POLIO GLOBAL ERADICATION INITIATIVE

INVESTMENT CASE 2022–2026

INVESTING IN THE PROMISE OF A POLIO-FREE WORLD

World Health Organization · Rotary · CDC · unicef · Bill & Melinda Gates foundation · Gavi The Vaccine Alliance

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Global Polio Eradication Initiative Investment Case 2022-2026: investing in the promise of a polio-free world

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ACRONYMS AND ABBREVIATIONS

AFP	Acute flaccid paralysis
cVDPV	Circulating vaccine-derived poliovirus
cVDPV2	Circulating vaccine-derived poliovirus type 2
GPEI	Global Polio Eradication Initiative
nOPV2	Novel oral polio vaccine type 2
SIA	Supplementary immunization activity
UNICEF	United Nations Children's Fund
VDPV	Vaccine-derived poliovirus
WHO	World Health Organization
WPV	Wild poliovirus

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EXECUTIVE SUMMARY

The marathon to eradicate polio is on its final lap: the world is more than 99% of the way to success. After millennia of living with poliovirus and suffering the paralysis it causes, today nearly all the world's people live in polio-free countries; two of the three strains of wild poliovirus (WPV) have been eradicated. Some 20 million people are walking who would have been paralysed had it not been for the efforts of national governments and health workers. If eradicating polio has been a marathon, the finishing line is in sight.

But the final stretch is the hardest. Given that the polio eradication programme works in the world's most challenging areas – in terms of geography, conflict, poverty, weak health infrastructure and communities left behind – the difficulty of crossing the finishing line to global eradication should surprise no one.

The coming five years may provide the last opportunity to eradicate polio. The COVID-19 pandemic has fundamentally changed the international environment within which humankind operates, which is now less – not more – conducive to success. As this investment case is being written, Malawi has declared a national health emergency after discovering polio circulating in the country. Afghanistan faces a generational upheaval, leading to the collapse of its economy and the unspooling of its already fragile health system. Ukraine – a country that has historically struggled to ensure vaccination coverage and prevent polio outbreaks even in peacetime – is in a full-fledged conflict with its attendant destruction of health care. The COVID-19 pandemic has disrupted health systems, including essential immunization activities, and has set back the fight against AIDS, tuberculosis and malaria, threatening the future of the next generation.

> ***Time is against us. To succeed in eradicating polio, we must act now.***

A NEW STRATEGY THAT WILL GET THE JOB DONE

The upheaval of the COVID-19 pandemic demanded the agility and adaptability of the polio eradication community, and a new approach focused on the critical path to achieving and sustaining zero polio. In 2021, the Global Polio Eradication Initiative (GPEI) updated its 2019–2023 strategy and launched a new one, entitled Delivering on a Promise covering the period 2022–2026.

The strategy outlines the use of all the collective, accumulated experience, new technologies – including an improved vaccine – and a broader approach to the actions needed to achieve the goal through a five-year action plan for success.

The strategy's transformative elements are accountability and political will from all stakeholders, community engagement and the integration of eradication efforts with other health partners and goals. The commitment of the two remaining endemic countries with WPV, Pakistan and Afghanistan, is strong; a combination of improved immunization operations, trust-building approaches and collaboration with a broader coalition of health services has improved the programme's ability to serve unvaccinated children.

US$ 4.8 BILLION OVER FIVE YEARS TO FREE THE WORLD FROM POLIO

The five-year cost for the new strategy is US$ 4.8 billion. Securing this amount will enable the programme to fund the critical path to implement the *Polio Eradication Strategy 2022–2026*. This cost includes funding that will also benefit essential health system functions beyond polio eradication. It incorporates transitioning surveillance and technical assistance in all but 11 high-risk countries and the two endemic countries to WHO, a process beginning in 2022; establishing the minimum threshold for non-endemic country vaccination activities to keep immunity high; and planning to maintain that figure for the next five years.

Investments in polio eradication – whether they consist in planning with partners for the formal transition of polio programme elements into other health care priorities, or using the existing capacities to respond to health emergencies – are also investments that will build a healthier world generally. An investment in the *Polio Eradication Strategy 2022–2026* will reap rewards tomorrow and for decades to come.

A CLEAR CHOICE

It is up to us: either we honour our collective commitment to eradicate polio, or we decide not to do so.

Polio, like all viruses, does not care about our intentions or choices; it only exploits human weakness. If the investment is neglected and/or if the final push for eradication is postponed, polio will spring back, reversing years of progress and increasing the cost of the final battle. A delayed investment is also a choice – a choice with tragic and costly consequences.

Polio is not a problem that can wait while we hope for a better time to act. It is an emergency, and our window of opportunity will not stay open forever.

This effort will require boldness and courage from governments, from institutions and from each and every person who wants to help health workers end polio in their lifetime. But it is a boldness that is easy to justify because the solution boils down to a simple proposition, an easy choice.

Together, we can deliver on our promise to eradicate polio.

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1 Giving it all to cross the finishing line

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The poliovirus has existed for thousands of years, and eradicating it from the planet has been one of the top priorities in global health for just three decades. Today, nearly all the world's people live in polio-free countries; two of the three strains of WPV have been eradicated. Some 20 million people are walking today who would have been paralysed had it not been for the efforts of national governments and health workers as well as the support of donors and partners to deliver polio vaccines. Eradicating polio has been a marathon. The finishing line is in sight.

As in any marathon, the final stretch is the most difficult. It was to be expected that the hardest part would come towards the end. Given that the polio eradication programme works in the world's most challenging areas – in terms of geography, conflict, poverty, weak health infrastructure and underserved communities – the difficulty of crossing the finishing line to global eradication should come as no surprise.

Freeing future generations from the paralysis and untimely death caused by polio will be one of the greatest public health achievements in history as only the second human disease to be eradicated, after smallpox. Failure, in contrast, means a return to thousands of paralysed children every year and a price tag that will, within only a few years, eclipse the amount of funding needed to finish the job.

In 1988, the Global Polio Eradication Initiative (GPEI)[1] was formed in a world where over 1000 children were paralysed in 125 countries – every single day. In all of 2021, six cases of WPV were detected, and polio remains endemic in only two countries[2].

WHAT IS THE GLOBAL POLIO ERADICATION INITIATIVE?

We are the GPEI. We were formed by the Forty-first World Health Assembly's commitment to eradicate polio, contained in landmark resolution WHA41.28. From the beginning, the effort to eradicate polio has been spearheaded by national governments, along with Rotary International, WHO, the US Centers for Disease Control and Prevention and the United Nations Children's Fund (UNICEF). Later, the Bill & Melinda Gates Foundation and Gavi, the Vaccine Alliance, joined the GPEI. These organizations jointly organize, coordinate and raise resources for the collective effort.

But no matter who the "we" in the GPEI are; it is we — every single person, collectively, together — who are responsible for taking the decision to eradicate polio. Only with a combined commitment can we finish the job. That is why we are asking you to join us in our work – and WE will beat polio.

[1] The Member States of the World Health Organization founded the GPEI in 1988.
[2] Countries that have never stopped WPV transmission

But the promise of eradication is unfulfilled until everyone lives in a polio-free world. It was clear that such a monumental task would not be easy, and that the hardest part – towards the end – would require extraordinary measures both to finish the job and protect the gains.

This is one of the reasons why WHO considers polio a public health emergency of international concern[3]. Polio now clings on in those parts of the world where combinations of physical geography, poor health service delivery, conflict or insecurity all conspire to deprive children of vaccination – but the hurdles of this stage are no surprise.

The programme has encountered them before and is now better equipped, with scientific, management and financial innovations based on the data and research that drive this effort. The COVID-19 pandemic exacerbated the difficulty of eradicating polio. As health services struggled in 2020, over 80 million children were at a heightened risk of diseases such as polio and measles[4].

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[3] On 5 May 2014, the WHO Director-General declared the international spread of poliovirus to be a Public Health Emergency of International Concern (PHEIC) under the International Health Regulations (IHR) 2005. This status has been renewed several times and is still in effect.

[4] GAVI, WHO and UNICEF News release (published on 22 May 2020)

WILD POLIOVIRUS VS VACCINE-DERIVED POLIOVIRUS

Polio (or poliomyelitis, the disease's formal name) can be caused by wild poliovirus (WPV) or vaccine-derived poliovirus (VDPV). WPV is the virus that occurs in nature. Three types of WPV exist: types 1, 2 and 3. Today, only type 1 remains circulating in parts of Pakistan and Afghanistan. Types 2 and 3 have been eradicated globally, in 2015 and 2019, respectively.

Circulating vaccine-derived polioviruses (cVDPVs) are non-wild variants of the poliovirus that can sometimes emerge in populations where vaccination efforts are substandard and do not reach all children. In such areas, the weakened form of poliovirus originally contained in the oral polio vaccine can begin to circulate in an under-vaccinated community for an extended period. If this happens, this strain can genetically change from its original weakened form to one that can cause paralysis.

An outbreak of cVDPV does not mean that WPV is present in a community. Such outbreaks can be stopped, more easily when they are identified early and countries respond rapidly with polio immunization activities. Raising the vaccination rate will put communities back on a safe footing.

The best way to minimize the risk of cVDPV outbreaks is to maintain high rates of vaccination among children. Vaccination protects children from any kind of polio, whether wild or vaccine derived. Strong immunization systems, as well as good ongoing surveillance efforts, are key to minimizing the risks.

But when an outbreak of any poliovirus does occur, it is imperative to react immediately to prevent harm to children and the possibility of wider spread. Systems need to be in place to make sure emergency response is timely and effective. In addition, it is necessary to continue rolling out the new tools, like enhanced data analytics, to help surveillance efforts, or the novel oral polio vaccine type 2, which is more genetically stable and thus less likely to induce future outbreaks of cVDPVs. These examples show how continuous research and innovation sponsored by the GPEI can improve the odds of success.

Large-scale immunization campaigns had to be paused to protect communities from the spread of COVID-19. Outbreaks of circulating vaccine-derived poliovirus (cVDPV) tripled from 2019 to 2020[5] as this break in immunity left more children vulnerable, with over 1100 children paralysed. In over 20 countries where the polio eradication network operates, the infrastructure in place was the only framework capable of responding to COVID-19 and did so immediately. Even during "lockdowns", polio surveillance was largely uninterrupted and polio staff provided unprecedented support to the COVID-19 pandemic response in many countries. Once vaccination campaigns resumed in mid-2020, polio workers fanned out to make sure they reached every child.

In late 2021, WPV imported from Pakistan – one of the two remaining polio-endemic countries – sparked an outbreak in Malawi, threatening Africa's victory over polio and providing a chilling reminder that until the virus is eradicated everywhere, all children remain at risk. And in the other endemic country, Afghanistan, the change in regime has precipitated a humanitarian crisis. At the time of writing, Ukraine was facing destruction, in a country where weak immunization has repeatedly given rise to outbreaks of vaccine derived poliovirus (VDPV).

In both endemic countries, however, WPV transmission has measurably slowed; fewer children are paralysed and more sewage samples test negative for poliovirus. For the first time in history, in early 2022, Pakistan passed a year without a single child paralysed by WPV, which is a testament to health workers who are supported by the commitment of political leaders. In Afghanistan, a three-year ban on polio immunization activities in swathes of the country, which deprived one in three Afghan children of vaccines, was lifted in 2021, allowing nationwide vaccination once again. In most countries that used the novel oral polio vaccine type 2 (nOPV2), the vaccine has shown its effectiveness in stopping outbreaks when immunization activities are well run.

But the next global disruption is unpredictable – governments fall, elections change political priorities, wars erupt, new pathogens slink out – and the window of opportunity to finish eradication grows ever narrower. The final sprint to the finishing line requires a true emergency posture, and it takes investment, accountability, adaptability and renewed commitment from all involved. Failure to cross the finishing line to eradicate polio now means needless paralysis and death and an open-ended need for billions of dollars in additional costs.

[5] cVDPV Outbreaks and the type 2 Novel Oral Polio Vaccine (nOPV2) Fact Sheet (published on 13 January 2022)

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USING ART TO ACHIEVE A POLIO-FREE WORLD

Kwaku Asante Afful, President of the Ghana Federation of Disability Organisations, is a polio survivor. He is also an artist. One of his works is a mural he and his daughter, Naana, painted on the clinic wall in Sefwi Bekwai, Ghana. "My mural became their teaching aid, and I became the example of what happens when you don't vaccinate," Kwaku said. "The murals are effective."

According to Kwaku, "One of the major challenges we have in our society is people think when you are physically disabled that it means you are also mentally disabled."

Kwaku takes these stereotypes on in his advocacy and in his life. He campaigns for the dignity of those who have survived polio, while farming and running a sign painting business. He also paints murals with his daughter, helping to educate people about polio, where it comes from and, most importantly, how to prevent children from falling victim to this paralysing disease.

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A new strategy to deliver on the promise

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The upheaval of the COVID-19 pandemic demanded agility and adaptability of the polio eradication community. These changes had to be reflected in the polio eradication strategy going forward, and in 2021 the existing 2019–2023 strategy was updated to a 2022–2026 strategy, outlined in a document titled *Delivering on a promise*.

The new strategy is grounded in the recognition that polio eradication needs to be treated as the public health emergency it is. The detection of a single case of polio, whether it be wild or vaccine-derived, is a global emergency that requires an extraordinary and overwhelming response that stops it in its tracks. The robust response spanning five countries within weeks of detecting a single imported WPV case in Malawi in February 2022 exemplifies the intensity of the effort required to stop global transmission now.

While polio eradication has always partnered with essential immunization and health emergencies, the programme is now collaborating in a more strategic and deliberate way. The new strategy is already steering the polio eradication work of governments and

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supporting partners to integrate efforts within essential immunization services. The focus is on "zero-dose children" who have never been vaccinated, to coordinate with other health services in the highest-risk communities and to support overall COVID-19 pandemic preparedness and emergency response.

The strategy's transformative elements are accountability and political will from all stakeholders, community engagement and the integration of eradication efforts with other health partners and goals. Each of these elements is already helping to improve the programme's performance in detecting any virus and reaching every child. Increasingly, a gender lens is being applied to each area of the programme, from operational planning to governance and decision-making, recognizing the importance of gender equality to achieving eradication and further boosting effectiveness.

FIGURE 1. Eradicating polio rests on two deceptively simple actions: knowing where the virus (surveillance) and vaccinating enough children so that the virus has nowhere left to circulate (immunization). To achieve this, the Polio Eradication Strategy has two clear goals and several key activities.

Goal 1: To permanently interrupt all wild poliovirus transmission

Political advocacy

- Gain and maintain access in Afghanistan through systematic advocacy with all
- Intensify advocacy with provincial governments in Pakistan

Community engagement

- Conduct multdisciplinary research into vaccine hesitancy and community mistrust
- Foster alliances with priority communities for co-design, ownership and delivery of gender-responsi ve programme innovatiions

Campaign

- Recruit, train, and appropriately support a motivated workforce that meets the needs of the community
- Introduce monitoring innovations to enable faster data feedback loops and improve quality
- Facilitate strengthening of essential immunization

Integration

- Deliver polio vaccines alongside basic public services to increase the reach of both essential and supplementary immunization, with a focus on high-risk areas
- Partner with governments, communities, and adjacent health programmes to support access and reduce missed communities and zero-dose children

Surveillance

- Improve timeliness for detection - from case onset to final results
- Establish pathway towards a sustainable integrated surveillance system

Enabling environment

- Increase the representation and empoverment of women at every level and across all areas of the programme
- Provide targeted assistance for country programme through the GPEI hub.

Goal 2: To stop vaccine-derived poliovirus transmission and prevent outbreaks in non-endemic countries

Political advocacy

- Engage government and political stakeholders via integrated health advocacy to esnure emergency posture, resourcing and joint accountability for timely and effective outbreak response

Community engagement

- Engage nomadic and settled communities both before and during outbreak campaigns

Campaign

- Deploy nOPV2 and improve campaign planning and execution through optimized response scope, mobile money payments, campaign digitalization and other innovations

Integration

- Ensure success of the Gavi zero-dose strategy and leverage multi-antigen campaigns.
- Support global health emergencies with a near term focus on COVID-19

Surveillance

- Implement technical and innovation surveillance and samply analysis to more rapidly detect, sequence and initiate response activities

Enabling environment

- Pivot away from Sabin OPV2 to nOPV2 and ensure sufficient vaccine supply
- Move to a regional structure with global support that holds the GPEI and countries accountable for progress
- Utilize a rapide gender analysis to shape the outbreak response.

Source: WHO

MOZAMBIQUE: YOUNG AND POLIO-FREE

As long as anyone can remember, people paralysed by polio have been part of Mozambique's streets and village scenes. Though the country pursued essential vaccination programmes almost from its independence in 1975, it was not until 1996 and the "Kick Polio Out of Africa" movement that the immunization of all children became a goal. From 1997 to 2015, the government strengthened disease surveillance systems, improved its logistics, trained health care workers and engaged with community and religious leaders to support vaccination campaigns. By 2016, that effort resulted in the elimination of WPV. By 2019, outbreaks of cVDPV were also controlled.

"Mozambique is a young country, with about 44% of our population below the age of 14. We will continue efforts to sustain high immunization coverage and protect them from polio and other deadly vaccine-preventable diseases," said Dr Isabel Mentiane, Director of the Expanded Programme on Immunization in the Ministry of Health of Mozambique. "The keys to the successful fight against polio were government leadership and the support of its partners, including the GPEI, Gavi, WHO and UNICEF."

Detection of cVDPV type 2 in 2021 in the country, and WPV type 1 in neighbouring Malawi in 2022, underscores how fragile this progress is, however, and the need for continued vigilance everywhere.

MAINTAINING A GLOBAL COMMITMENT

The commitment of national authorities to polio eradication remains strong, even in countries that have not seen polio for years. Governments – Bangladesh or South Africa are two good examples – demonstrate their support in many ways. They mandate their own bureaucracies and encourage their peers to keep surveillance high. They actively coordinate immunization activities with neighbours to prevent and stop international spread. They advocate in intergovernmental fora, such as the World Health Assembly or the G7.

In the two countries in which polio is still endemic, national authorities are taking more visible and regular leadership and ownership, ensuring the highest political oversight and empowering their staff to develop strategies tailored for local situations. The Prime Minister of Pakistan, for example, personally chairs and oversees regular meetings with provincial leadership to track progress against polio – an exemplary level of involvement, essential to the commitment to end polio.

THE PLAN IN AFGHANISTAN

A shattered economy, severe food insecurity, a devastating drought: these are just a few of the blows to Afghanistan in the past year. These setbacks have pushed many to migrate in search of food and sustenance, putting pressure on the already difficult task of finding and vaccinating children.

Despite these challenges, the GPEI's operations are moving forward – sensitively and appropriately – in Afghanistan. The goal is to limit circulation of the poliovirus to core reservoirs by mid-2022 and end transmission by the end of 2023. Discussions with the de facto authorities have led to a broad understanding that ending polio is a shared goal.

To build on this understanding, the GPEI is:

- **Maintaining an emergency posture:** The programme is working with sustained urgency, getting resources into place quickly, getting people where they need to be as fast as possible, and giving those people the authority to get the job done in the best possible way.
- **Increasing integration efforts:** In collaboration with *Sehatmandi*, the Afghan national health scheme, and other partners, the programme is working to better integrate eradication efforts within a broader package of health and related services to serve community needs, gain increased access and boost vaccine acceptance.
- **Improving an understanding of communities:** With a better understanding of community needs, the programme is tailoring immunization activities, partnering with high-risk communities to reinforce vaccination as a key part of children's lives and upbringing. As more children and more areas of the country become accessible, the programme will be flexible and move rapidly to carry out immunization activities.
- **Ownership at all levels:** With the support of the de facto national authorities, the programme is advocating for leaders at all levels to own polio vaccination efforts and encourage their people to get children vaccinated. It is working with the authorities to ensure that necessary staff and supplies get to the areas that need them, when they need them. The polio National Emergency Operations Centre is being revitalized and restructured in consultation with the de facto national authorities.

With sensitivity and adaptation to the current conditions, Afghanistan can be polio-free by 2023.

This high level of political will is apparent even in countries with competing priorities. Recovering from Tropical Storm Ana recently, Malawi reacted swiftly to the detection of WPV by declaring a public health emergency, planning an emergency immunization response and contributing domestic funding. And Malawi is not alone. The new strategy builds on and monitors this political commitment of countries.

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In the GPEI structure itself, stronger and clearer accountability from all stakeholders will arise from a new monitoring and evaluation framework that includes revamped key performance indicators. Based on the real-world conditions of a highly operational programme, these indicators will flag weak spots and help the programme tweak tactics and focus particularly on the unvaccinated. To reinforce global health monitoring, this GPEI monitoring and evaluation system is aligned with that of Immunization Agenda 2030 and will feed into it.

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PLACING COMMUNITIES AT THE CENTRE

The communities where polio survives are not generally well covered by public services. This is where many of the unvaccinated zero-dose children live, those whom an eradication effort cannot leave behind. Like people the world over, especially in remote or conservative areas, these communities may nurture scepticism towards outsiders; they may become tired of frequent polio vaccinator visits in the absence of broader health services; and they may fall victim to vaccine misinformation and rumours. Depending on the very local circumstances, these factors can generate suspicion and hesitation towards immunization.

Communication in polio eradication is based on understanding the barriers people face in accessing immunization, building public momentum for polio campaigns through mass media and social mobilization, and training workers to improve the immunization experience at the doorstep. While all those still matter, the programme has deepened and broadened its work in this technical field. It is expanding its use of behavioural science and insights to better understand community barriers and needs.

BUILDING ACCEPTANCE, CONFIDENCE AND TRUST IN VACCINES AND VACCINATION

If providing vaccine to every last child is an operational challenge, the challenge of trust is no less daunting. Governments and partners must create and then maintain an enabling environment for polio campaigns, often in the most service-deprived communities in the world. Vaccine hesitancy is an increasingly growing phenomenon affecting many immunization programmes, and it has burgeoned in the COVID-19 pandemic context. Caregivers must make sense of the abundance of information about vaccines, distilling scientific facts from fake news and misinformation. Engaging communities to provide accurate information and build trust in vaccines and in vaccination is paramount for the programme.

The GPEI has decades of experience in crafting and executing vaccination campaigns, as well as in public education, community engagement and outreach efforts. The programme works in close partnership with community leaders, religious clerics and local influencers to earn their trust towards the polio programme, and mobilize them to get children fully vaccinated against polio and other childhood diseases. But each community and cultural context is unique, and the reasons for hesitancy can be very local, demand-driven and highly specific to a community.

To overcome vaccine hesitancy in those few remaining areas and gain community trust, the GPEI is employing participatory social research and behavioural science that enables the programme to design community-led solutions. The programme has employed anthropologists to better understand social barriers in the remaining pockets of vaccine refusals. With a more granular analysis and the meaningful engagement of parents, community leaders, religious figures and other influencers, the GPEI prototypes new polio campaign modalities designed around people and their needs. This human-centred approach offers the possibility to calibrate the programme and work with communities to reach every last child.

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In Pakistan, for example, Pashto-speakers are disproportionately affected by polio. Learning and understanding the hierarchies of Pashtun tribe and subtribe levels and their power dynamics helped the polio personnel create more appropriate plans. Social research unpacked underlying reasons for community resistance, which included demands for other services and a lack of trust in social influencers engaged in the programme. In one response to this discovery, local polio eradicators started bringing Pashtun influencers from South Waziristan who helped resolve persistent Masood tribe refusals in Karachi.

SOUTH SUDAN: A POLIO SURVIVOR'S WORK TO PROTECT COMMUNITIES

As a child, James Giir Thiik was paralysed by polio. He now moves about on a tricycle, powered by the strength of his arms alone. In the rough countryside of Warrap state, in the northern part of South Sudan, getting around is difficult. But Giir, as he is known, does not let the terrain slow him down. His work as a social mobilizer with the Integrated Community Mobilization Network keeps him on the move.

Giir often works from early morning to late in the evening to spread messages about education, hygiene and health, and about polio vaccination campaigns. Dressed in his uniform, a blue vest and cap, he can be found hand-wheeling himself through town using one arm while the other holds a megaphone. "Look at me!" he shouts. "If this vaccine was available when I was a child, I wouldn't have lost my legs." He also plays music to draw attention as he goes through villages in his area, encouraging parents to vaccinate their children against polio and other childhood diseases.

His efforts are effective. "[He] is our 'doctor' who tells us about child immunization at the health facilities and this one where they come to put the two drops in the mouths of our children at homes," one woman said. A childhood blighted by polio could have destroyed Giir's life. Instead, it gave him a mission. "I don't want any other child to suffer like me," he said, "when vaccines have come to save their lives.".

In other adjusted tactics, the programme engaged with Pashtun men – the major decision-makers in their families – in the evenings or at their workplaces. As a result, Karachi, once a stronghold of Pashtun resistance, is at historically low vaccine refusal levels. Outcomes of initiatives like these can inform choices such as combining polio and measles campaigns more systematically to make accessing immunization easier for caregivers.

The UNICEF Digital Community Engagement Unit is a rumour-tracking and response mechanism, linked with capacity on the ground and a global set of communication products to tailor and respond to misinformation through a network of 15 000 digital social mobilizers. It has been introduced in 30 countries alongside nOPV2 rollouts as well as in the two endemic countries. Most recently, this mechanism has been informing communications tactics that are culturally acceptable and appropriate in Malawi and neighbouring countries.

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A HERO AT THE DOOR

Shumaila Rehmani is a polio vaccinator in Pakistan. She is tasked with vaccinating every child aged under 5 years in the community she serves. During immunization drives, that means setting out early in the morning with a cooler filled with polio vaccine and a well-constructed plan of the homes she needs to visit. At each door, she knocks and offers the children two drops of the orally administered vaccine.

But Pakistan, like many countries, has its share of parents who hesitate to vaccinate their children. And when a parent refuses Shumaila's request at the door, her real work begins. She patiently talks to the parents, answering their questions about polio, explaining that the vaccine is both safe and effective. She also engages with community and religious leaders to reinforce her message before, during and after immunization campaigns, helping to lessen community hesitations from the lack of information or fear.

Shumaila's efforts bear fruit. In one round of immunizations, she faced refusals from more than 250 families. Through her engagement with the community and patient efforts to educate families, she managed to reduce that number to only four families who refused vaccinations. And she has not given up her efforts to convince those four families.

As in other countries, the COVID-19 pandemic disrupted vaccination efforts in Pakistan. But Shumaila, like vaccinators around the world, used her community relationships to raise awareness of COVID-19 and teach families how to stay safe. She also provided the toll-free telephone number set up by the government polio programme to anyone who wants to speak with a doctor about COVID and polio, or who wants answers to questions about essential immunization. "If other countries can be polio-free, why can't Pakistan be?" she asks.

Based on "Going door to door, this hero brings the world closer to ending polio", published by Gates Notes in October 2021

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INTEGRATION EFFORTS AT MULTIPLE LEVELS

Becoming an integral part of broader immunization efforts under the umbrella of Immunization Agenda 2030 is an imperative not only to complete polio eradication. Integration will also make sure the world remains safe from poliovirus forever and will leave behind stronger immunization programmes to serve the needs of communities. It will enhance global health security, with inputs from the lessons learned in surveillance, preparedness and response, and accountability and oversight. An investment in polio eradication today is therefore also an investment in a more integrated, stronger health system in the future.

Integration in the GPEI works across three basic streams:

- Aligning with the Expanded Programme on Immunization, by contributing to training and monitoring essential immunization activities, and adding other vaccines to campaigns, all with a particular focus on reaching children who have never been vaccinated – the zero-dose agenda, a shared goal across the immunization community;
- Supporting the COVID-19 response and vaccine rollout, and integrating polio networks and assets into overall pandemic preparedness, response and immunization recovery efforts; and
- In high-risk areas in Afghanistan and Pakistan, playing a convening role in an integrated service delivery package, which includes water and sanitation, nutrition and basic health services, to help meet community needs in a more coordinated way across health programmes and other relevant sectors.

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POLIO INFRASTRUCTURE, GLOBAL EMERGENCIES AND GLOBAL HEALTH SECURITY

The tools, infrastructure and knowledge developed to eradicate polio have saved countless lives across the globe and serve as the default epidemic response programme in dozens of countries during health emergencies. Health workers and systems that deliver polio vaccines have helped fight other vaccine-preventable childhood diseases, tackle Ebola, COVID-19 and other disease outbreaks, deliver malaria prevention tools and vitamin A supplementation, and improve disease surveillance.

The polio programme has one of the largest disease surveillance systems in the world, which comprises a network of environmental surveillance sites and 146 laboratories in over 90 countries. While this system is primarily responsible for poliovirus detection, GPEI resources support much of the overall vaccine-preventable disease surveillance in many low-income countries. Collectively, the system built to eradicate polio has helped detect and respond to measles outbreaks, Ebola, yellow fever and neonatal tetanus, among other diseases. It is contributing to the COVID-19 response with case detection, sample transportation and contact tracing as well as vaccine rollout.

Alongside the surveillance network, the GPEI draws on a network of hundreds of thousands of workers and community mobilizers who play a critical role by engaging with parents and caregivers to build their trust and provide lifesaving vaccines to children. In India, the legendary Social Mobilization Network – established to help eradicate polio – worked with key faith leaders to ensure congregants understood and adhered to physical distancing and other essential COVID-19 prevention methods.

An investment in polio infrastructure, therefore, goes far beyond polio eradication; it is an investment in strong health emergency and pandemic response systems that the world desperately needs as it continues to tackle COVID-19 and prepares for future health threats. The polio infrastructure, assets and experience are of particular benefit for the global health fraternity in responding to health needs and emergencies in conflict-affected and hard-to-reach areas.

In these streams, work takes place at multiple levels, from policy to finance to operations. At a policy level, for example, Gavi's increasingly important role in the GPEI ensures that countries with the weakest immunization programmes and the largest proportion of unvaccinated children now include polio eradication as part of their planning process, making the process more efficient.

On the financial stream, budget planning for Pakistan's National Health Service Programme integrates polio eradication as part of the broader range of health needs, such as maternal and child health, nutrition, or water and sanitation, with the goal of efficiently providing integrated services in areas at highest risk for polio. In non-endemic countries, the GPEI is working on equivalent approaches with governments to access funds available at the country level, whether through multilateral financing institutions like the World Bank or through mechanisms like the UN Central Emergency Response Fund.

Operationally, partners like Rotary in Pakistan join with local organizations to improve water and sanitation in specific localities at the highest risk for polio, making a difference to both polio vaccine acceptance and the community's water quality.

CLEAN WATER BUILDS TRUST

Across the world, millions of people have had to flee their homes. Unfortunately, many of the displaced are in countries that are at high risk for polio or other prevalent childhood diseases. Efforts to vaccinate the children in camps for the displaced continue, but they are often met with frustration. "People say, 'We don't have water, and you're giving us polio drops,'" one vaccinator explained.

Addressing these basic needs, whether in camps or communities in needs, can help build relationships and trust with community leaders. It is a path well known to the GPEI and its partners. That's why supplying clean water to vulnerable communities is a priority of Rotary International's PolioPlus programme. For example, in the Madinatu settlement in Nigeria, home to 5000 displaced people, Rotary and its partners funded 31 solar-powered boreholes to provide clean water.

Delivering integrated health services alongside polio vaccine is an important aspect of the GPEI's *Polio Eradication Strategy 2022–2026*. The poliovirus spreads through human waste, so making sure people are not drinking or bathing in contaminated water is critical to eradicating the disease. Bunmi Lagunju, the PolioPlus project coordinator in Nigeria, said that installing the boreholes has also helped prevent the spread of cholera and other diseases in the displaced persons camps.

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STRENGTHENING GENDER-RESPONSIVENESS: FROM STRATEGY TO MAINSTREAMING

Based on the new strategy to strengthen the programme's gender-responsiveness and improve immunization outcomes, a gender perspective is being mainstreamed into the stages of programme planning and design, implementation, and monitoring and evaluation at all levels. The programme applies a systematic approach to gender mainstreaming, addressing gender-related barriers to vaccination inequities and increasing women's meaningful participation in decision-making and leadership roles, demand creation and health service delivery. In Pakistan, for example, vaccinators were asked what time of day would be safer for women to walk through certain neighbourhoods. In outbreaks, a checklist of actions is being piloted to ensure actions are not gender-blind but take into account the specific needs and perspectives of women and men.

Technical and advisory bodies are making deliberate efforts to ensure gender parity. Personnel training includes topics such as understanding gender-related barriers to immunization and upholding policies on preventing and responding to sexual exploitation, abuse and harassment.

GENDER EQUALITY AND POLIO ERADICATION

One of the keys to the new strategy is to mainstream gender equality efforts. The GPEI recognizes that integrating a gender perspective into all areas of the polio programme is essential to improve the quality of its work and to achieve eradication. As such, the GPEI launched a five-year Gender Equality Strategy in May 2019 in a concrete effort to address gender-related barriers to immunization and to significantly improve the representation of women at all levels of the programme. The GPEI's firm commitment to gender equality, including gender-responsive programming, is reflected in the programme's Polio Eradication Strategy 2022–2026, which aims to systematically incorporate a gender perspective into programme design, delivery, monitoring and evaluation. Another objective is to strive for gender-balanced staffing to ensure that women are empowered as decision-makers at all levels of the polio programme. For example, commitments include working towards gender parity in key governance, advisory and oversight bodies like Polio Technical Advisory Groups and the Polio Oversight Board and working at the country level to increase the number of women supervisors in vaccination teams.

Women are critical in making progress against polio in many countries and contexts. For example, some religious and cultural practices forbid unrelated men to enter households if women are alone with children. To help overcome this challenge, the programme is recruiting and training women to work as vaccinators and to provide other health services to children in homes when no men are present. Women comprise almost 80% of vaccinators in Nigeria and Somalia, and over 60% in Pakistan. They have been critical in reaching children that otherwise may have been missed.

A by-product of the strategy is that it may be empowering women financially and increasing their standing in some socially conservative societies. Recognizing that this is sometimes met with resistance and even threats to women's safety, the GPEI is striving to create a safe environment for women working in the programme.

The GPEI Global Polio Surveillance Action Plan ensures that surveillance activities are gender sensitive. Annually, some 100 000 cases of acute flaccid paralysis (AFP) – a signal of potential poliovirus infection – are reported globally[7]. To rule out any systematic gender gap in AFP surveillance, the GPEI closely monitors the distribution of gender by timeliness of reporting, vaccination status, location and age. These analyses help the programme pinpoint three major gender aspects: whether caregivers quickly report cases, whether they report boys and girls equally, and whether both genders are equally vaccinated. Stratification by age helps the programme discover if any gender biases exist in a particular age group. These findings can help community engagement, surveillance and immunization tactics.

WHY WOMEN ARE CRUCIAL TO NIGERIA'S POLIO SUCCESS

Fatunmobi Christiana is convinced that immunization is most effective when delivered by women. "... [W]omen can more easily connect with caregivers at the doorstep as we are ourselves mothers, sisters, wives and daughters. For polio for instance, we empathize with parents when addressing concerns and explain the importance of having their children immunized. This is important in establishing trust."

Fatunmobi is on the front lines of vaccinating every child in her district in Ibadan in Nigeria's Oyo state against polio and other preventable childhood diseases. She is among the thousands of health care workers who helped to make Nigeria free of WPV. "[We were] able to eradicate [it] because of the employment of many vaccinators, especially women, who sensitized communities on the importance of vaccination." Nigeria systematically and deliberately included female polio workers across the country. From January 2020 to June 2021, women comprised about 80% of the workforce, vaccinating millions of children across the country against polio and other diseases.

The success of these female health care workers has also helped Nigeria confront the COVID-19 pandemic. From the earliest days of the pandemic, the Government of Nigeria used the polio networks to support its response. This helped achieve significant successes in surveillance, contact tracing and vaccination. Fatunmobi believes the experience that she and her colleagues gained in fighting polio helped in her country's response to the COVID-19 epidemic.

"Nigeria was able to eradicate wild poliovirus because of the employment of many vaccinators, especially women," she says. "I am optimistic that Nigeria will also overcome COVID-19."

[7] WHO Weekly Epidemiological Record

BOOSTING INNOVATION AND DIGITAL TECHNOLOGIES

Working in new ways means more than new tactics. The polio eradication programme has a long track record of innovation – much of it informed by an active research work stream – in vaccination campaign planning, surveillance, communications, financing and political advocacy. One of the most exciting new tools is nOPV2, developed to stop VDPV type 2 outbreaks more quickly. Launched in March 2021 as the first-ever vaccine to receive a recommendation for use under the WHO's Emergency Use Listing procedure, this vaccine is already reducing the risks of new emergences and outbreaks of circulating vaccine-derived poliovirus type 2 (cVDPV2) as it gradually becomes more available.

Building on years of research and development, a new testing methodology called "direct detection" is being validated in the field. If successful, it will be rolled out in eight[8] very high-risk countries in 2022. This will significantly shorten the time to genetically sequence a polio sample from a paralysed child, enabling faster response to an outbreak.

The programme is adopting new digital technologies. Since misinformation and disinformation thrive in digital ecosystems, resulting in real-life consequences, the polio eradication effort uses innovative social listening platforms, such as the

[8] Afghanistan, Chad, Democratic Republic of the Congo, Ethiopia, Niger, Nigeria, Pakistan and Somalia.

Africa Infodemic Response Alliance, to track rumours in social media, analyse potential effects and deploy measures to stem them early and respond in a prepared and strategic manner. In Côte d'Ivoire and the Democratic Republic of the Congo, among others, direct digital payments using mobile money allow health workers to be paid more quickly and efficiently, leading to a more motivated and safer workforce and better quality campaigns.

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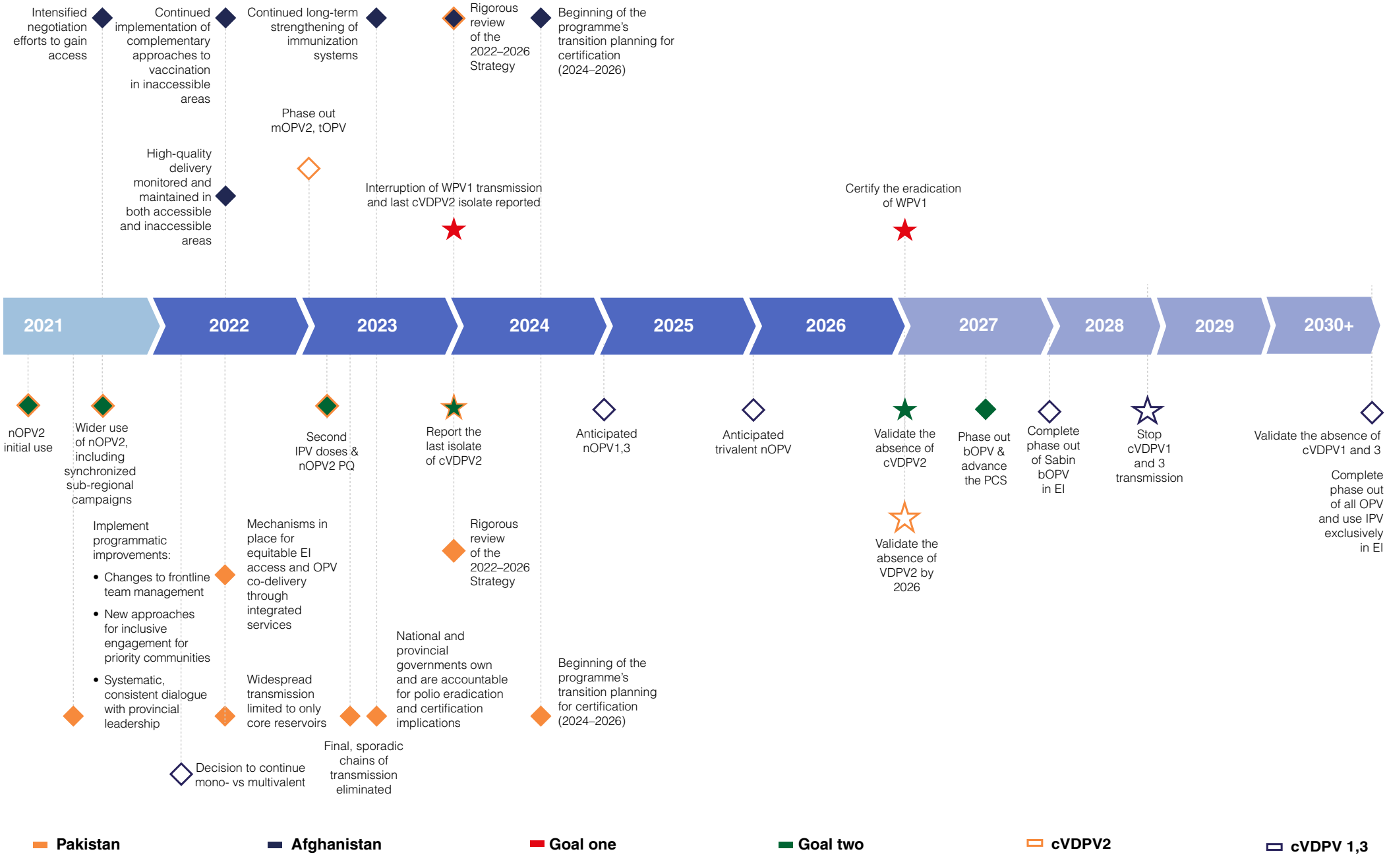
Recent advances in data analytics provide a much better idea of where the children not yet vaccinated are located, allowing those populations to be reached more efficiently and effectively. The GPEI uses a comprehensive Power BI gender dashboard to analyse all gender aspects of AFP data to help stakeholders understand and analyse gender data. Sharing data is easier, allowing better work across governments and partners to make essential immunization programmes more effective and to synergize efforts[9]. The partnership also monitors conversations in the digital space to understand community concerns that may arise and inform how governments can address them.y concerns that may arise and inform how governments can address them.

[9] Data are collected on the sex of the child so the programme can quickly address any discrepancies in immunization based on sex. Recent data suggest that, in general, such discrepancies are minor but that disparities in some communities may exist. Knowing this will allow better planning.

FIGURE 2: Timeline of eradication



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INVESTING IN A FIVE-YEAR PLAN: AN INVESTMENT IN A HEALTHIER FUTURE

Although the goal is close, it will not happen in a year. The GPEI estimates that to achieve it, the full five years envisioned in the new strategy will be needed. This final push began in 2021, and efforts are already bearing fruit. This is taking place against the backdrop of some of the world's most fragile health systems, bringing communities otherwise unreached under the umbrella of public health. Pakistan and Afghanistan have made historic headway against WPV – in the latter's case, in the midst of a generational crisis. If this pace continues, by 2023 the transmission of WPV can be interrupted and the last outbreaks of cVDPV2 could be stopped. On that trajectory, the world could be certified free of polio by the end of 2026.

An investment in the eradication of polio is an investment in the future of public health. To eradicate polio, governments train vaccinators and other health care staff. They set up and run infrastructure and systems that provide the foundation for the surveillance of other diseases and help identify emerging threats. Community leaders and other influencers promote vaccination and good hygiene. Polio eradicators find partner programmes that can improve water and sanitation in communities at high risk for polio transmission. Women drive eradication both as health workers at the forefront and as policy-makers and leaders. These are people, skills and programmes that will continue to strengthen core functions of health care systems around the world, long after polio is gone, as they have done already for Ebola, COVID-19 and health crises after floods, tsunamis and earthquakes.

The value of polio eradication is the value of a skilled public health worker in a community that has never had one – unleashing the power to address other unmet needs and seeding long-term sustainable benefits to national

health systems. "Polio workers go where even the rays of the sun do not penetrate," were the words of a father in India when that country was the polio epicentre of the world. The majority of the people working on polio eradication spend a significant portion of their time supporting other health care programmes, including broader immunization efforts, addressing malnutrition and vitamin deficiencies, providing mosquito nets, even registering births and offering other, routine services where they are needed most. Polio eradication – both through its surveillance and response and its immunization activities – contains a structure, knowledge and capacity that are crucial in global efforts to improve pandemic preparedness. Polio has already proven its usefulness in the successful push to stop Ebola in Nigeria in 2014 and in the programme's contribution to efforts to stem the COVID-19 pandemic over the past two years.

SUPPORT TO THE COVID-19 RESPONSE

In March 2020, the polio programme decided to pause vaccination campaigns for four months because of the COVID-19 pandemic, to protect communities and health workers from the coronavirus.

Although the pause of immunization activities set back polio eradication efforts, the swift diversion of the polio programme's infrastructure and resources was crucial. In some countries, it was the only means that allowed them to mount a comprehensive response against the COVID-19 pandemic

- **Up to 30 000 polio programme staff** and **over US$100 million in polio resources** supported country logistics and communications campaigns around the COVID-19 response and disease surveillance in over 50 countries.
- The **GPEI's network of 146 labs** provided significant support to track COVID-19 cases. Digital maps drawn from this data helped experts trace contacts, predict transmission patterns and make evidence-based decisions about social distancing guidelines in challenging contexts.
- Health workers at the forefront, including **grassroots social mobilization networks in countries such as Pakistan, Afghanistan, and Nigeria**, enabled officials to educate communities and promote effective contact tracing, public health messaging, social distancing and the uptake of COVID-19 vaccines. In Pakistan alone, the polio programme supported nationwide engagement with religious leaders, journalists, community influencers and the use of social media platforms that helped reach over 23 million people with accurate messaging on COVID-19. While polio eradication activities have resumed to almost full capacity, the programme has sustained support and expertise to the COVID-19 response, particularly through disease surveillance and community engagement activities, and has an important role to play in the pandemic recovery phase. With unique expertise in vaccine delivery, planning and monitoring, the training of workers at the forefront, microplanning and community engagement, the polio programme has been instrumental in the distribution of COVID-19 vaccines in many countries, and is also contributing to pandemic preparedness and response and overall health system strengthening.

US$ 4.8 billion to eradicate polio

3

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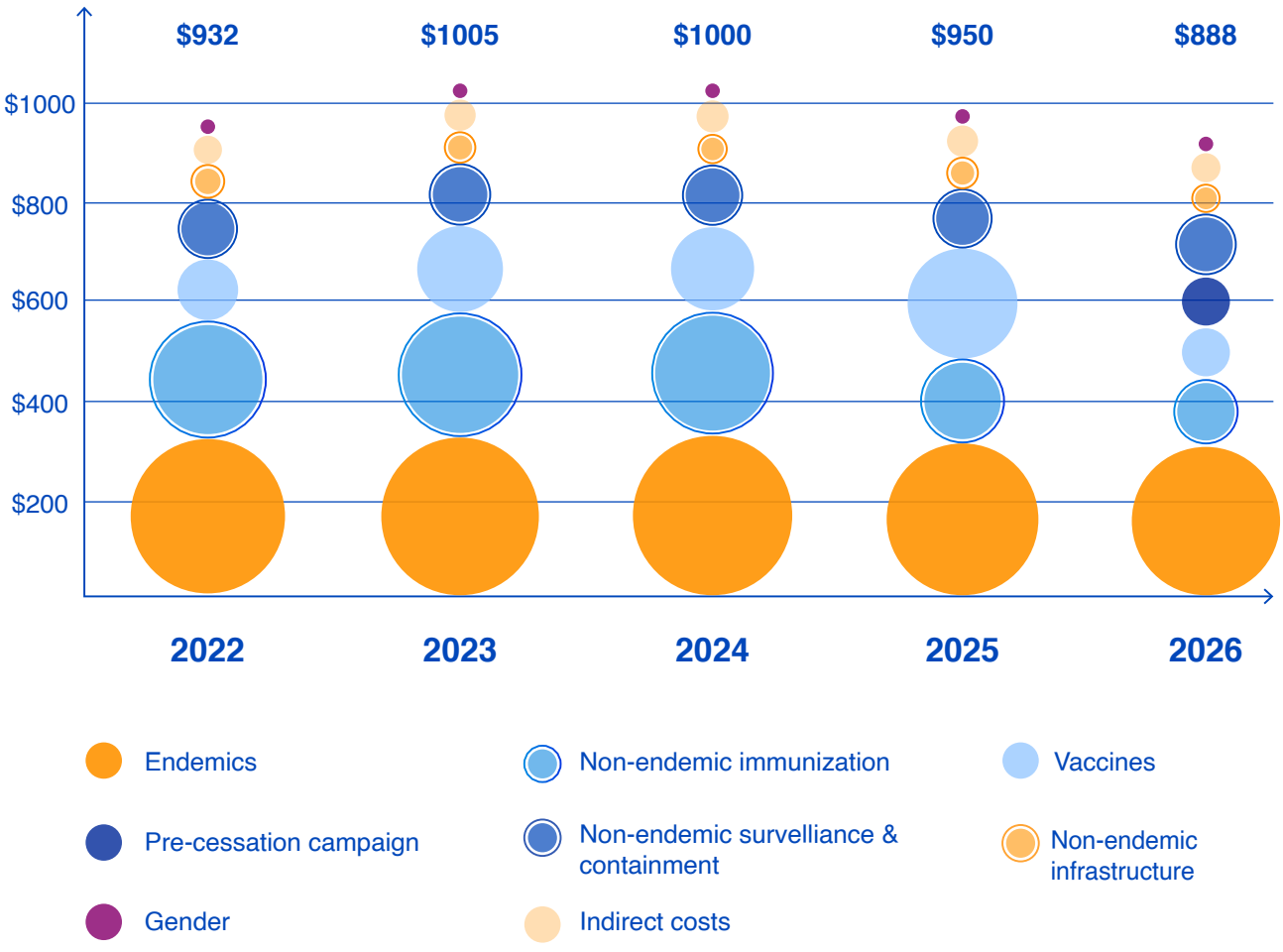
The *Polio Eradication Strategy 2022–2026*, which outlines a scenario in which WPV is interrupted by the end of 2023 and global eradication is certified in 2026, is projected to cost US$ 4.8 billion (**Fig. 3**).

The GPEI seeks this financing to implement the *Polio Eradication Strategy 2022–2026*: eradicating all forms of polio, supporting essential health services in underserved communities and leaving a legacy of healthier children.

FIGURE 3: Estimated Cost of the Polio Eradication Strategy 2022 – 2026 (US$ millions)



Source: GPEI

HOW DOES THE GLOBAL POLIO ERADICATION INITIATIVE ARRIVE AT ITS BUDGET?

The GPEI budgeting process focuses on the programmatic assumptions as the inputs, based on epidemiological considerations and risk tolerance. Programme and finance teams collaborate to identify and cost out key interventions. The programme then prioritizes and carries out a reality check against the capacity to implement in light of (often geography-specific) circumstances. Finally, the cost–benefit of activities is considered to land on a proposed budget. Through a series of consultations, priorities are identified, savings and efficiencies are implemented and any duplication or planning errors are detected and eliminated. For the 2022 budget, these amounted to a resource request reduction of US$ 100 million. Budgets are reviewed at least once a year, if not twice, and throughout the year the GPEI follows a cash management process, aligned with the approved budget, to ensure fund disbursements are optimized.

The following summarizes the assumptions that drive the total estimated cost.

Endemic countries: The Pakistan and Afghanistan programme will remain largely stable through certification, including a plan to deliver four or five national immunization days or similar immunization campaigns per year, with a gradual reduction from 2025 onwards. Based on lessons learned in other geographies, the GPEI has opted not to ramp down infrastructure and technical assistance in endemic countries prior to certification. This estimate reflects a continued programme commitment to integration with increasing levels of investment in endemic integrated service delivery (including immunization activities and health camps) from US$ 5 million/year in 2022 to US$ 8 million/year in the final three years of the strategy.

Non-endemic immunization: Outbreak response, by nature unpredictable, continues to be a major planning challenge. The initial modelling, while still very preliminary, signals caution, and therefore the GPEI has budgeted on a conservative assumption that outbreaks will persist at current high levels (US$ 156 million/year) for two more years (2023 and 2024) before surveillance confirms that activity levels – and therefore funding – can decline. The GPEI recommends that non-endemic supplementary immunization activities (SIAs) be continued at a minimum required level (US$ 86 million/year) to preserve population immunity. This is a nearly 60% reduction of the cost of SIAs in non-endemic countries compared to the 2017–2019 budget. Additionally, the GPEI has included a placeholder of US$ 100 million in the final year only for pre-cessation campaigns.

Non-endemic infrastructure: This estimate assumes that the programme cautiously ramps down core technical assistance and communications in all non-endemic areas at 10% per year after interruption, apart from the Democratic Republic of the Congo and Somalia, where country risks warrant preserving staffing through certification. This is a relatively minor cost (at US$ 3 million/year for both countries combined) that offers valuable risk mitigation. The GPEI support for technical assistance and surveillance outside the endemic countries has steadily decreased over the past years, as both are concentrated in fewer non-endemic countries, as non-endemic infrastructure and surveillance have been transitioned to core WHO programmes in accordance with the strategy.

Cross-cutting assumptions: Of course, the assumption is that the programme maintains a robust surveillance system since that is a prerequisite for certification. The vaccine procurement plan assumes the successful rollout of nOPV2, the phase out of Sabin oral polio vaccine type 2 and the implementation of large-scale nOPV2 SIAs to control and stop outbreaks. It includes investments required for the post-certification supply of vaccines. The GPEI has also included a small but crucial budget line item at 1% of the total budget (excluding vaccine procurement and indirect costs) to support gender as a core component of the programme.

These figures are preliminary in the anticipation of an approved cessation strategy.

The contributions to this effort are sought from partners, governments, civil society, foundations, corporations and individuals who want to be part of this historic goal and eternal gift for humanity.

The estimated cost is based primarily on eight cost drivers (**Fig. 3**). Among them, the major drivers are immunization activity in the two remaining endemic countries, surveillance, large-scale response to polio outbreaks, and an appropriately sized stockpile of oral poliovirus vaccine. Important items, although smaller cost drivers, are a mix of dedicated and integrated campaigns and gender initiatives, essential integrated health and community services, campaign quality enhancements and the targeted staffing of WHO and UNICEF country, regional and headquarter offices to support eradication.

The US$ 4.8 billion budget assumes that total costs remain steady over the initial three years and then decrease once the programme achieves interruption and certification efforts begin. Once the certification milestone has been achieved, costs will plateau as the programme begins implementing the *Post-Certification Strategy*[10].

The cost estimate over five years includes funding that will also benefit essential health system functions beyond polio eradication, such as surveillance and technical assistance. The global polio surveillance infrastructure is a valuable health system asset that also supports the detection and monitoring of other infectious diseases. This infrastructure, its processes and the expertise of the implementing personnel will gradually be grafted into sustaining national health systems. The most recent large-scale execution of this transition was the GPEI's decision to migrate surveillance and technical assistance in most countries[11] to core WHO programmes, beginning in 2022.

[10] The early transition of polio-supported functions onto other programmes with alternative sources of support would reduce the GPEI's resource requirements, but the projections of these shifts have not been factored into these scenarios.

[11] In all but 11 high-risk non-endemic countries and the two endemic countries.

A BUDGET THAT IS PART OF A LARGER EFFORT TO ENSURE ERADICATION

The GPEI is part of an immunization and health ecosystem. While the GPEI is focused on eradication, the work of other entities – whether stakeholders in the GPEI, other immunization and health partners, and even related sectors, such as water and sanitation – is also easing the path towards eradication. The US$ 4.8 billion will be part of this overall financial investment package. Other enabling financing outside this envelope but contributing to eradication includes funding for the purchase of vaccines, research and any major integration initiatives beyond those initially scoped within this budget scenario. Many of the integration initiatives described in the *Polio Eradication Strategy 2022–2026* will require collaboration with other health programmes to deliver a combined package of services, so the annual operating budgets will be refined as discussions advance. Partners, such as Gavi, the Vaccine Alliance, are collaborating more closely with the GPEI to advocate for funding in this space.

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A FRONT-LOADED INVESTMENT

A fully funded polio eradication effort means 370 million children will be vaccinated each year for the next five years, including vaccination campaigns to reach all children aged under 5 years wherever polioviruses circulate. It also means continuing global surveillance in 50 countries to detect any poliovirus from any source.

It means the end of the line for the poliovirus.

Investing in polio now may cumulatively save an estimated US$ 33.1 billion[12] by 2100. Economists[13] have estimated these savings from the polio eradication effort using the cost of current objectives against the cost of maintaining the control of polio without eradication (**Fig. 4**).

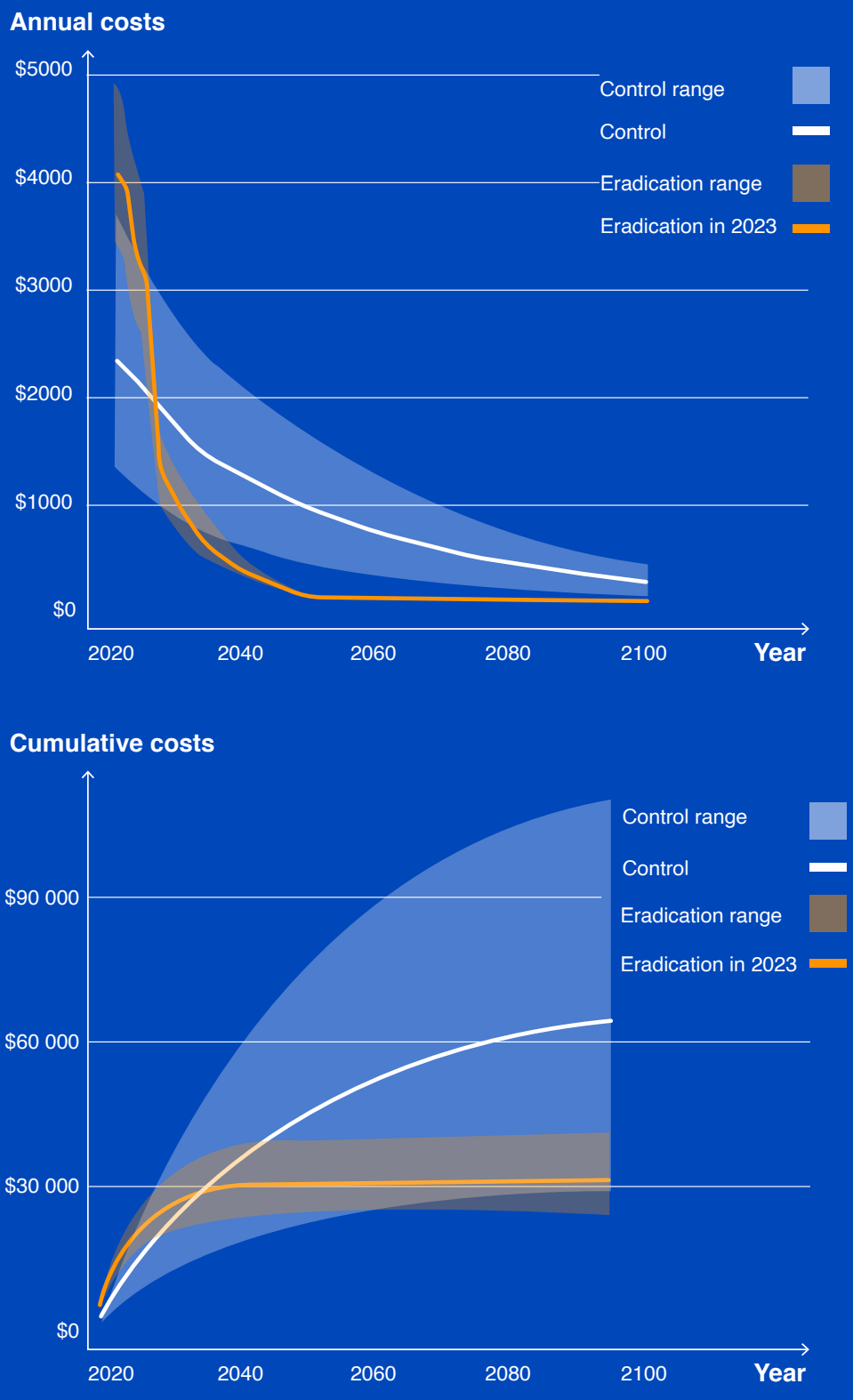
The savings come in the form of reduced costs of surveillance and vaccination. Once polio has been eradicated globally, polio immunization can be scaled down, and polio infrastructure and expertise can be redirected to serve other health initiatives, such as essential immunizations, comprehensive vaccine-preventable disease surveillance and outbreak preparedness and response. By investing now in eradicating polio, the world will rapidly start saving money compared to "controlling" polio at low levels without eradication. The coming five-year investment is therefore very much an upfront investment in future savings.

[12] A range of US$ 4.8 billion to US$ 68.3 billion in today's dollars (discounted at a 3% annual rate in accordance with economic standards).

[13] Zimmermann M, Hagedorn B, Lyons H. Projection of Costs of Polio Eradication Compared to Permanent Control. J. Infect. Dis. 2019;221(4):561–5. doi:10.1093/infdis/jiz488.

FIGURE 4: Total annual costs and cumulative costs for an eradication scenario vs a control scenario for polio[14] (current US$, using a 3% annual discount rate)

(in millions)



Source: Zimmermann M, Hagedorn B, Lyons H, Voorman A. Institute for Disease Modeling, 2019.

[14] The current modelling is a reflection of updated data sets and assumptions based on the original modelling conducted in 2019

Eradication is ultimately the most sustainable option, a true fit with the Sustainable Development Goals. It is not possible to reduce investment and at the same time keep polio at a handful of cases per year globally. Cutting back current efforts is expected to result in a global resurgence of polio[15]. The cost of dealing with a perpetual polio epidemic will quickly exceed the costs of the current eradication effort. The costs to countries to control polio, plus the costs to treat the survivors, would be over US$ 1 billion per year for decades to come. To not commit to eradication is to spend more for a worse outcome over a long period. Without investment now, by 2032 the world would be spending more to control the virus than to eradicate it.

The resurgence of polio is not speculation; history has shown how quickly it can happen. When vaccination rates fall, polio can spread far and fast. Twenty years ago, a single state in Nigeria paused its vaccination efforts. That pause sparked outbreaks that spread around the world, paralysing 1500 children in 20 countries[16], as far away as Indonesia (**Fig.5**). And the importation of WPV from Pakistan to Malawi in late 2021 is a dire reminder of those times. More recently, the pause in vaccinations in 2020 triggered drops in immunity worldwide for polio and other diseases and fed outbreaks of VDPV in 23 countries the following year[17] from Mozambique to Ukraine. Though the numbers were small, the trend was stark. Doing nothing will cost much more, in both dollars and lives destroyed, than ending polio altogether.

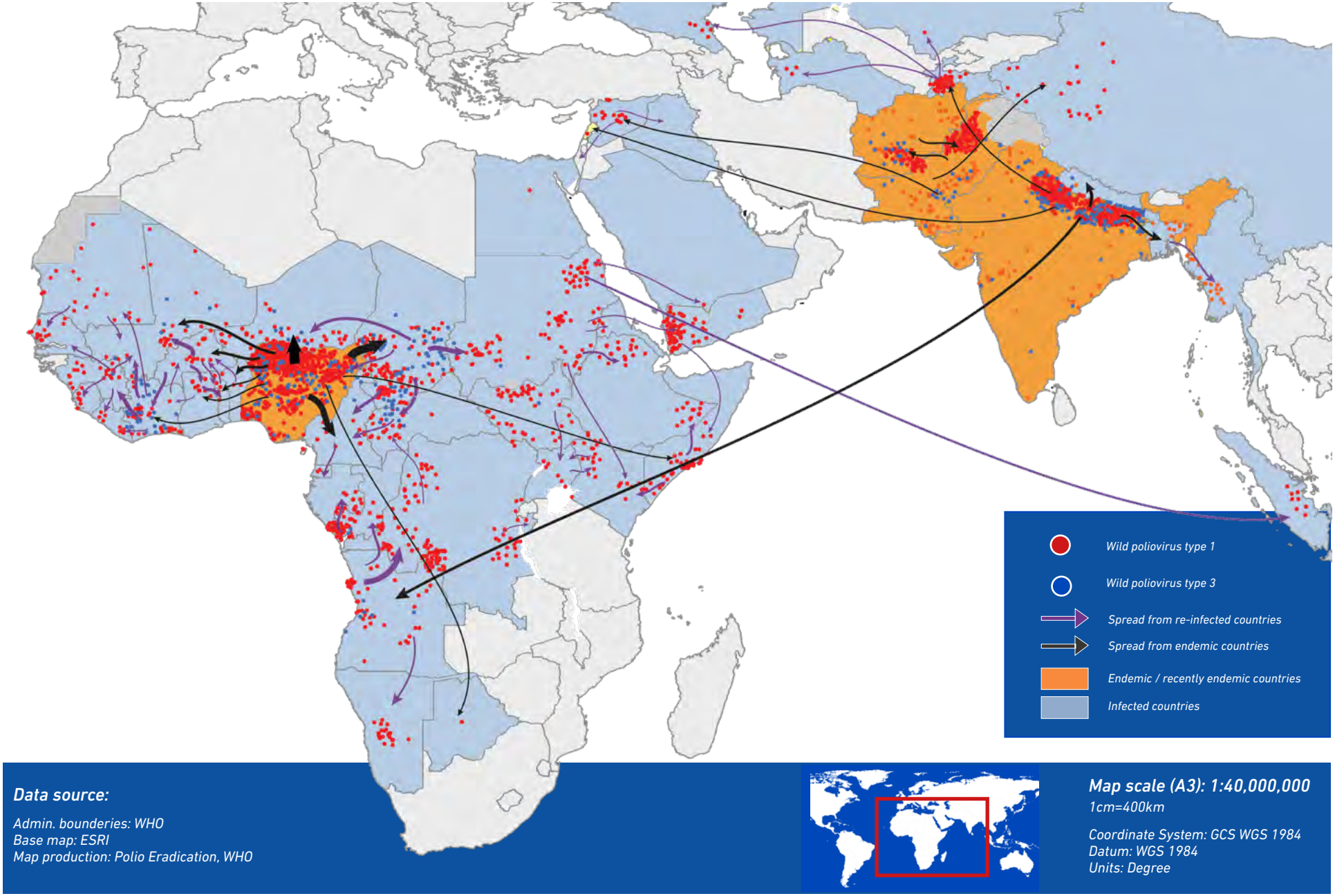
[15] A study published in *The Lancet* in 2007 calculated that at that time, relying only on essential immunization could lead to roughly 200 000 expected paralytic poliomyelitis cases every year in low-income countries. See Thompson KM, Tebbens RJD. Eradication versus control for poliomyelitis: an economic analysis. Lancet. 2007;369(9570):1363–71. doi:10.1016/S0140-6736(07)60532-71.

[16] 115th Executive Board, Eradication of poliomyelitis (EB115/28)

[17] Global Circulating Vaccine-derived Poliovirus table as of 22 March 2022

FIGURE 5: international spread of wild poliovirus, 2003-2014

Excludes viruses detected from environmental surveillance and vaccine derived polioviruses.



Data source:

Admin. bounderies: WHO
Base map: ESRI
Map production: Polio Eradication, WHO

Map scale (A3): 1:40,000,000
1cm=400km

Coordinate System: GCS WGS 1984
Datum: WGS 1984
Units: Degree

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A LOOK AT POST-2026

As the world comes closer to eradicating polio, GPEI resources are focused on achieving the two core goals of the *Polio Eradication Strategy 2022–2026*: eradicating WPV and stopping cVDPV outbreaks. In polio-free countries, WHO and UNICEF are working with the national governments to transition critical infrastructure to support broader health priorities. This will ensure that the most vital assets and staff are sustained to support health systems far into the future, especially in the areas of essential immunization, emergency preparedness and response, and keeping the world polio-free. At WHO, this work is guided by the *Strategic Action Plan on Polio Transition* (2018–2023).

The certification of the eradication of WPV and the validation of the absence of remaining cVDPV will be one of the greatest public health achievements in human history. But to maintain that victory, vigilance will be needed as will the upkeep of polio surveillance efforts and vaccination capability. That is why the GPEI has developed a Post-Certification Strategy. This strategy focuses on maintaining the surveillance system to ensure swift detection and response and essential immunization activities. It highlights the need to quickly phase out bivalent oral poliovirus vaccines to prevent the re-emergence of VDPV outbreaks. And it outlines the work needed with all stakeholders to ensure poliovirus containment in essential facilities, such as laboratories, research facilities and vaccine manufacturers.

A clear choice

4

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Economic, health and ethical arguments support eradication. Mankind's only choice is a world where people never again live in fear of their children being paralysed or even killed by a preventable disease.

Polio, like all viruses, does not care about people's intentions or choices; it only exploits human weakness. If the investment is neglected and/or if the final push for eradication is postponed, polio will not wait for us. It will spring back, reversing years of progress and increasing the cost of the final battle. A delayed investment is also a choice.

A promise was made in 1988 that can now be fulfilled with courage and the commitment to full funding. Alternatively, failure to deliver on the promise and to support it financially will mean denying future generations a polio-free world. Whether the decision is to actively choose to not do enough or passively do less than is necessary, millions of children will have been condemned to paralysis and premature death over the coming decades.

Unquestionably, there are competing priorities, and many donors who have invested previously may be facing severe budgetary constraints. Against this backdrop, polio eradication stands out as a best buy. It is within reach, thanks to over three decades of intensive global efforts, and it is within reach now. Investments in polio deliver tangible auxiliary benefits that help health systems cope, as they did during COVID-19, thanks to the practical and operational nature of the GPEI. In modern budget terms and split between many countries, citizens and private foundations, US$ 4.8 billion is not a particularly large sum to end a disease forever and reap the additional benefits.

This is not a problem that can be delayed while hoping for a better time to act. It is an emergency, and the window of opportunity will not stay open forever.

The US$ 4.8 billion investment will offer a very good chance to create a world in which polio is something children read about in history books as a triumph of a united world over a deadly disease. Much as eradicating smallpox inspired a generation, the eradication of polio will give a COVID-19 pandemic-battered world a victory to celebrate for humanity and pave the way for public health to deliver more victories.

This effort will require boldness and courage from governments, from institutions and from each and every person who wants to help end polio in their lifetime. But it is a boldness that is easy to justify because the solution boils down to a simple proposition, a clear choice.

> ***Together, we can deliver on our promise to eradicate polio.***

LEADERSHIP QUOTES

Tedros Adhanom Ghebreyesus
Director-General,
World Health Organization

There is simply nothing more equitable or sustainable than the eradication of a disease. The global effort to consign polio to the history books will not only help to spare future generations of this paralysing disease, it is also serving to strengthen health systems and health security. We are on the cusp of a historic win for humanity – now is the time for all partners to come together to deliver on the promise of a polio-free world.

Catherine Russell
Executive Director,
United Nations Children's Fund (UNICEF)

Three decades ago, when the Global Polio Eradication Initiative was established, we made a promise to deliver a polio-free world for every child. Since then, we have vaccinated over 2.5 billion children and saved millions of children from polio. But the polio virus continues to paralyze children and endanger their lives.

Conflicts, climate crises, and the COVID-19 pandemic have all threatened our progress, interrupting essential immunization services all over the world. The impact of these disruptions has been made painfully clear in recent days, with outbreaks of the polio virus in multiple countries in Africa, parts of Asia, Ukraine, and most recently Israel. Globally, polio has paralyzed nearly 600 children in the last 12 months alone.

We cannot allow another child to suffer from this devastating disease. Not when we know how to prevent it. Not when we are so close.

UNICEF will do what it takes to eradicate polio once and for all. We stand in solidarity with all partners, supporters, health workers, communities, families, and children in recommitting ourselves to achieving a polio free world for every child.

We can do this. And we will.

Seth Berkley
Chief Executive Officer,
Gavi, the Vaccine Alliance

An investment in polio eradication goes further than fighting one disease. It is the ultimate investment in both equity and sustainability – it is for everyone and forever. An important component of GPEI Strategy's focuses on integrating the planning and coordination of polio activities and essential health services to reach zero-dose children who have never been immunized with routine vaccines, therefore contributing to the goals of the Immunisation Agenda 2030.

Chris Elias
GPEI Polio Oversight Board
Chair and Global Development
President,
Bill & Melinda Gates Foundation

The polio program has demonstrated time and again its ability to adapt and innovate to overcome hurdles and has benefitted from the steadfast support of its global partners. Today is no different - the GPEI has identified how to break through the final barriers to eradication.

From the rollout of a next-generation polio vaccine and digital money payments to health workers, to the use of wastewater surveillance to protect communities, the GPEI is leveraging new tools and evolving proven strategies to end polio. With renewed financial and political commitments from governments and partners, we can make our goal of protecting every child from polio a reality.

Bill Gates
Co-chair,
Bill & Melinda Gates Foundation

We have the knowledge and tools to wipe polio off the face of the earth. GPEI needs the resources to take us the last mile to eradicating this awful disease. Investing in GPEI will also help us detect and respond to other health emergencies. We can't waver now. Let's all take this opportunity to fully support GPEI, and create a world in which no child is paralyzed by polio ever again.

Mike McGovern
Chair,
International PolioPlus
Committee
Rotary International

Eradicating a disease is like running a marathon - it takes dedication, energy, and most of all, endurance. When Rotary and its partners launched the GPEI in 1988, we knew that the fight against polio would be an incredible challenge. Twenty million people are walking today because of polio vaccination, and we have learned, improved and innovated along the way. We are stronger and more resilient as we enter the last lap of this marathon to protect all future generations of the world's children from polio. Please join us; with our will and our collective resources, we can seize the unprecedented opportunity to cross the finish line that lies before us.

Marise Payne

Minister for Foreign Affairs and Minister for Women of Australia

The Australian Government is proud to announce its continued commitment to achieving a world free of polio. In doing so, we recognize the crucial role that women play at all levels in eradicating polio. We all must commit to working towards a world where women and children are free from discrimination.

Harjit S. Sajjan

Minister of International Development and Minister responsible for the Pacific Economic Development Agency of Canada

As a result of our collective efforts, the number of polio cases around the world has been reduced by 99.9%. The scope and scale of collaboration towards our shared goal of eradicating polio is truly impressive, spanning across local communities and health workers, governments, and agencies. Canada has been a proud partner in global polio eradication efforts from the beginning and remains committed to fulfilling the promise of a polio-free world. We hope other donors will stay the course with us.

Lazarus McCarthy Chakwera

President of the Republic of Malawi

The re-emergence of polio in Malawi after three decades of no child in our country being paralysed by this disease underscores how urgent it is that we finish the job on eradication. As long as polio exists anywhere in the world, it is a threat to children everywhere.

The global polio programme has the tools and the knowledge to put an end to this terrible disease. I urge all countries to unite behind its strategy and ensure that children and their families everywhere never have to fear polio again.

Carole Lanteri

Ambassador and Permanent Representative of the Principality of Monaco to the United Nations Office in Geneva

The progress the polio programme has witnessed in the past years would not have been possible without the hard work and commitment of courageous women who are dedicated to protecting children, even during the COVID-19 pandemic. More than ever before, we need to advocate for the adoption of gender-transformative policies and strengthen women's leadership in health. Monaco is proud to support the GPEI's efforts towards gender equality.

José Manuel Albares

Minister for Foreign Affairs, European Union and Cooperation of Spain

The COVID-19 pandemic has worsened existing inequalities between women and men in almost all areas of life, both in Europe and beyond, and has reminded us of the crucial role of gender in health programming. The GPEI, one of the largest public health programmes in history, has spearheaded incredible efforts to mainstream gender in its programming. In this final step towards polio eradication, we must continue to support gender mainstreaming and we must not ignore gender-related barriers to vaccination. Spain is proud to support the GPEI and its commitment towards gender equality.

EVERY LAST CHILD

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