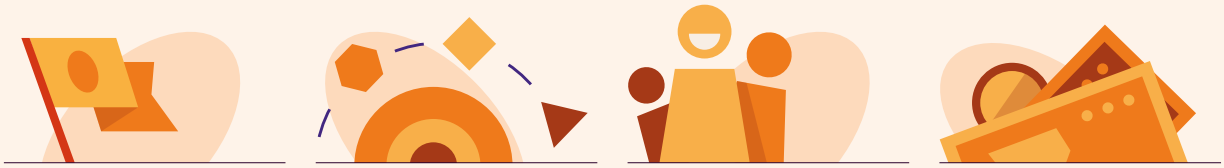
ANNA HAKOBYAN
CHIEF IMPACT OFFICER,
CHILDREN'S INVESTMENT FUND FOUNDATION (CIFF)

"Evolve" to do things faster, better and in support of country needs

As part of the Operational Excellence initiative, in June 2022 Gavi launched "EVOLVE", a multi-year project that will transform the way Gavi manages and delivers funds to implementing countries and partners.

Innovating every component of Gavi's grant management process, from vaccine forecasting and applications through to disbursement of funds and reporting, the project will modernise, simplify and strengthen the core of Gavi's operations to be more effective and efficient.

By streamlining processes, centralising data, fostering greater stakeholder collaboration and with an integrated suite of digital solutions, EVOLVE will make Gavi's grant management cycle shorter, more predictable, efficient and user-friendly – ultimately helping us to reach more children with life-saving vaccines, faster.



Countries

Improve user experience with **simpler processes** and **centralised tools** for country application, implementation and reporting.

Gavi Secretariat

Improve risk **management, controls and workflows** to allow resources to focus on higher value activities.

Partners

Strengthen **engagement** and **collaboration.** Enable faster transactions.

Donors

Increase **transparency** and **accountability** for all Gavi investments.

Improving the immunisation system in DRC through mapping

The Democratic Republic of Congo (DRC) faces many challenges with massive population displacement having a significant impact on the health system. As DRC's last nationwide census was held in 1984, health planning data has been very outdated. The Ministry of Health, Flowminder, and the Center for International Earth Science Information Network at Colombia University established the GRID3 Mapping for Health initiative to improve equitable access to services by identifying barriers faced by caregivers to accessing immunisation. It was funded through Gavi's INFUSE programme. The project has produced base maps – showing health area boundaries, health facility and settlement locations – and high-resolution gridded population estimates disaggregated by sex and age. Drawing upon 370,000 interviews and mobile phone data, more than 13,000 health facilities, 11,000 schools, 22,000 religious centres, and 2,400 health areas were mapped in seven provinces. Health staff are using this mapping to extend services including immunisation to remote areas and also malaria bed net distribution and cholera treatment to hard-to-reach areas. The work will be expanded as part of the Equity Accelerator Fund (EAF) grant to high zero-dose areas.

Left: Bauma, a 24–year-old lab technician in Goma, DRC.
Gavi/2023/Wise Kubuya Bebukya

6 Shaping the future for generations to come: toward a new global health dividend

CHAPTER 6

A whole generation of young adults are alive and healthy in India thanks to the power of immunisation – let us aspire to achieve even more for today's children

H.E. DR MANSUKH MANDAVIYA
MINISTER OF HEALTH AND FAMILY WELFARE, INDIA

As the world emerges from 28 months of living with COVID-19 as a public health emergency of international concern, the work of Gavi has never been more vital. The Alliance's priority is to drive the recovery of routine immunisation and extend the reach of immunisation to additional zero-dose children – building on the estimated three-percentage point rise in immunisation coverage in 2022 indicated in this report. Gavi's refreshed 5.1 strategy has been designed to support this push and to help deliver on its Investment Opportunity commitments in the rest of the strategic period.

And yet, the Mid-Term Review is also a time for Alliance Partners, Donors, and Gavi implementing countries to begin to lift their sights and see what can be achieved over the next five-year strategic period. The challenges are clear. The 2026–2030 period looks set to be the most testing for lower-income countries since the Alliance was created in 2000. Nevertheless, it is equally clear that exciting opportunities exist to find new ways to support countries protect more lives.

Making sure the benefits of the renaissance in vaccine technology reach the world's poorest

Gavi was set up more than 20 years ago to overcome failures in global vaccine markets. Countries that needed them most could not get access to affordable vaccines. Gavi's proactive market-shaping strategy helped transform that dynamic. As the vaccine industry stands on the threshold of exciting new advances in technology, Gavi can once again shape the next generation of vaccine markets for the benefit of the world's poorest. New technologies such as mRNA and scientific discoveries powered by artificial intelligence will be used to develop breakthrough vaccines in high-income markets. The challenge for the Alliance will be to ensure those same tools are used to tackle unaddressed diseases in Gavi implementing countries, ensure healthier markets for existing vaccines like malaria or HPV, and find new ways to make it simpler to administer a vaccine in a remote community.

Finishing the 'zero-dose' job and finding new ways to prevent future deaths and build prosperity

With the conclusion of Gavi 5.1, almost all Gavi implementing countries will have introduced the key childhood vaccines, thanks to their dedication and the Alliance's support. A renewed focus on finishing Gavi's equity agenda and reducing the number of zero-dose children by 50% by 2030, supporting vulnerable women and girls, refugees, and other marginalised communities, will save millions of lives and put in place the foundation for stronger primary health care. In addition, the prospect of an effective vaccine against tuberculosis, alongside the recent progress on malaria, could dramatically reduce the impact of two of the biggest killer diseases. There are exciting prospects to reinforce protection for vulnerable groups such as pregnant women and newborns,

against deadly diseases. For example, new vaccines against respiratory syncytial disease (RSV) and group B streptococcal infections offer the promise of further reductions in neonatal deaths, particularly in sub-Saharan Africa where they have remained stubbornly high.

Building greater resilience against outbreaks, epidemics, and pandemics and mitigating climate change

The number of outbreaks of diseases of epidemic and pandemic-potential are predicted to rise in the years ahead – fuelled by climate change, population growth, mobility, and greater human/animal interactions. The Alliance can respond to this challenge by providing countries with better tools to prevent outbreaks and stop their spread – using vaccines as a preventative tool; and ensuring they are available immediately when outbreaks occur; making immunisation programmes more resilient; and equipping health workers with greater capacity to respond. This can drive national, regional, and global health security and mitigate the impacts of climate change.

Supporting continued investment in immunisation and strengthened immunisation programmes

The Alliance has always worked with countries to help them fund more of the cost of their own immunisation programmes over time. The challenging macro-economic environment post-pandemic and rising impacts from global vulnerabilities means that Gavi's existing co-financing and transition model is likely to need to adapt. And middle-income countries are facing new challenges that may require a commensurate response. Funding for immunisation will compete with other priorities for scarce national resources, including within the health sector. A revised approach will be required, supported by all Alliance partners, to emphasise the value of immunisation as one of the best buys in public health. Strengthening immunisation programmes will be more important than ever to make sure the Alliance can reach those left behind avoid expensive illnesses and outbreaks and help meet the promise of universal health coverage.

Renewing the Alliance model once again in support of countries

The Alliance will need to consider how to adapt its partnership and operating model to take advantage of some of these additional challenges and help it deliver better for countries. The unique, flexible, and innovative nature of Gavi as a public private partnership can provide the impetus for change, as it has done in the past. New partnerships with regional entities and strengthening links with other global health organisations can reduce fragmentation and provide enhanced support. Innovative financing mechanisms can be targeted to correct market failures. Leveraging additional investment in immunisation by working with the private sector and MDBs and DFIs can increase the impact of each dollar of scarce Official Development Assistance funding. And Gavi will need to continue to look hard at its own processes and procedures and drive efficiency and agility in how it works.

These opportunities can help shape the strategic choices made by the Alliance, its donors, and implementing county partners for the remainder of this decade. Whilst there will be trade-offs involved, with the prospect of greater access to a wider range of vaccines than ever before on the horizon, there is a chance to raise the Alliance's collective ambitions and shape the post-pandemic world for the benefit of the most vulnerable. Driven by partnership, the renaissance in vaccine technology can help pave the way for a new global health dividend and set Gavi on the path to raising the next Generation ImmUnity.

Vaccinations are essential for children's health and to build human capital. We must continue to support countries to strengthen their immunization programs as an integral part of their health systems – saving lives and building prosperity.

MAMTA MURTHI
VICE PRESIDENT FOR HUMAN DEVELOPMENT,
WORLD BANK GROUP

ANNEX 1

Summary report against investment opportunity commitments

Quantitative commitments

	Investment Opportunity Commitments 2021–2025	Progress by 2022	Description
1	Reach an additional 300 million children	130 million	On track
2	Saving 7–8 million lives	2.4 million	On track
3	Contribute to a further US$ 80–100 billion in economic benefits	32.3 billion	On track
4	Facilitate 1.4 billion touchpoints between families and health services through vaccination	542 million	On track
5	Transition of a further 10 countries into self-financing	3	Progress delayed by economic challenges, with six countries expected to transition by the end of the strategic period under new Board approved policy.
6	Catalyse country contribution of US$ 3.6 billion in domestic co-financing and self-funded vaccine programme	US$ 1.1 billion	Progress slightly delayed, current forecast is to achieve US$ 3.4bn in 2025 (94% of target), linked to reduced co-financing and self-financing payments under new Board approved policy. Expected to be delivered in early 2026.
7	Generate US$ 900 million in donor cost savings in 2021–2025 through reduced prices of the powerful vaccines presented in the Berlin Investment Opportunity	US$ 300 million	Progress delayed - current forecast to achieve US$ 760 million by 2025 (84% of target). There are further opportunities to drive introductions of lower priced vaccines in the next three years to close the gap. Significant additional price reductions have been achieved through procurement of vaccines for COVAX portfolio. Moving forward, ensuring geographic diversity of vaccines will also be an important criteria alongside price to ensure security of supply.
8	Provide the most comprehensive package of vaccination to Gavi implementing countries to protect against 18 diseases	19	On track
9	Enhance the competitiveness and supply security of at least five Gavi implementing markets with additional product choices from new manufacturers	5	On track
10	Deliver over 3.2 billion doses of life-saving vaccines to 55 eligible countries	1.53 billion	On track

Qualitative commitments

	Investment Opportunity Commitments 2021–2025	Progress by 2022
11	Continue to engage the 18 countries that have already transitioned out of Gavi support through targeted activities to sustain progress	Continued engagement with Gavi transitioned countries through Gavi'spolicies and procedures. New relationships developed also through COVAX.
12	Accelerate the roll-out of the HPV vaccine to girls that protects against up to 70–90% of cervical cancer cases	In 2022 there were only five national introductions, due to disruptions of the pandemic. Programme being revitalised.
13	Be ready to invest up to US$ 150 million in a new Ebola vaccine stockpile, once prequalified by WHO	Formal Ebola vaccine stockpile established, with US$ 169 million funding.
14	Insure the world against polio re-emergence through implementing routine IPV programmes across Gavi countries in collaboration with GPEI	Routine coverage of the second dose of IPV has risen by ten percentage points, increasing the number of children protected against all types of paralytic poliovirus.
15	Fund vaccine stockpiles for emergency use to stop dangerous outbreaks (including meningitis, yellow fever, cholera)	Stockpiles funded for yellow fever, cholera, meningitis, measles and Ebola vaccines.
16	Build on momentum towards further domestic resource mobilisation	Gavi implementing countries have continued to maintain or increase domestic resources for co-financing and self-financing of their vaccines – both Gavi-eligible and formerly supported countries on track to contribute over 40% of total vaccine financing over the 5.0/5.1 period for the first time – up from 28% in 4.0.
17	Equity focus: reaching missed communities and zero-dose children	US$ 500 million of funding has been earmarked by the Board across this strategic period for the Equity Accelerator Fund (EAF) which provides dedicated resources to identify and reach zero-dose children and missed communities with a full course of vaccines.
18	Help countries target increased health system and primary health care delivery to those living below the poverty line	Gavi invested approximately US$ 1.3 billion in health systems from 2021 to 2022.
19	Strengthen routine use of yellow fever, meningitis, and cholera vaccines to reduce outbreak risk and reduce pressure on stockpiles over time, as well as strengthen routine use of Japanese encephalitis and typhoid vaccines	Gavi's multiple types of support including a shift towards prevention have helped countries adapt to increased risks.
20	Support emergency campaigns to respond to measles outbreaks	11 countries accessed Gavi funding for 14 emergency measles vaccination campaigns in 2021 and 2022.

Qualitative commitments (continued)

Investment Opportunity Commitments 2021–2025	Progress by 2022
21 Strengthen data and disease reporting to allow early warnings of epidemics	Gavi launched Digital Health Information Strategy, strengthened yellow fever diagnostic detection capacity in 21 African countries at high risk for yellow fever, and began to improve availability of fit-for-purpose cholera, typhoid, meningococcal, measles, and rubella diagnostic tests.
22 Ensure sustainable, healthy market dynamics for vaccines and immunisation-related products at affordable prices	The number of markets exhibiting acceptable healthy market dynamics has decreased from 11 to 10, but with several expected to improve in the remaining years of this strategic period.
23 Incentivise development and scale up innovation of suitable vaccines and of innovative immunisation-related products	Gavi has helped to accelerate vaccine delivery innovations via its Vaccine Innovation Prioritisation Strategy (VIPS). To date, VIPS has seen significant progress in the development of three potentially transformative technologies for vaccine delivery in low-income countries.
24 Empower women and girls through gender-focused immunisation programming approaches	Gavi established new gender-responsive funding systems as part of an overall gender strategy. The revitalisation of the HPV vaccination programmes is based on a tailored approach for reaching women and young girls.

ANNEX 2

List of Funders to Gavi, the Vaccine Alliance

All donors contributing to Gavi 2021–2025 strategic period

- Australia
- Belgium
- Brazil
- Burkina Faso
- Cameroon
- Canada
- China
- Denmark
- European Commission (EC)
- France
- Germany
- India
- Ireland
- Italy
- Japan
- Kingdom of Saudi Arabia
- Luxembourg
- Monaco
- Netherlands
- Niger
- Norway
- Portugal
- Qatar
- Republic of Korea
- Russia
- South Africa
- Spain
- Sweden
- Uganda
- United Kingdom
- United States of America
- Airtel
- Alwaleed Philanthropies
- Arm Limited
- Bill & Melinda Gates Foundation
- ELMA Vaccines and Immunization Foundation
- Google.org
- His Highness Sheikh Mohamed bin Zayed Al Nahyan
- "la Caixa" Foundation
- Mastercard
- Rockefeller Foundation
- TikTok
- Unilever
- UPS
- Wellcome Trust

All other donors to Gavi, the Vaccine Alliance

- Austria
- Bahrain
- Bhutan
- Colombia
- Croatia
- Estonia
- Finland
- Greece
- Iceland
- Kuwait
- Liechtenstein
- Malaysia
- Malta
- Mauritius
- Mexico
- Moldova
- New Zealand
- Oman
- Palau
- Philippines
- Poland
- Singapore
- Slovenia
- Stadt Zug
- Switzerland
- Vietnam
- AerCap Ireland Limited
- Alight Solutions
- Analog Devices Foundation
- Asia Philanthropy Circle
- BlackBerry

All other donors to Gavi, the Vaccine Alliance (continued)

Centene Charitable Foundation

Cisco

Coca-Cola Foundation

CODE(RED) Campaign

Collins Aerospace (Goodrich Corporation)

Croda Foundation

Dolby Laboratories Charitable Fund

Epiroc AB

Etsy

Gamers without Borders

Gates Philanthropies Partners

Kerk in Actie

KS Relief

McHugh O'Donovan Foundation

PagerDuty

Portuguese private sector

Pratt & Whitney

Procter & Gamble

Reed Hastings and Patty Quillin

Russell Reynolds Associates

Salesforce

Shell International B.V.

SMBC Aviation Capital Limited

Sovereign Order of Malta

Spotify

Stanley Black & Decker

SymAsia Foundation

Thistledown Foundation

Toyota Tsusho

Twilio

UBS Optimus Foundation

Vaccine Forward Initiative

Visa Foundation

WHO Foundation - Go Give One Campaign

Workday Foundation

Absolute Return for Kids

ActionAid International

a f Jochnick Foundation

Al Ansari Exchange

Allen & Overy Foundation

Anglo American plc.

Audacious Alliance

Charities Trust

Children's Investment Fund Foundation (CIFF), UK

China Merchants Charitable Foundation

Comic Relief

Deutsche Post DHL

Dutch Postcode Lottery

ExxonMobil Foundation

Fondation Botnar

Girl Effect

Gogel Family Foundation

Gulf Youth Alliance

IF Metall

IKARE Limited

IFPW

JP Morgan

King Baudouin Foundation

Kuwait Fund for Arab Economic Development

Laerdal

LDS Charities

Lions Clubs International Foundation (LCIF)

Majid Al Futtaim

Medline International

NEC

Nikkei Inc.

NITO

Okta for Good Fund

OPEC Fund for International Development (OFID)

Orange SA

Philips

Reckitt Benckiser (RB) Group

Red Nose Day Fund

Soccer Aid

StepStone Group

Swedish Postcode Foundation

Tencent Holdings Limited

UBA Foundation

UNFCU Foundation

Unorthodox Philanthropy (UP)

UPS Foundation

Vodafone

Walter de Gruyter GmbH

Wise

The Vaccine Alliance is supported by several other partners that wish to remain anonymous

ANNEX 3

Methodology used to estimate and forecast immunisation metrics

Unless otherwise stated, data in this report is until the end of 2022.

Gavi reports on progress of immunisation coverage and impact annually based on the WHO/UNICEF Estimates of National Immunization Coverage (WUENIC), which are published on July 15th each year. During the COVID-19 pandemic, WHO began working with its Member States to collate their national administrative immunisation data several times per year. These data are reported by month, typically with a three- to four- month lag, and contain information on the number of individuals vaccinated. These data have been critical for monitoring disruptions to routine immunisation as well as recovery, and the Gavi Secretariat has used them to update its Board since 2020.

As the Mid-Term Review will occur in June 2023 at the mid-point of the Gavi 5.0 period, before the WUENIC release in July 2023, the Measurement, Evaluation and Learning team of the Gavi Secretariat has used this monthly administrative data to exceptionally produce initial estimates of the number of children immunised with Gavi-supported vaccines for year 2022, as well as key impact metrics such as future deaths averted and economic benefits that use those immunisation data as inputs.

Immunisation coverage

Monthly administrative data on number of children immunised for DTP3 were available for 31 countries through at least September 2022, representing 85% of the Gavi57 birth cohort. At least six months of 2022 data was available for 44 countries and 96% of the Gavi57 birth cohort, including all 20 Gavi implementing countries with the largest birth cohorts.

The following decisions were made when processing the monthly administrative data:

- If a country's 2021 monthly administrative data on number of children immunised differed by more than 5% from what it reported to WHO/UNICEF through the Joint Reporting Form (JRF) for 2021, its 2022 data were excluded from the analysis.
- If a country reported less than six months of data for 2022, those data were excluded.
- In six countries, the final month of reporting was removed when there was an extreme reduction in numbers vaccinated. Based on past experience, this is due to incomplete reporting in the final month, with the reduction in number vaccinated disappearing in the next update.
- Three countries reported administrative data but they were removed after visual inspection raised data quality concerns.

Following these processing steps, at least six months of administrative data was used to generate estimates for 31 countries representing 75% of the Gavi57 birth cohort. This number rose to 90% after accounting for the 7 countries for which WUENIC traditionally holds coverage constant following the last household survey, which was also incorporated into the estimation process (see below).

To generate a coverage estimate for 2022, a three-step process was followed:

- First, the ratio of number of children immunised from the monthly administrative data in 2022 vs 2021 was computed, using data from the same months in instances without complete reporting;
- This ratio was then multiplied against the WUENIC estimate of the number immunised in the year 2021 to estimate the number immunised in 2022;
- The estimate of the number immunised in 2022 was then divided by the UNPD WPP population for 2022 to calculate estimated immunisation coverage for the year 2022.

Where 2021 monthly administrative data were unavailable, but 2022 data were available, 2019 or 2020 monthly administrative data were used to obtain the ratio, and this ratio was multiplied against the WUENIC estimate of numbers immunised for the same year.

The following assumptions were made to align with WUENIC methodology:

- Coverage was capped at 99%, i.e., 100% coverage was not allowed.

- Coverage estimates for 2022 were set equal to 2021 values for seven countries for which WUENIC holds coverage constant after the last available household survey due to data quality concerns about the administrative data (Cambodia, Central African Republic, Guinea, Haiti, Lesotho, Somalia, South Sudan) as well as for Nigeria, for which WUENIC typically excludes administrative data and bases the estimate on the last household survey.

To estimate coverage of a vaccine when data for that vaccine were missing but data for other vaccines were available, the following assumptions were made to draw upon empirical relationships in coverage across vaccines:

- For new vaccines, the ratio of 2021 WUENIC coverage in relation to a reference vaccine was used to approximate 2022 coverage from the reference vaccine data for 2022. For example, within a few years of introduction, PCV3 coverage is usually similar to DTP3 coverage within a country as they are delivered at the same time. If a country reported DTP3 data for 2022, but no PCV3 data, the ratio of coverage for PCV3/DTP3 in 2021 as estimated by WUENIC was applied to the DTP3 estimate for 2022. In most cases, this assumption is conservative as in many cases coverage of a new vaccine like PCV3 may still be increasing.

- Seven Gavi implementing countries (Cameroon, Kenya, Senegal, Sudan, Tanzania, Zambia, Zimbabwe) suffered rotavirus vaccine supply disruptions in 2022. Monthly administrative data from 2022 was available for three of them, and the average level of disruption observed in those countries was applied to the four countries that did not report 2022 data.

- The largest gap in monthly administrative data reported to WHO for 2022 was for HPV vaccine. The Secretariat supplemented the data reported to WHO with administrative data submitted to WHO/UNICEF through the Joint Reporting Form (JRF), data from expanded partners, and qualitative information about whether a country faced programmatic challenges in 2022. In the absence of data, conservative assumptions were made for a 2022 estimate, e.g. either coverage was held constant (for countries with a flat or increasing trend) or coverage was assumed to have declined to the midpoint between 2021 coverage and 0% (for countries with evidence of recent declines).

Estimates for 2022 were then prepared for each country following the above methodology, and then combined with the WUENIC estimates published in July 2022 which provide coverage estimates for 2000–2021, to obtain a preliminary estimate of coverage for 2000–2022. These coverage estimates for 2022 were then used to update key impact metrics through 2022. Forecasted values for 2023–2025 were based on the recent Gavi Operational Forecast v20, with the v20.1 update used for HPV vaccination.

The analysis of 2022 monthly administrative data suggests average routine immunisation coverage rebounded in 2022 after declines in 2020 and 2021, although may not have fully returned to pre-pandemic levels. Based on the initial estimates prepared using the above methodology, it is estimated that overall DTP3 coverage increased by 3 (2–4) percentage points in Gavi57 countries between 2021 and 2022.

These initial estimates of immunisation trends through 2022 in Gavi57 countries are preliminary, and final official values will be calculated and reported following the publication of WUENIC in July 2023, which may differ due to the inclusion of additional country administrative or survey data (including historical data pre-2022), further qualitative country information, or WUENIC methodological choices.

Sensitivity analysis of immunisation coverage estimates

These estimates were prepared for the MTR report in April 2023 based on data available at the time. In May 2023, countries began reporting their annual coverage data and official estimates to WHO/UNICEF through the Joint Reporting Form (JRF), which is the primary input to the final WUENIC estimates. As of 10 May, 47 countries representing 92% of the Gavi57 birth cohort had reported their 2022 data through the JRF. These data were cross-referenced against the original analysis described above. This involved following past WUENIC documentation on how JRF data were used for each country, which included: accepting administrative or official data as the final estimate, calibrating administrative or official data to the levels of the last coverage survey, or excluding administrative or official data and holding coverage constant at the value from the last coverage survey. This sensitivity analysis had a very small (0.1 percentage point) difference in estimated coverage for DTP3 in 2022 as compared to the original analysis used for this report.

Future deaths averted and economic impacts

Future deaths averted were computed using the Vaccine Impact Modelling Consortium (VIMC) impact extrapolation (IE) method, which involves multiplying country, pathogen, and vaccine delivery-specific impact ratios (deaths averted per person immunised) by the total number immunised against each pathogen. Similarly for economic benefits, measured as cost of illness (COI) averted, using a method akin to the VIMC IE method, previous estimates of COI averted were used to generate country and pathogen-specific ratios of COI averted per death averted, and multiplied those ratios by the estimated deaths averted in 2021–2025. Further details on Gavi forecasting and impact modeling can be found in the Gavi 5.0 Investment Opportunity Technical Appendix.[23]

Endnotes

1. The Access to COVID-19 Tools ACT-Accelerator, was a global collaboration to accelerate the development, production, and equitable access to COVID-19 tests, treatments, and vaccines. It was set up in response to a call from G20 leaders in March and launched by the WHO, European Commission, France and The Bill & Melinda Gates Foundation in April 2020. The ACT-Accelerator has four areas of work: diagnostics, therapeutics, vaccines and the health system connector. Cross-cutting all of these is the workstream on Access & Allocation.
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3. Thanks to combination vaccines such as pentavalent and measles rubella vaccine, only 14 different vaccines are needed provide this protection
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9. Table does not include Novavax or Clover, from which COVAX has signed APAs but has not procured volumes for AMC Participants. Source UNICEF COVID-19 dashboard and COVID-19 vaccine price data.
10. Source WHO market information for Access to Vaccines (Mi4A).
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23. Gavi 5.0 Investment Opportunity Technical Appendix, https://www.gavi.org/sites/default/files/document/funding/Investment%20Case%20Technical%20Appendix.pdf

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Third row: *Gavi/2023/Michael Aboya*
Fourth row: *Gavi/2023/Kelvin Juma; Gavi/2023/ Benedikt V. Loebell; Gavi/2023/ Benedikt V. Loebell.*

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