POLIO GLOBAL ERADICATION INITIATIVE

Pre-final draft

Polio Eradication Strategy 2022–2026

GPEI response to the midterm review

World Health Organization · Rotary · CDC Centers for Disease Control and Prevention · unicef · Bill & Melinda Gates foundation · Gavi The Vaccine Alliance

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DEDICATION

For their invaluable contributions to world health by vaccinating children and delivering other health services to their communities, the Global Polio Eradication Initiative dedicates this report to frontline workers, particularly those workers who have lost their lives.

The report is also dedicated to children, adolescents and adults affected by polio and to polio-affected advocates who have used their voices and experiences to play a defining role in the eradication effort.

ACRONYMS AND ABBREVIATIONS

bOPV	Bivalent oral polio vaccine
COVID-19	Coronavirus disease (2019)
cVDPV	Circulating vaccine-derived poliovirus
cVDPV1	Circulating vaccine-derived poliovirus type 1
cVDPV2	Circulating vaccine-derived poliovirus type 2
cVDPV3	Circulating vaccine-derived poliovirus type 3
DD-ITD	Direct detection with intratypic differentiation
DDNS	Direct detection by nanopore sequencing
EPI	Expanded Programme on Immunization
FRR	Financial resource requirements
GCC	Global Commission for the Certification of the Eradication of Poliomyelitis
GPEI	Global Polio Eradication Initiative
H2H	House-to-house (campaigns)
IMB	Independent Monitoring Board
IPV1	Inactivated polio vaccine first dose
IPV2	Inactivated polio vaccine second dose
MR	Measles and rubella (vaccine)
Non-FRR	Non-financial resource requirements
nOPV2	Novel oral polio vaccine type 2
OPV	Oral polio vaccine
POB	Polio Oversight Board
SAGE	Strategic Advisory Group of Experts on Immunization
SIA	Supplementary immunization activity
TAG	Technical Advisory Group
UNICEF	United Nations Children's Fund
VDPV	Vaccine-derived poliovirus
WASH	Water, sanitation and hygiene
WHO	World Health Organization
WPV1	Wild poliovirus type 1
WPV2	Wild poliovirus type 2

EXECUTIVE SUMMARY

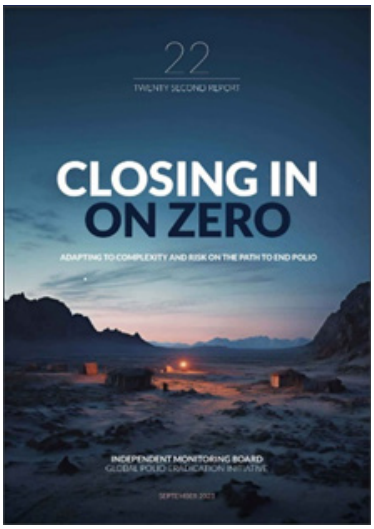
The Global Polio Eradication Initiative (GPEI) draws upon the strengths of national governments and six core partners, in collaboration with independent advisory bodies, donors, and health, immunization and humanitarian partners, to protect children around the world from the debilitating effects of polio. Through this public–private partnership, an estimated 20 million people are walking today who otherwise would have been paralysed.

In 2022, the GPEI launched a new strategy centred on two goals: to permanently interrupt all poliovirus transmission in the endemic countries of Afghanistan and Pakistan (Goal One); and to stop circulating vaccine-derived poliovirus (cVDPV) transmission and prevent outbreaks in non-endemic countries (Goal Two).[1] Because the work is complex and the stakes are high, the *Polio Eradication Strategy 2022–2026* called for a rigorous review in 2023. The GPEI entrusted this midterm review to the Independent Monitoring Board (IMB), a panel of external advisers who collectively serve as a critical partner in programme accountability.

This report offers the GPEI's response to the IMB midterm review. It was developed by the Strategy Committee with the support of the Executive Management Unit. The report was presented to the Polio Oversight Board (POB) on 14 October 2023 for its endorsement and engagement towards the work that lies ahead. The information contained in this report is current as of 10 October 2023. For the latest information, visit the GPEI website at www.polioeradication.org.

THE MIDTERM REVIEW

In *Closing in on zero: Adapting to complexity and risk on the path to end polio*, the IMB delivers its assessment of the status of the strategy's two goals, enumerates risks that could impede eradication and proposes actions for the GPEI's consideration.[2] Among identified risks, the IMB emphasizes stagnating essential immunization coverage, emerging outbreaks of circulating vaccine-derived poliovirus type 1 (cVDPV1) and missed opportunities for integrated programme delivery. Adding complexity to the eradication effort, several geopolitical risks present formidable challenges, particularly through conflict, insecurity and inaccessibility.



- **In Afghanistan**, the acute humanitarian crisis continues to intensify with few international health actors left in the country.
- **Pakistan** is experiencing economic instability, political uncertainty and rising insecurity.
- **Parts of the Democratic Republic of the Congo, Nigeria, Somalia and Yemen** face severe challenges including banditry, kidnapping, famine and weak health systems.

Risks identified by the IMB have been integrated within the GPEI's risk register, which is regularly reviewed to track and implement mitigating measures, wherever possible (see **Annex A**).

In view of the risks to eradication and the complex contexts in which the GPEI must operate, the IMB concludes that the target milestone for Goal One of interrupting wild poliovirus type 1 (WPV1) transmission in 2023 is off track, while the goal of ending circulating vaccine-derived poliovirus type 2 (cVDPV2) outbreaks by the end of 2023 will be missed.

The GPEI agrees with the IMB's assessment that efforts to reach interruption will extend beyond 2023, even as the programme remains confident that WPV1 certification will be achieved in 2026, in alignment with the strategic goal. The GPEI also agrees with the IMB assessment that the 2023 milestone for cVDPV2 interruption will be missed; however, the GPEI has scaled up outbreak response to prioritize interruption in 2025.

[1] Global Polio Eradication Initiative (GPEI). Polio Eradication Strategy 2022–2026: Delivering on a promise. Geneva: World Health Organization; 2021 (https://apps.who.int/iris/bitstream/handle/10665/345967/9789240031937-eng.pdf, accessed 20 November 2023).
[2] Independent Monitoring Board (IMB). Closing in on zero: Adapting to complexity and risk on the path to end polio. September 2023 (https://polioeradication.org/wp-content/uploads/2023/09/22nd-Report-of-The-Independent-Monitoring-Board-IMB.pdf, accessed 20 November 2023).

GOAL ONE

In Afghanistan and Pakistan, the programme stands unequivocally behind the vaccines, methods and tools at its disposal. These resources have brought the world to the threshold of global polio eradication. Crossing that threshold requires continued dedication and urgency. The programme is working to accomplish this through ongoing advocacy with the political leadership at all levels, collaboration with humanitarian actors engaged in the integrated delivery of health services and tailored interventions in subnational areas.

Despite severe challenges, both country programmes have not only remained operational but have also achieved critical health gains that have brought the world closer than ever to the goal of WPV1 interruption. Most notably, historic reservoirs are no longer endemic, and the virus circulates in just four of 34 provinces in Afghanistan and seven of 164 districts in Pakistan. Recognizing that such gains are fragile, the GPEI has introduced a risk categorization framework to focus efforts and implement context-driven campaigns. Furthermore, mitigation plans are in place to bolster essential immunization, increase cross-border coordination, strengthen engagement with the provincial and local leadership, and enhance community engagement.

The GPEI has demonstrated its ability to adapt to challenging and rapidly changing circumstances. The programme anticipates achieving WPV1 interruption in 2024, which would leave the 2026 target for certifying eradication within reach, as revised guidance from the Global Commission for the Certification of the Eradication of Poliomyelitis (GCC) replaced what was previously a fixed three-year period of non-detection with a period of not less than two years in duration in countries with strong surveillance indicators.[3]

GOAL TWO

At the outset of the strategy, efforts to interrupt cVDPV outbreaks were diverted by the importation of WPV1 in south-east Africa and an explosive cVDPV1 outbreak in the Democratic Republic of the Congo. The programme nevertheless made headway, which is as yet insufficient to meet the goal's target for cVDPV2 interruption.

Key to progress in this complex environment has been an operational adjustment to assess and respond to the most consequential geographies, where weak systems, poor-quality implementation and high rates of zero-dose children have resulted in intractable outbreaks and international spread. In 2022 and 2023, these consequential geographies include parts of the Democratic Republic of the Congo, Nigeria, Somalia and Yemen. The programme has also restructured its planning and budgeting processes with precise requirements to meet country-level needs and respond more effectively to consequential geographies, ongoing outbreaks and new outbreaks, with the objective of supporting bigger, better and faster responses necessary for achieving interruption (**Table 1**).

Table 1 **Strategies for outbreak response**

Outbreaks within consequential geographies	Tailored responses that account for inaccessibility and other challenges
New outbreaks	Accelerated responses that provide immediate availability of resources and streamline decision-making
Ongoing outbreaks	Bigger and better-quality responses that are supported by effective recruitment of personnel, training and microplanning

The GPEI will build on the momentum of declining cases and cVDPV2 emergences with a scaled-up outbreak response footing through 2024 and into 2025, if needed. While the programme is attentive to the increased financial resources required, the restructuring of the outbreak budget and planning framework is an operational improvement that will enable intensified efforts in consequential geographies driving the bulk of transmission. Improvements in the supply of the novel oral polio vaccine type 2 also will strengthen outbreak response in this critical period. As engines of transmission slow, programmatic focus will shift to stopping circulation in countries with ongoing outbreaks.

The task ahead for cVDPV interruption is complex. The 2023 milestone for cVDPV2 interruption will be missed, yet the programme is in a vastly improved position to answer the challenge and reach cVDPV2 interruption by 2025. The GCC is considering the criteria to determine cVDPV2 certification. Based on these criteria, a revised certification timeline, plan and budget will be submitted to the POB in the second quarter of 2024.

[3] Global Polio Eradication Initiative (GPEI). Report from the twenty-second meeting of the Global Commission for the Certification of Poliomyelitis Eradication, 28–29 June 2022. Geneva: World Health Organization; September 2022 (https://polioeradication.org/wp-content/uploads/2022/09/22nd-GCC-report-20220907.pdf, accessed 20 November 2023).

THE WAY FORWARD

As the GPEI follows through on the recommended actions and risk mitigation activities identified in this report, several forthcoming POB decisions are expected. These include a formal extension of the strategy period; renewed milestones, particularly for Goal Two; confirmation of new criteria to be brought forward by the GCC to certify cVDPV interruption; and a revised multi-year budget. **Annex B** will be updated to ensure that all partners in the polio eradication effort have ready access to key decisions that define the way forward.

It is now more urgent than ever to remain focused and intensify proven approaches. The world is on the verge of achieving WPV1 interruption, and this momentum should help fuel the commitment to eradicate poliovirus in all forms. No country or partner should underestimate the historic position the world is in with respect to eradication.

As the world closes in on zero polio cases, the way forward is clear: serious challenges must be overcome while the programme maintains the intensity of its approach in the endemic countries, expands response activities in countries experiencing outbreaks, and continues to closely manage the complex geopolitical risks and insecurity that represent the biggest barriers to interruption. The mitigating actions and corrective measures detailed in this report, informed by the thoroughness and candour of the independent monitors, will help to overcome remaining hurdles, optimize response and deliver a world in which no child suffers paralysis or death from polio.

OVERVIEW

The promise of a polio-free world has been the focus of the Global Polio Eradication Initiative (GPEI) for more than three decades. In pursuit of this mission, the GPEI has drawn upon the strengths of national governments and six core agencies – Rotary International, the World Health Organization (WHO), the United Nations Children's Fund (UNICEF), the US Centers for Disease Control and Prevention, the Bill & Melinda Gates Foundation, and Gavi, the Vaccine Alliance – in collaboration with independent advisory bodies, donors, and health and immunization partners. Collectively, the programme has marked notable achievements: from the certification of the WHO South-East Asia Region as free of wild poliovirus type 1 (WPV1) in 2014, to the declaration of the eradication of wild poliovirus type 2 (WPV2) in 2015 and wild poliovirus type 3 in 2019, to the WHO African Region's certification as free of WPV1 in 2020.

POLIO ERADICATION STRATEGY 2022–2026

At the start of this decade, however, the GPEI faced a deteriorating epidemiological context exacerbated by the COVID-19 pandemic. While WPV1 transmission had been limited to the final two endemic countries of Afghanistan and Pakistan, programmatic and epidemiological challenges demanded new approaches to the long tail of transmission. Furthermore, the eradication effort was forced to grapple with circulating vaccine-derived polioviruses (cVDPVs). As cVDPV outbreaks emerged after 2016 due to type 2 immunity gaps that followed the removal of type-2-containing vaccines from immunization programmes in the wake of WPV2 eradication, pandemic-related disruptions to polio eradication campaigns and essential immunization elevated the risk of outbreaks.

In recognition that historical approaches would be insufficient to meet these last-mile challenges, the GPEI launched a new strategy centred on two goals: to permanently interrupt all poliovirus transmission in the endemic countries of Afghanistan and Pakistan (Goal One); and to stop cVDPV transmission and prevent outbreaks in non-endemic countries (Goal Two).[4] The *Polio Eradication Strategy 2022–2026* offered a holistic approach by sharpening the core strategies that enabled the success of the programme while also identifying innovative ways to overcome intractable barriers to eradication.

The strategy's timeline made 2023 a pivotal year with the interruption of WPV1 transmission and the reporting of the last circulating vaccine-derived poliovirus type 2 (cVDPV2) isolate targeted for year-end. These milestones were deemed necessary for reaching the goals of certifying WPV1 eradication and cVDPV2 interruption by end-2026. A rigorous review of the programme was earmarked for the end of 2023. The GPEI entrusted this assessment to its Independent Monitoring Board (IMB).

THE INDEPENDENT MONITORING BOARD

Throughout the GPEI's history, progress towards polio eradication amid often steep challenges has depended on candidly assessing epidemiological realities, identifying missteps and failures, and implementing course corrections where needed.

A critical partner in accountability, the IMB is composed of external global health advisers who regularly conduct programme assessments by reviewing data, convening experts within and beyond the GPEI, and conducting field visits to polio-affected countries. Established in 2010, the IMB has a threefold mandate:[5]

1. to evaluate GPEI progress towards goals as on track, at risk, off track or missed;
2. to identify areas where corrective action plans are required by countries, partners, donor agencies or other parties; and
3. to evaluate the quality, implementation and impact of corrective action plans.

[4] Global Polio Eradication Initiative (GPEI). Polio Eradication Strategy 2022–2026: Delivering on a promise. Geneva: World Health Organization; 2021 (https://apps.who.int/iris/bitstream/handle/10665/345967/9789240031937-eng.pdf, accessed 20 November 2023).
[5] Revised terms of reference for the Independent Monitoring Board (IMB) and the Transition Independent Monitoring Board (TIMB). Geneva: World Health Organization; 2020 (https://polioeradication.org/wp-content/uploads/2020/02/ToR-IMB-TIMB-Jan2020-Dec2021-20200122.pdf, accessed 20 November 2023).

THE MIDTERM REVIEW

For its 22nd report, the IMB was tasked with providing a midterm review of the Polio Eradication Strategy 2022–2026. In *Closing in on zero: Adapting to complexity and risk on the path to end polio*, the IMB delivers its assessment.[6] The report recognizes progress in the endemic countries, which have geographically restricted the virus against a challenging environment and are now as close as ever to WPV1 interruption. It also recognizes that the burden of cVDPV2 transmission has been reduced. Despite this progress, the midterm review concluded that 2023 milestones will be missed. Throughout the review, the IMB explores risks that threaten to further delay interruption or complicate efforts. In view of the risks to eradication and the complex contexts in which the GPEI must operate, the IMB encourages the GPEI to avoid "[being] selective in what it tackles, dismissive of the need to work on the human factors, and ducking the most difficult, intractable obstacles".[7] To point the GPEI to what the IMB prioritizes as areas of focus, the midterm review concludes with recommended actions that apply to Goals One or Two or carry programme-wide implications.

[6] Independent Monitoring Board (IMB). Closing in on zero: Adapting to complexity and risk on the path to end polio. September 2023 (https://polioeradication.org/wp-content/uploads/2023/09/22nd-Report-of-The-Independent-Monitoring-Board-IMB.pdf, accessed 20 November 2023).
[7] Ibid., p. 7.

GPEI RESPONSE TO THE MIDTERM REVIEW

The independent assessment performed by the Independent Monitoring Board (IMB) is a valuable component of the polio eradication programme, and the partnership is committed to optimizing its approach to the remaining obstacles.

This report offers the GPEI's response to the IMB midterm review. It presents the current state of eradication, before responding to the recommended actions and outlining the mitigation measures under way to address risks. The GPEI response was developed by the Strategy Committee with the support of the Executive Management Unit. The report was presented to the Polio Oversight Board (POB) on 14 October 2023 for its endorsement and engagement towards the work that lies ahead. The information contained in this report is current as of 10 October 2023. For the latest information, visit the GPEI website at www.polioeradication.org.

Review risks to eradication and develop risk mitigation activities		
Recommended action 1	**The GPEI is asked to review the IMB's list of 20 risks, add any important risk omissions from its perspective, and set out the action being taken to resolve or mitigate each in a way that facilitates monitoring.**	**GPEI** ✓ **Agrees**

The IMB's first recommended action is for the programme to review the risks to eradication and establish actions to mitigate their impact. Such an exercise is necessary, given the scope of the eradication effort, the challenges in closing immunity gaps and narrowing in on timely and effective responses, and the substantial costs to the world should paralysis from polio continue threatening children in the years to come. The risks enumerated by the IMB are addressed within this report under their corresponding recommended actions or as additional risks detailed within Goal One and Goal Two.

The GPEI maintains an internal risk register to track potential threats, and the risks identified by the IMB have been integrated within this register. The GPEI also rates each risk.

Risk ratings distinguish:

- **inherent risk**, meaning the severity of the risk in the absence of mitigating actions; and
- **residual risk**, characterizing the ongoing severity of the risk after mitigating actions are applied.

Some risks are readily amenable to mitigation. A risk with a high inherent risk rating will carry a low residual risk rating if mitigation is expected to resolve it. In other cases, such as risks that are outside the programme's control (including geopolitical risks), the GPEI alone is not in a position to resolve the risk. The programme will take all mitigating measures possible for all risks, but certain challenges will only be resolved by countries themselves or will require multilateral collaboration.

Annex A contains a risk inventory that comprises both the risks the IMB identified and additional risks identified through the GPEI's internal register. To align with the midterm review, the GPEI has maintained the IMB's numbering format throughout this report and in **Annex A**.

As the GPEI follows through on the recommended actions and risk mitigation activities identified in this report, several POB decisions are expected. These include a formal extension of the strategy period; renewed milestones, particularly for Goal Two; confirmation of new criteria by the Global Commission for the Certification of the Eradication of Poliomyelitis to certify circulating vaccine-derived poliovirus interruption; and a revised multi-year budget. **Annex B** will be updated to ensure that all partners in the polio eradication effort have ready access to key decisions that define the way forward.

GOAL ONE

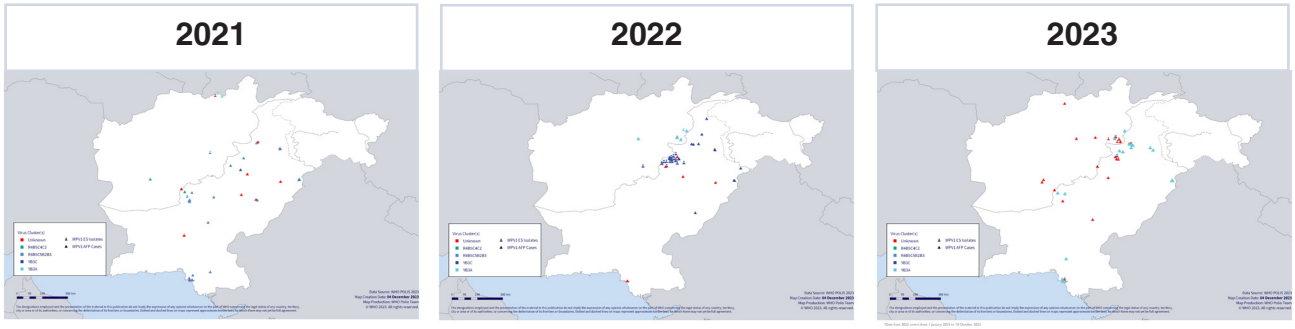
CURRENT STATE

The endemic countries of Afghanistan and Pakistan show considerable progress despite unprecedented difficulty. Pakistan faces intense economic instability, political uncertainty and rising insecurity. In Afghanistan, the world's largest humanitarian crisis has intensified, contributing to setbacks in the country's health sector. Despite these challenges, both programmes have not only remained operational but have also achieved success in key areas, including:

- a resumption of house-to-house (H2H) campaigns in most of Afghanistan;
- a return to subnational cross-border coordination across the epidemiological block;
- in Pakistan, sustained performance amid changes in the national leadership; and
- in Afghanistan, extensive coordination with humanitarian partners.

Epidemiology confirms the impact of these efforts (**Fig. 1** and **Annex C)**. The proportion of children missed during campaigns is decreasing, and overall population immunity is improving. The transmission of circulating vaccine-derived poliovirus, which complicated planning at the outset of the strategy, was quickly stopped due to a strong outbreak response. Historic reservoirs for wild poliovirus type 1 (WPV1) are no longer endemic, and the chains of transmission have been reduced to two. The virus remains endemic in seven of 164 districts in Pakistan and just four of 34 provinces in Afghanistan.

Fig. 1 **WPV1 cases and positive environmental samples by genetic cluster, Afghanistan and Pakistan, 2021–2023**



ES = environmental surveillance. YB3A, YB3B, YB3C and CX2B are virus genetic codes.
Source: WHO. Data as of 10 October 2023.

However, several challenges place this progress in jeopardy.

- Both country programmes face uncertainty as WPV1 survived the 2022–2023 low-transmission season.
- There is still no agreement for H2H campaigns in southern Afghanistan, and the history of disruption of H2H campaigns throughout the country has contributed to potential pockets of susceptibility in children aged 5–10 years.
- Positive samples in Kandahar suggest the potential for a large outbreak in southern Afghanistan that could potentially spill over into Pakistan.
- The deteriorating security context in both countries, with low-intensity conflict in the southern Khyber Pakhtunkhwa region of Pakistan, may further impede access to high-risk populations.

The Independent Monitoring Board (IMB) characterizes the WPV1 interruption milestone as off track and likely to be missed by year-end but achievable in 2024, provided the intensity of the effort is maintained and current and future risks are successfully managed. Interruption in 2024 would leave the 2026 target for certifying eradication within reach, as revised guidance from the Global Commission for the Certification of the Eradication of Poliomyelitis replaced what was previously a fixed three-year period of non-detection with a period of not less than two years in duration for countries with strong surveillance indicators.[8]

[8] Global Polio Eradication Initiative (GPEI). Report from the twenty-second meeting of the Global Commission for the Certification of Poliomyelitis Eradication, 28–29 June 2022. Geneva: World Health Organization; September 2022 (https://polioeradication.org/wp-content/uploads/2022/09/22nd-GCC-report-20220907.pdf, accessed 20 November 2023).

RECOMMENDED ACTIONS

Increase the number of campaigns

Recommended action 5

More polio vaccination rounds should be carried out in the final quarter of 2023 in the endemic countries than currently planned, as well as coordinating them between the two countries.

GPEI
✓ **Agrees in principle**

The achievements of both endemic country programmes, while hard-won, are also fragile. The IMB is concerned about the resilience of such precarious gains when it highlights a series of risks for Pakistan, Afghanistan and the epidemiological block they represent – where both countries must interrupt transmission for either country to achieve and sustain eradication. The IMB encourages the GPEI to stay focused on prevention rather than reactively chasing the virus when it recommends that country programmes increase the number of large immunization rounds and strengthen cross-border coordination.

The GPEI is committed to carrying out all necessary immunization activities to interrupt WPV1 transmission. Campaign schedules are guided by the Technical Advisory Group (TAG), which confers extensively with country programmes. It should be noted that more vaccination rounds were scheduled for the second half of 2023 than at the time of the IMB's assessment in spring 2023 (**Table 2**).

Table 2 Former vs current supplementary immunization activity calendar, July–December 2023

		July	August	September	October	November	December
Afghanistan	Former plan	SNID			SNID	SNID	
	Current plan	SNID, OBR	NID	NID	SNID	SNID	SNID
Pakistan	Former plan	SNID			SNID	SNID	
	Current plan	RUR	SNID (OBR), RUR	OBR, RUR	NID	OBR, NID	SNID

NID = National Immunization Day; OBR = outbreak response; RUR = Reaching the Unreached (strategy); SNID = Subnational Immunization Day.

The GPEI stands by the TAG's work and endorses its recommendations. Because the geographic spread of WPV1 has been reduced, campaigns have become more focused – and the operational approach under the TAG's guidance has increasingly prioritized campaign quality over size. In 2022, the TAG introduced a risk categorization framework that defined supplementary immunization activities (SIAs) according to the immunity profiles of targeted areas (**Table 3**). This risk categorization framework guides campaign implementation to focus programme efforts and develop context-driven campaigns. Endemic zones, the areas of highest priority, draw upon a range of strategies to close immunity gaps. For example, southern Khyber Pakhtunkhwa has implemented the Reaching the Unreached strategy in the 69 highest-risk union councils, and eastern Afghanistan has carried out essential immunization campaign activities to reach zero-dose children.

Table 3 Campaign approach to target areas under the risk categorization framework, Afghanistan and Pakistan

Targeted risk area	Campaign approach
Endemic zones	Specific SIA schedules that are independent of national schedules and tailored to each context
Outbreak response	A minimum of three large-scale campaigns that aim to reach at least 2 million children
Risk reduction*	No fewer than four campaigns in high-risk districts
Maintenance districts	At least two SIAs as part of NIDs and additional doses when in outbreak response

*Note: Many designated risk-reduction districts are also included in outbreak response campaigns and receive additional SIA doses.
NID = National Immunization Day; SIA = supplementary immunization activity.

RISK 1.2: The risk of weakening newly established resilience in Pakistan's former polio reservoirs

Over the past 12 months, the Pakistan programme has demonstrated its resolve by implementing extended aggressive outbreak responses to multiple detections of WPV1 isolates in environmental samples. The programme is further intensifying this robust outbreak response strategy to address the increased risk of transmission becoming re-established in the former reservoirs.

Mitigation plans are in place to bolster campaigns and essential immunization in the historic reservoirs, with particular emphasis on Peshawar. Furthermore, the SIA calendar has been intensified (see **Table 2** above), and provincial and district task force meetings are held prior to each SIA to ensure the Pakistan programme maintains peak performance.

Risk 1.2	
Inherent risk	**High**
Residual risk	**Medium**

RISK 1.3: The risk of re-establishing transmission in Quetta Block

In contrast to other former reservoirs like Karachi that have withstood WPV1 emergences, Quetta Block has yet to be challenged in the same way. The programme recognizes this vulnerability, particularly in such northern areas as Chaman and Killa Abdullah, where essential immunization remains poor and immunity is decreasing. Underscoring the threat, a WPV1 isolate was detected in an environmental sample collected in Pishin on 4 September 2023; the virus was closely matched to WPV1 detected in Kandahar in May 2023, representing a new importation from southern Afghanistan.

The programme is mitigating this risk through additional immunization rounds, further efforts to strengthen SIA quality and intensified surveillance. An experienced senior polio official from WHO headquarters has been deployed to Quetta to support programme success. Further developments include a newly appointed chief secretary who has demonstrated the province's resolve in prioritizing polio eradication activities.

Risk 1.3	
Inherent risk	**High**
Residual risk	**Medium**

RISK 1.10: The risk of a loss of momentum to close the immunity gap in eastern Afghanistan

Eastern Afghanistan has been recovering from two years of disruption in campaigns, but this momentum is susceptible to setbacks due to inaccessibility from heightened conflict and insecurity. In June 2023, campaigns were briefly suspended, though this pause was short-lived, in part due to engagement by regional ministers of health – a sign of the value of advocacy efforts, such as the action of the Eastern Mediterranean Regional Subcommittee for Polio Eradication and Outbreaks.

Top-level engagement with regional ministers and the local leadership, particularly within prioritized communities, remains imperative to ensure the polio eradication programme is insulated from political disruption, and the GPEI will continue to cultivate this engagement.

Risk 1.10	
Inherent risk	**High**
Residual risk	**Medium**

RISK 1.12: The risk of cross-border transmission

Cross-border transmission threatens each endemic country's capacity to sustain gains, as neither country can achieve WPV1 eradication until they both succeed. Coordination across the epidemiological block includes a range of collaborative actions that country programmes are taking to address this risk. Such cross-border coordination has become more effective at both the national and subnational levels, supported by the GPEI hub in Amman.

Risk 1.12	
Inherent risk	**High**
Residual risk	**Medium**

At the national level, three face-to-face coordination meetings have been held. Recent steps forward include:

- synchronized national SIAs with increased focus on the joint corridors;
- vaccination at cross-border points;
- monitoring of vaccination and surveillance in the bordering areas;
- enhanced coordination to ensure consistent messaging for social and behavioural change communication; and
- joint risk assessment with national and subnational involvement, including the immediate sharing of information about the detection of new isolates.

At the subnational level, each of the three cross-border corridors conduct regional/provincial-level meetings to address ongoing concerns. Since January 2023, a monthly cross-border coordination call includes representation from the National Emergency Operations Centre, Regional/Provincial Emergency Operations Centres, and the GPEI hub. Additionally, an October 2023 face-to-face meeting of national and subnational staff resulted in strengthened action plans and grassroots coordination.

Lastly, in addition to engaging meaningfully with each other, Afghanistan and Pakistan have collaborated effectively with TAG consultations. A joint follow-up session on TAG recommendations will be held in late 2023.

Focus on Pakistan's chief secretaries

Recommended action		GPEI
6	**The GPEI leadership should continue to work extremely closely with the chief secretaries of the Pakistan provinces, and ensure immediate engagement and polio programme induction with any change of post-holder.**	✓ Agrees

Risks within Pakistan's political landscape present steep challenges to the eradication effort. Illustrative of the severity of these risks, the IMB highlights the number of boycotts within the Khyber Pakhtunkhwa province, where communities leveraged polio vaccination to get the government to meet demands for a range of issues, such as a lack of health care, electricity or water supply. Pakistan was able to resolve these boycotts through the efforts of provincial chief secretaries. The IMB goes so far as to suggest that chief secretaries, because of their critical role in resolving boycotts and the amount of time required to achieve a resolution, "will define the course of Pakistan's struggle to eradicate polio".[9]

The GPEI likewise credits the essential contributions of provincial chief secretaries. Since 2019, the GPEI has maintained a full strategy of subnational engagement in key provinces, and chief secretaries are key contacts in that political environment. Furthermore, all provinces maintain rigorous oversight of polio eradication activities through regular Provincial Task Force meetings prior to each campaign, along with semi-annual meetings of the National Task Force chaired by the Prime Minister. The programme will maintain its engagement with the Pakistan leadership and expand outreach to local-level officials, including district commissioners who make decisions in the field.

The GPEI is firmly committed to high-level engagement with Pakistan officials. The Polio Oversight Board (POB) has demonstrated this commitment through numerous delegations to Pakistan in the past few years, including six visits by the POB chair. The chair of the Rotary Foundation's board of trustees visited Pakistan as recently as September 2023. WHO Director for Polio Eradication and Strategy Committee Chair Aidan O'Leary met newly appointed Minister of Health Dr Nadeem Jan during a visit to Pakistan from 29 August to 1 September 2023, visited the National Emergency Operations Centre as well as Provincial Emergency Operations Centres in Lahore and Peshawar, and held high-level meetings with provincial chief ministers and chief secretaries.

RISK 1.1: The risk of a loss of continuity of political commitment, alignment and security support

While the IMB is attentive to risks presented by the turnover of the national and provincial leadership, an additional factor worth noting is that deputy commissioners in approximately 164 districts will rotate in the coming months, and the scale of these shifts will be a challenge to manage. The GPEI recognizes the risks posed by changes of government in Pakistan, and the programme has mitigation plans in place. The programme has demonstrated its ability to adapt to rapidly changing circumstances. The GPEI acknowledges the IMB's security concerns regarding the potential diversion of army and police resources to election duty; while such a diversion is beyond programme control, the GPEI expects that any impact on campaign operations will be short-lived.

Risk 1.1	
Inherent risk	**High**
Residual risk	**Medium**

RISK 1.8: The risk of disruptions posed by community boycotts

Many boycotts are not polio-specific: they either include polio eradication among other longstanding disagreements or they leverage the government's prioritization of polio eradication in pursuit of unrelated goals.

As the IMB highlighted, this risk is best mitigated through active engagement with provincial chief secretaries and sustained engagement with chief secretaries amid any turnover. In addition, strengthened engagement with the provincial and local leadership and enhanced community engagement will be necessary parts of the solution.

Risk 1.8	
Inherent risk	**High**
Residual risk	**Medium**

[9] Independent Monitoring Board (IMB). Closing in on zero: Adapting to complexity and risk on the path to end polio. September 2023; p. 25 (https://polioeradication.org/wp-content/uploads/2023/09/22nd-Report-of-The-Independent-Monitoring-Board-IMB.pdf, accessed 20 November 2023).

Order an independent audit in eastern Afghanistan

Recommended action		GPEI
7	**The GPEI should order an immediate independent external audit of the acute flaccid paralysis investigation and data-gathering processes in east Afghanistan.**	✓ Agrees

In the investigation of five polio cases in Afghanistan, parents reported that their children received a high number of oral polio vaccine (OPV) doses, from 16 to 28 doses each. As the IMB conducted its interviews, the possibility that children who were vaccinated to such a degree would nonetheless become paralysed raised concerns about vaccine effectiveness in cases of severe malnutrition. It was this concern that prompted the IMB to request an audit of acute flaccid paralysis surveillance and a serology study (see **Rec. action 8**, below).

The GPEI welcomes an independent audit even as the programme underscores the considerable data supporting vaccine effectiveness in eastern Afghanistan and elsewhere, including under conditions of widespread malnutrition. If malnutrition were contributing to vaccine failure, the programme would see continued infection, disease and paralysis in young children in Afghanistan. Instead, the ages of the children investigated (from 4 to 11 years) align with periods of inaccessibility in eastern Afghanistan. Parental recall has its challenges, and it would be difficult to specify with certainty the number of doses received from years before. Notwithstanding these caveats, it remains the case that a full schedule of polio vaccination is more than 95% effective at preventing paralysis from the disease. In extremely rare cases, children who have received all recommended doses of the vaccine may still become infected and suffer polio-related morbidity. These cases are often related to diarrhoeal diseases and other intestinal infections present at the time of oral polio vaccination. A fuller scientific study on this phenomenon is being planned in the region.

Conduct a serology study in eastern and southern Afghanistan

Recommended action		GPEI
8	**The GPEI should carry out a serology study in east and south Afghanistan to enable better estimates of polio immunity levels to be made.**	✓ Agrees

Drawing a connection to the previous recommendation, the IMB proposes the GPEI conduct a serology study as a means of assessing the cumulative effect of multiple vaccination rounds on population immunity.

The GPEI welcomes all data that might shed light on progress towards strategic goals. While the programme's immediate priority is on intensifying efforts to reach all children with vaccines, serology studies are valuable tools, particularly when assessing the longer-term resilience of endemic countries as they advance towards interruption and plan to transition from GPEI support. When a study moves forward, however, it will be important to bear in mind the lessons from a serology study in the southern Khyber Pakhtunkhwa province of Pakistan. The study found implausible results (in excess of 90% seropositive) for the simple reason that the children accessible to researchers came from the same population accessible to vaccinators. Similarly for Afghanistan, serology data will likely come exclusively from highly accessible populations given that a blood draw is more intrusive than an OPV drop. Consequently, the challenge is that such a study will miss the same children that are missed in vaccination campaigns.

Support the leadership transition in the Eastern Mediterranean Region

Recommended action		GPEI
9	**The new Regional Director of the WHO Regional Office for the Eastern Mediterranean, when elected, should give immediate priority to convening the Regional Subcommittee for Polio Eradication and Outbreaks.**	✓ Agrees

Noting the enormously influential role of the Regional Subcommittee under the leadership of Dr Ahmed Al-Mandhari, WHO Regional Director for the Eastern Mediterranean, whose appointment ends in January 2024, the IMB seeks continuity in the Subcommittee's work to ensure collective ownership of the eradication mission in the endemic countries.

In an October session of the Regional Committee for the Eastern Mediterranean, Member States voted to nominate Dr Hanan Balkhy as the next Regional Director. A Saudi national, Dr Balkhy is a leading expert in infection prevention and control who has provided critical guidance to the WHO Regional Office for the Eastern Mediterranean and WHO headquarters. In her acceptance speech, she affirmed a "hands-on" commitment to achieving polio eradication within her first term. Following review by the WHO Executive Board at its 154th session in early 2024, Dr Balkhy will begin her five-year team on 1 February 2024. The chair of the POB and the co-chairs of the Regional Subcommittee will engage Dr Balkhy in the Subcommittee's work, and the WHO Director-General and other POB members will conduct further discussions. Dr Al-Mandhari will also brief Dr Balkhy on polio eradication, the Subcommittee and its priorities.

> I assure you that I will be committed to continue the efforts to eradicate polio within my first term.
>
> **Dr Hanan Balkhy** in her acceptance speech


© WHO / Blue Ocean

RISK 1.7: The risk of a weakened cohesiveness of the Eastern Mediterranean Regional Subcommittee for Polio Eradication and Outbreaks after the retirement of the current WHO regional director

The GPEI shares the IMB's recognition of the important work of the Regional Subcommittee. While the leadership transition represents a change, it also presents an opportunity for POB engagement. In the GPEI's view, continuity is likely, particularly as Member States appear firm in their commitment.

Risk 1.7	
Inherent risk	Medium
Residual risk	Low

Dr Al-Mandhari's leadership contribution

The GPEI joins the IMB in recognizing the defining role of Dr Al-Mandhari in the WHO Eastern Mediterranean Region. When the Regional Office first organized the Regional Subcommittee for Polio Eradication and Outbreaks in October 2020, the programme was recovering from a four-month pause in vaccination activities due to the COVID-19 pandemic, and Afghanistan and Pakistan were facing co-circulation of circulating vaccine-derived poliovirus type 2 with WPV1. The Regional Subcommittee's central goal was to reach every last child with polio vaccine by, in the words of its terms of reference, "ensuring any remaining cultural, operational, programmatic, political or societal barriers are overcome".

With Dr Al-Mandhari at its helm, the Regional Subcommittee:

- advocated for increased domestic polio eradication investments on the part of Member States;
- drove collaborative public health action; and
- pushed for a regional response to the public health emergency of polio transmission.

Under Dr Al-Mandhari's leadership, ministers of health joined together in purpose and collective ownership of polio eradication and outbreak response. The programme owes him a debt of gratitude not only for spearheading this new body but also for providing a model of leadership that epitomizes what regional advocacy and coordination uniquely contribute to the eradication effort.

Engage southern Afghanistan's provincial governor

Recommended action 12	**There should be immediate discussions with the provincial governor in south Afghanistan to seek his support for delivery of house-to-house campaigns; an invitation to the WHO Eastern Mediterranean Regional Subcommittee for Polio Eradication and Outbreaks may be a key element in these discussions.**	GPEI ✓ Agrees

Since mid-2021, an estimated 350 000 children are still inaccessible to the programme as southern Afghanistan remains the only area in the country where the GPEI has been unable to resume H2H immunization. Instead, vaccinators operate through site-to-site and mosque-to-mosque campaign modalities which are suboptimal. An enhanced site-to-site method that prioritizes smaller groups of houses offers some benefits, but this is still no substitute for the gold standard for campaign modalities.

In May and September 2023, environmental surveillance detected WPV1 in Kandahar, raising concerns about the risk of an explosive outbreak. Noting the need for quick action, the IMB highlights the role of the provincial governor, recommending that the programme begin discussions to seek his support for H2H campaigns.

The GPEI recognizes the vulnerability in southern Afghanistan, and engagement with the Afghan leadership has been in progress since mid-2021. Conversations are continuing across all channels, not all of which can be discussed publicly due to the sensitivities involved. The proposal to involve the Regional Subcommittee in advocating on this point may not be politically feasible. Still, the partnership will evaluate any and all potential dialogue opportunities conducive to a future in which no child in Afghanistan or any other country suffers the effects of this disease.

RISK 1.9: The risk of re-establishment of wild poliovirus circulation in Kandahar

The GPEI is attentive to the risk of an explosive outbreak in Kandahar. At present, the possibility of any resumption of H2H campaigns in the southern region appears unlikely, and thus mitigation efforts will continue. These include expanding the health camp strategy to over 40 zones in Kandahar city, expanding satellite camps and coordinating with humanitarian actors to reach more children to deliver integrated health services that include polio vaccines.

Risk 1.9	
Inherent risk	**High**
Residual risk	**High**

Convene a high-level meeting on strengthening Afghanistan's health system

Recommended action 14	A high-level, widely representative meeting should be convened to agree on how Afghanistan can be supported to develop a health system as a legacy of polio eradication.	GPEI ✓ Agrees in principle

Afghanistan is in an acute humanitarian crisis, and its needs for functional health systems are very real. In observing the country's fragmented and bleak health landscape, the IMB recommends that a meeting be convened to support Afghanistan towards strengthening its health system. This recommended action echoes a consistent theme of the midterm review: that the goals of polio eradication and transition are intertwined and interdependent, and that polio eradication can only be sustained when country ownership and health system capacity can manage the transition from GPEI support.

A widely representative meeting of the kind proposed would be a step towards sustaining health gains from the polio eradication programme into the transition period and beyond, but this is ultimately not a decision for the GPEI to make. Like all polio-affected countries, Afghanistan's future will depend on its willingness and ability to resolve its health problems and strengthen its health systems. Any such effort could be regionally supported, potentially with the involvement of the Regional Subcommittee. The programme could participate by identifying possible partners. If members of the GPEI partnership were elected to participate, they would do so as independent agencies, not as representatives of the GPEI.

RISK 1.11: The risk of a lack of funding preventing Afghanistan from sustaining gains in interrupting wild poliovirus transmission

A resilient, polio-free Afghanistan will require external funding to strengthen essential immunization and develop a comprehensive primary health care system. This fundamental circumstance is undeniable. Also undeniable are the geopolitical constraints the country faces when it comes to soliciting support from international donors. While a thoroughgoing solution in this area exceeds the mandate of the polio eradication programme, the programme will review a primary health care development roadmap (currently under development by the Afghan Ministry of Health) once it is available.

Risk 1.11	
Inherent risk	**High**
Residual risk	**High**

ADDITIONAL RISKS

RISK 1.4: The risk of solely incremental, instead of transformative, improvements in access and programme performance in southern Khyber Pakhtunkhwa

The intensifying low-level insurgency in southern Khyber Pakhtunkhwa creates security constraints that the programme does not have the ability to resolve. The GPEI continues to advocate with the federal Minister of Health for more support. While improvements in access depend on political actions at the national and local levels, improved programme performance is within the GPEI's control. Evidence of progress includes the Reaching the Unreached strategy, which has been implemented in the province's 69 highest-risk union councils and has led to the vaccination of approximately 160 000 more children as of June 2023. In September 2023, the federal Minister of Health commissioned an appraisal mission to assess the southern Khyber Pakhtunkhwa programme. A plan is now under way to convert the findings into action items that focus on a transformation of the operating environment that will include worker motivation, community engagement and closer integration with security support. As part of that effort, synergy between Pakistan's polio eradication programme and the Expanded Programme on Immunization will improve coverage for both essential immunization and OPVs.

Risk 1.14
Inherent risk **High**
Residual risk **Medium**

RISK 1.5: The risk of a lack of a critical mass of integrated methods of polio programme delivery

Integration is not limited to the co-delivery of antigens but can and should extend to other areas of consequence for public health, including integration with humanitarian partners. In its review of integration efforts in the endemic countries, the IMB mentions a UNICEF-backed initiative in southern Khyber Pakhtunkhwa focused on maternal health, nutrition, and water, sanitation and hygiene; a separate integrated effort in Karachi to boost essential immunization; and integrated nutrition interventions in Sindh. In fact, more efforts are under way than those listed. As discussed below (see **Rec. action 15**), the programme is now building out its integration function, and a plan for this work received POB endorsement in October 2023.

Risk 1.5
Inherent risk **High**
Residual risk **Medium**

Collaboration with humanitarian groups on integrated delivery

Ongoing collaboration with humanitarian groups in Afghanistan demonstrates the value of integrating polio eradication with other health needs. Enlisting 10 international organizations in an effort focused primarily on the southern region, the collaboration identified high-risk polio districts with active humanitarian partners, mapped areas that lack basic health service delivery and collected data on nine polio-specific indicators as partners delivered OPV doses to children.

In 2023, humanitarian partners have vaccinated 944 736 children across nine provinces, including 28 153 children missed by the polio eradication programme.

Given this success, the TAG recommended that the programme continue to identify opportunities to leverage platforms with humanitarian partners to increase polio and essential immunization coverage in underserved areas.

RISK 1.6: The risk of the continuation of poor sanitary conditions in polio-endemic areas and those places vulnerable to re-established transmission

The GPEI agrees with the IMB's view that access to safe water, sanitation and hygiene (WASH) is essential for human health and well-being and that WASH initiatives are critical to public health. The partnership has made investments to this end in Pakistan that have reached over 600 000 people with improved water, over 800 000 with improved hygiene and 300 000 with better sanitation. Larger-scale WASH undertakings exceed the combined resources of the programme – a fact highlighted by the US$ 442 million World Bank investment in a WASH project in the Punjab province of Pakistan benefiting scarcely more than 6 million residents. GPEI partners will continue to advocate within their agencies and across the global development sector for the prioritization of long-term WASH investments for communities in polio-affected countries.

Risk 1.6
Not included in the GPEI risk register

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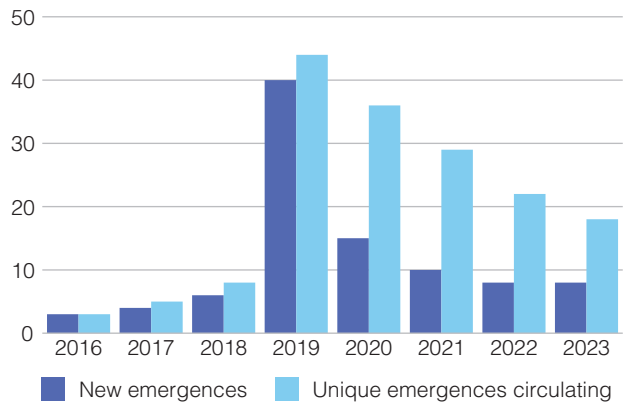
GOAL TWO

CURRENT STATE

The burden of outbreaks of circulating vaccine-derived poliovirus type 2 (cVDPV2) is declining, whether measured as the number of transmission chains, cases or districts with circulation (**Figs. 2** and **3**, **Annex C**). Indicative of this trend, cases are increasingly geographically concentrated. This progress comes despite the challenges of a temporary supply disruption of an important new tool – the novel oral polio vaccine type 2 (nOPV2) – developed to reduce the frequency of vaccine-derived poliovirus (VDPV) emergences. Among the positive developments:

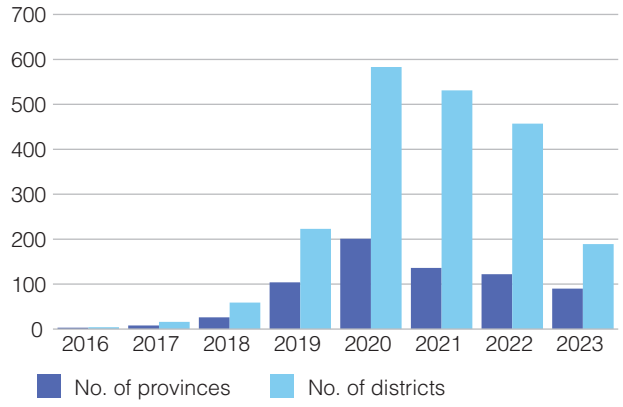
- decreasing numbers of new and unique cVDPV2 emergences year over year since 2019;
- nearly 750 million nOPV2 doses have now been administered; and
- most cVDPV2 outbreaks are stopped after two high-quality nOPV2 campaigns.

Fig. 2 **Emergences of cVDPV2, 2016–2023**



cVDPV2 = circulating vaccine-derived poliovirus type 2.
Source: WHO. Data as of 10 October 2023.

Fig. 3 **Provinces and districts with cVDPV2, 2016–2023**



cVDPV2 = circulating vaccine-derived poliovirus type 2.
Source: WHO. Data as of 10 October 2023.

In the wake of the pause in campaigns in 2020 due to COVID-19 that led to a dramatic rise in cVDPV2 cases, these developments are significant even if insufficient to meet the 2023 interruption milestone. Operational improvements are evident, such as a major increase in campaign size from 2021 (target populations tripled from 2019), giving campaigns the necessary reach to contain sprawling outbreaks. Better, faster responses are nonetheless still needed.

The GPEI has operationalized adjustments to address risks faced by the most consequential geographies where complex operating environments, poor-quality implementation and high rates of zero-dose children have resulted in intractable outbreaks and international spread (**Table 4**). While new cVDPV2 cases and emergences are declining, ongoing inaccessibility and security risks fuel transmission in these geographies.

Table 4 Most consequential geographies for Goal Two, 2023

Targeted risk area	Area	Issue
Nigeria	Four north-western states: Katsina, Kebbi, Sokoto, Zamfara	Insurgency, banditry and kidnapping attacks
Democratic Republic of the Congo	Three eastern provinces: Haut-Lomami, Maniema, Tanganyika	Insecurity, armed conflict and large internally displaced populations
Somalia	South-central region	Insecurity, inaccessibility and humanitarian emergency driven by drought and famine
Yemen	Northern governorates	Anti-vaccine sentiment among the leadership

While Goal Two of the strategy was largely focused on cVDPV2 outbreaks, two major developments since 2022 have required the programme to adapt quickly: the importation of wild poliovirus type 1 (WPV1) in the south-east Africa region, with the final outbreak set to close by the end of 2023; and outbreaks of circulating vaccine-derived poliovirus type 1 (cVDPV1) that emerged in the WHO African Region due to immunity gaps from weakened essential immunization programmes and the deprioritization of preventive campaigns with the bivalent oral polio vaccine (bOPV). Prioritizing these two developments after the launch of the strategy impacted progress towards cVDPV2 interruption by diverting US$ 271 million of the budget for cVDPV2 outbreak response to quickly stamp out WPV1 importations and cVDPV1 outbreaks.

In view of these and other challenges, the Independent Monitoring Board (IMB) concludes that the Goal Two milestone for cVDPV2 interruption will be missed. Given the intensified outbreak response that is under way in 2023 and will be maintained in 2024 and 2025, the GPEI anticipates a 2025 target for cVDPV2 interruption. The Global Commission for the Certification of the Eradication of Poliomyelitis (GCC) is currently evaluating certification requirements for VDPVs. Based on these criteria, a revised timeline, plan and budget will be submitted to the Polio Oversight Board (POB) in the second quarter of 2024. See Annex B on forthcoming POB decisions.

RECOMMENDED ACTIONS

Carry out a budgetary review

Recommended action		GPEI
2	**There should be an immediate, widely consultative review of the budgetary situation that is leading to prioritization decisions that are compromising the prospects for stopping polio in 2024 and jeopardizing the likelihood of a smooth journey to a polio-free world.**	✓ Agrees

The scale of cVDPV2 spread alongside WPV1 importations in the WHO African Region and large cVDPV1 outbreaks in the Democratic Republic of the Congo and Madagascar have collectively required a significant portion of the budget. As a consequence, the GPEI has insufficient funds to meet the budget ask, which has led to a difficult prioritization – specifically, the choice to prioritize active outbreak response over preventive campaigns. The IMB raises concerns about this budgetary situation, noting "it is very difficult to see how early successful polio eradication can be achieved with the present resource levels."[10] It recommends a consultative review of the budget.

A widely consultative review takes place as part of the GPEI's normal budgeting process. To address the IMB's core concern, the GPEI is attentive to the increased financial resources required by outbreak response and the corresponding trade-offs this entails. Funding for preventive campaigns in high-risk areas remains a challenge given the need for larger outbreak response campaigns. If resumed, preventive campaigns would only address types 1 and 3 immunity, as cVDPV2 response campaigns must take the form of outbreak response under the terms of the Emergency Use Listing for nOPV2. In the year ahead, the programme anticipates a still more aggressive approach that draws upon context-driven strategies to deliver bigger, better and faster outbreak responses.

[10] Independent Monitoring Board (IMB). Closing in on zero: Adapting to complexity and risk on the path to end polio. September 2023; p. 100 (https://polioeradication.org/wp-content/uploads/2023/09/22nd-Report-of-The-Independent-Monitoring-Board-IMB.pdf, accessed 20 November 2023).

RISK 2.3: The risk of insufficient resources necessitating unsatisfactory prioritization decisions

The programme has costed out the scale of outbreak response necessary to speed up the trajectory to circulating vaccine-derived poliovirus (cVDPV) interruption. At present, this leaves a US$ 200 million shortfall in 2024. Additional guidance on managing this shortfall will come through GPEI budget discussions to be held before the end of 2023.

The three possible mitigating actions to manage the risk of insufficient resources are additional fundraising; better alignment on financial resource requirements (FRR) and non-FRR resources; or hard prioritization. The most likely outcome is some combination of the three. Donor contributions to polio eradication outside the GPEI budget (i.e. non-FRR funding), approaching US$ 400 million annually in recent years, have at times been a source of surge financing for cVDPV2 outbreak response and could be leveraged to support progress. Absent the required funding, it would be necessary to address active outbreaks as a first priority over preventive immunity-boosting activities. Limited progress against outbreaks next year would ultimately prove even more costly in financial terms, in numbers of paralysed children and in progress towards eradication.

Risk 2.3	
Inherent risk	**High**
Residual risk	**Medium**

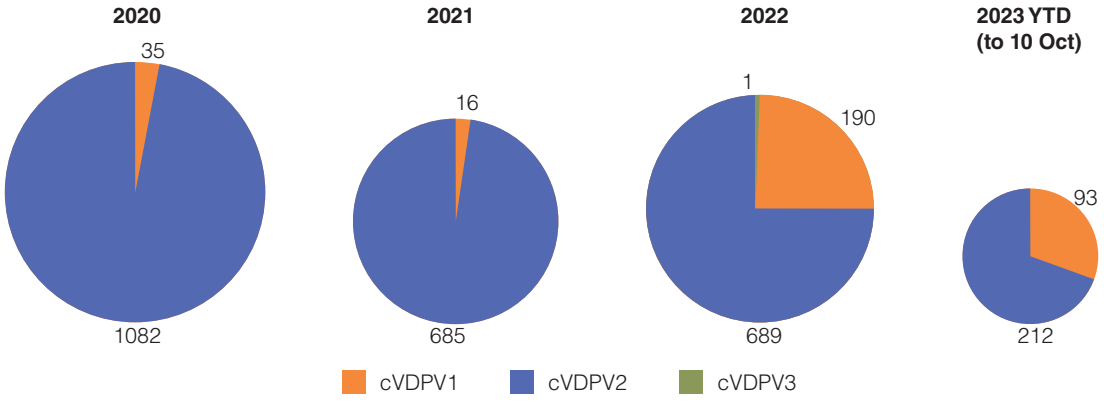
Extinguish cVDPV1 in Africa

Recommended action		GPEI
3	**High priority and intensive polio programmatic activity should be concentrated on extinguishing all vaccine-derived poliovirus type 1 in the WHO African Region.**	✓ Agrees

Outbreaks of cVDPV1 have gained in prevalence due to immunity gaps from decreased essential immunization coverage after the COVID-19 pandemic, particularly in subnational areas with already low coverage, and the suspension of preventive campaigns. The midterm review raises concern given the strain's high transmissibility and higher morbidity than cVDPV2. In the IMB's view, languishing type 1 immunity could spell disaster, as the establishment of cVDPV1 transmission in Nigeria or the Lake Chad Basin area would become a showstopper for Goal Two and possibly destabilize the programme in its entirety.

While Goal Two deals largely with cVDPV2, the GPEI exists to deliver upon the promise of a world in which no child is paralysed from polio, regardless of which poliovirus is involved. The programme has responded to cVDPV1 – an activity that has borne fruit. In 2021, cVDPV1 cases declined before an explosive outbreak in 2022. Following major response activities for type 1 in 2022 and 2023 that took up 37% of the outbreak budget, cVDPV1 case counts have been brought down significantly **(Fig. 4)**.

Fig. 4 Total cVDPV cases by type and year, 2020–2023



cVDPV1 = circulating vaccine-derived poliovirus type 1; cVDPV2 = circulating vaccine-derived poliovirus type 2; cVDPV3 = circulating vaccine-derived poliovirus type 3; YTD = year-to-date.

Source: WHO. Data as of 10 October 2023.

cVDPV1 responses in the Democratic Republic of the Congo and Madagascar – the only two countries currently impacted by cVDPV1 – are a key part of 2023 and 2024 outbreak response plans. Furthermore, as any cVDPV1 outbreak requires immediate action, the GPEI anticipates a full-scale response similar to its response to WPV1 importation in the WHO African Region. The programme will respond quickly and aggressively to any new outbreak, regardless of poliovirus type, and the restructured approach to planning and budgeting the outbreak response will support these efforts.

WPV1 importations and lessons learned

In February 2022, a WPV1 infection was confirmed in a child living in Malawi. In March 2022, a child in Mozambique experienced onset of paralysis by WPV1 linked to the imported case in Malawi, which resulted in eight other cases. Based on genetic sequencing, this importation was linked to Pakistan, providing further evidence that no country can remain polio-free while the virus circulates anywhere in the world.

The programme coordinated an immediate and effective response in the two affected countries as well as in the United Republic of Tanzania, Zambia and Zimbabwe, with a total of 21 rounds of campaigns conducted as of June 2023. The last detected transmission from this outbreak took place in Mozambique in August 2022.

Lessons learned from the outbreak can inform the programme's approach to cVDPV1 outbreaks:

- Fast, well-executed, large-scale responses to type 1 outbreaks can prevent those outbreaks from spreading.
- WPV1 cases in transition countries in the WHO African Region reaffirm the importance of high-performing essential immunization.
- A cVDPV1 outbreak in Malawi and Mozambique that coincided with the WPV1 cases underscores ongoing type 1 immunity gaps in the southern African Region.

RISK 2.5: The risk of large outbreaks of vaccine-derived poliovirus type 1

The GPEI is attentive to the risk large outbreaks of cVDPV1 pose to the programme and remains concerned that low rates of essential immunization and deprioritized preventive bOPV campaigns create type 1 immunity gaps. The programme welcomes initiatives like the Big Catch-Up and the efforts of Gavi, the Expanded Programme on Immunization, and other immunization partners to address these gaps, especially for zero-dose children. Preventive bOPV campaigns can also play a role in highest-risk countries, but programme budget demands (while fully aligned with the *Polio Eradication Strategy 2022–2026* multi-year budget) have exceeded available funding for 2022 and 2023 and may do so again in 2024 (see **Rec. action 2**, Goal Two). Employing non-FRR funds for this purpose, particularly in the case of integrating bOPV campaigns with measles or other antigens, is one possible mitigating action. The programme will continue to respond aggressively to cVDPV1 outbreaks in 2024, emphasizing the speed of response for new outbreaks while also expanding campaign breadth and improving quality.

Risk 2.5	
Inherent risk	**High**
Residual risk	**High**

Immediately introduce direct detection technologies

Recommended action		GPEI
4	**The rapid poliovirus detection technology that has been evaluated recently should be immediately introduced into outbreak management across the whole polio programme.**	✓ **Agrees in principle**

The programme is currently evaluating two direct detection methods to support surveillance for acute flaccid paralysis: direct detection by nanopore sequencing (DDNS) and direct detection with intratypic differentiation (DD-ITD). Both would eliminate the need for virus isolation by cell culture and reduce containment-related risks associated with growing live viruses. Given that direct detection has been reported to enable a "near-real-time approach" to outbreak detection and response, the IMB questions why the GPEI has not introduced it already.

While early indicators are favourable, evaluations of both methods continue, and the scientific process must ultimately determine the effectiveness and pace of rolling out new technologies. DD-ITD is currently under data review with a decision on routine implementation expected in the first half of 2024. DDNS will begin data review in November. To support rollout, the WHO African Region has begun DDNS preparedness activities: a pilot is under way in the Democratic Republic of the Congo, another is planned in Nigeria, and training was conducted in July for laboratories in Algeria, the Central African Republic, Côte d'Ivoire and Madagascar, with the objective of at least three additional labs contributing DDNS pilot data this year.

Despite grounds for optimism, evidence to date suggests that timeliness gains from direct detection would likely fall short of a "near-real-time approach". There is hope that it could reduce the timeline for laboratory processes by 7 to 14 days.

Efforts to improve response timeliness are not limited to direct detection. Logistics infrastructure remains a central component in outbreak response timeliness, with sample transport delays a key driver. The VillageReach sample transport project has shown some promise in countries without national laboratory capacity, and the programme is continuing to work on improving logistics on a country-by-country basis. Moreover, the assessment and expansion of sequencing capacity is under way, with the potential to address logistics challenges; training and rollout at six new laboratories are currently in progress.

The *Global Polio Surveillance Action Plan 2022–2024*, which defines surveillance priorities and sets a course for their implementation, is currently under biannual review with the GCC.[11] The GPEI's Surveillance Group developed a revised direct detection timeline at its October meeting and will continue to provide regular updates to the Strategy Committee on ways to further optimize and improve surveillance.

Reconvene Nigeria's Presidential Task Force

Recommended action 10	The Presidential Task Force on Polio Eradication in Nigeria should be reconvened.	GPEI ✓ Agrees

As a consequential geography, Nigeria faces severe challenges towards interrupting cVDPV transmission. Insurgency, banditry and kidnapping attacks in key north-west states have left over 3.9 million children in 31 000 settlements inaccessible to the programme. Additionally, financial instability has brought the country to the brink of crisis, which risks deprioritizing polio eradication amid competing country priorities. In light of the potential for further setbacks, the midterm review urges the new administration to reconvene the Presidential Task Force on Polio Eradication, Routine Immunization and Primary Health Care in Nigeria.

In September 2023, the country's Expert Review Committee for Polio Eradication and Routine Immunization endorsed reactivating the task force. Since the task force also concerns itself with essential immunization and primary health care, the significance of this development extends to integration and the Nigerian health landscape writ large. Furthermore, the reactivation of the task force aligns with the appointment of Dr Muhammad Ali Pate as Nigeria's Minister of Health and Social Welfare. Formerly a member of the IMB, Dr Pate is an unparalleled champion of health priorities, including polio eradication. His appointment represents a considerable opportunity for Nigeria and the entire GPEI programme.

Organize a high-level summit on strengthening Nigerian primary health care

Recommended action 13	A high-level, politically-engaged health summit should be convened to seek support for Nigeria for strengthening its primary care (including essential immunization) system in preparation for the post-certification period.	GPEI ✓ Agrees in principle

After Nigeria was certified as WPV1-free, a lack of resiliency in the country's health system ultimately fuelled VDPV outbreaks across the WHO African Region, affecting hundreds of children in at least 19 countries and costing the programme hundreds of millions of dollars. The midterm review connects the scale of Nigeria's outbreaks and their spread with its weakened health system. It argues that the country's polio eradication effort overshadowed essential immunization. To address ongoing risks related to Nigeria's health system, the IMB recommends a high-level summit to strengthen essential immunization and primary health care.

[11] Global Polio Eradication Initiative (GPEI). Global Polio Surveillance Action Plan 2022–2024. Geneva: World Health Organization; 2022 (https://polioeradication.org/wp-content/uploads/2022/05/GPSAP-2022-2024-EN.pdf, accessed 20 November 2023).

The GPEI welcomes a summit, and developments are under way towards such an event. The programme, however, notes the importance of Nigeria leading this effort and investing in its health system. The reconvened Presidential Task Force will likely be a driver, and Dr Pate's involvement will be pivotal. Given Dr Pate's history in pushing for polio eradication and essential immunization, the GPEI looks forward to supporting initiatives brought forward under his leadership.

RISK 2.6: The risk of Nigeria eliminating polio again and remaining vulnerable to another slide back because of the lack of developing a long-standing vision to develop strong, comprehensive primary care

The risks of Nigeria's health system not sustaining cVDPV interruption are significant, specifically in the north-west where considerable past investments have failed to deliver health gains. The GPEI remains attentive to challenges in this area even while acknowledging that primary responsibility for the country's health system lies with its government and people. The appointment of Dr Pate as Minister of Health and the reinstatement of the Presidential Task Force represent new opportunities for health systems strengthening. There is also a push to reactivate the state scorecard for performance and monitoring on polio eradication, essential immunization and primary health care.

Risk 2.6	
Inherent risk	**High**
Residual risk	**High**

ADDITIONAL RISKS

RISK 2.2: The risk of emergency outbreak response implementation continuing to be weak

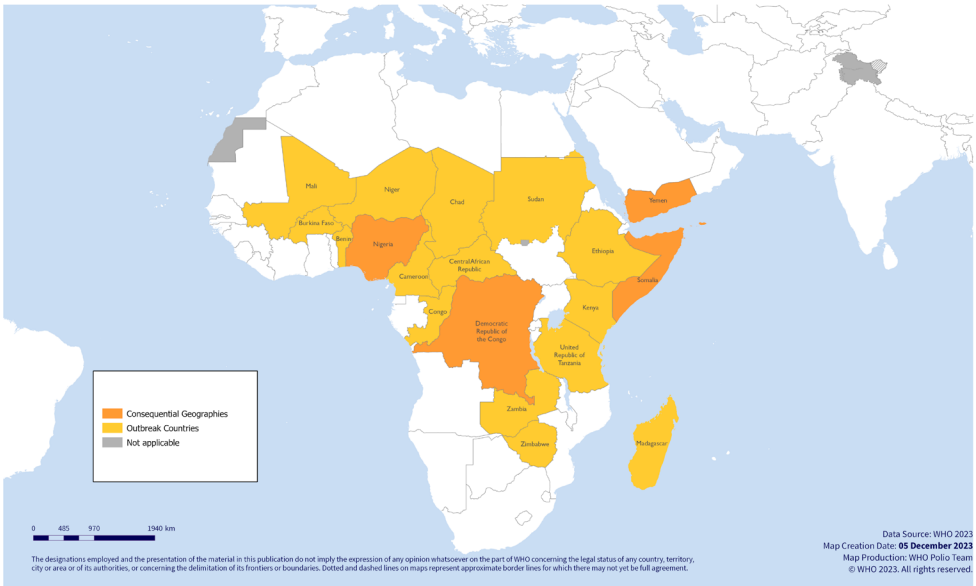
Given that the GPEI anticipates a significantly scaled-up outbreak response in 2024, the programme has restructured planning and budgeting based on the context of the outbreak (**Fig. 5**).

Risk 2.2	
Inherent risk	**High**
Residual risk	**Medium**

- **In consequential geographies**, the focus will be on tailoring responses to these difficult operating environments, which often involve insecurity and inaccessibility challenges, among other factors. To set the programme on a path towards cVDPV interruption, the immediate priority will be to stop cVDPV2 transmission in Nigeria and the Democratic Republic of the Congo in 2024.
- **For new outbreaks**, response timeliness is key. Funds have been set aside to ensure immediate resource availability and streamlined internal decision-making.
- **Ongoing outbreak responses in 15 countries** require bigger and better quality responses. By identifying these countries now, the programme will be able to conduct the recruitment of personnel, training and microplanning that drive campaign quality.

The financial and vaccine resources allocated by the 2024 budget will further enable bigger, better and faster responses to achieve Goal Two.

Fig. 5 **Consequential geographies and ongoing outbreak response countries, 2024**



Source: WHO.

RISK 2.4: The risk of a failure to get vaccine strategy right

The GPEI recognizes the risks related to securing the right vaccines through, to and beyond certification. The Outbreak Response & Preparedness Group and the Vaccine Supply Group have launched work streams to improve demand and supply forecasting. Additional efforts to expand the number of oral polio vaccine (OPV) suppliers, while important to undertake, face serious obstacles.

The withdrawal of several key polio vaccine manufacturers has created vulnerabilities in supply chains. Suppliers perceive risks in a low-revenue and sunsetting market, a situation further complicated by programme financial constraints, changing product requirements and long lead times across products (6–18 months). The GPEI is working closely with vaccine manufacturers to improve the mutual understanding of requirements, aiming through its procurement spend to diversify and expand the supply base in support of healthy vaccine markets. It is also supporting technology transfers and driving innovations towards products more suitable for a polio-free future.

The programme will work to ensure vaccine security through the development and refinement of mechanisms for effective supply management, such as the *Global OPV Stockpile Strategy 2022–2026*,[12] the bOPV stockpile, roadmaps for Gavi-supported vaccine supply, etc. The Polio Vaccine Supply Security Framework is being developed to harmonize objectives and actions across a broad spectrum of functional areas and stakeholders. This includes every facet of the vaccine life cycle, from research and development and poliovirus containment to production and distribution. Crucially, this framework is designed to span beyond the current eradication strategy, extending into the bOPV cessation as well as post-cessation periods.

A working group has been established to look at policy and supply requirements related to bOPV withdrawal, drawing on experiences from the trivalent oral polio vaccine switch, including immunity boosting campaigns, triggers and prerequisites for withdrawal, with guidance from the Strategic Advisory Group of Experts on Immunization (SAGE). The bOPV Cessation Team anticipates presenting policy options to the SAGE working group on polio vaccines in February 2024.

Risk 2.4	
Inherent risk	**High**
Residual risk	**Low**

RISK 2.8: The risk of a collapse or major disruption of supply of novel oral polio vaccine

Temporary nOPV2 supply disruptions in 2023 underscored the risks inherent in a sole supplier for this vaccine. While its projected full-year release of 550 million to 600 million doses is expected to meet 2023 programme needs, the GPEI is fortifying the supply base by funding technology transfer to a second manufacturer. Production at the new supplier may start before the end of 2024. The programme considers the 2024 supply outlook stable.

Risk 2.8	
Inherent risk	**High**
Residual risk	**Medium**

RISK 2.7: The risk of temporary diminished commitment if 2023 goals are not achieved

While the 2023 milestone for cVDPV2 interruption will be missed, it is now more urgent than ever to remain focused, intensify proven approaches, reach every last child with vaccine and deny the poliovirus the foothold to continue devastating young lives.

The task ahead for cVDPV interruption is complex, and yet the programme is in a vastly improved position to answer the challenge. The GPEI will aggressively scale up outbreak response in 2024 – sustaining that momentum into 2025, if necessary – to accelerate progress. The world is on the verge of celebrating WPV1 interruption, and the programme believes the momentum from this achievement will fuel the collective commitment to eradicate poliovirus in all forms.

Risk 2.7	
Inherent risk	**High**
Residual risk	**Medium**

[12] Global Polio Eradication Initiative (GPEI). Global OPV Stockpile Strategy 2022–2026. Geneva: World Health Organization; November 2022 (https://polioeradication.org/wp-content/uploads/2023/06/Global-OPV-Stockpile-Strategy-31052023.pdf, accessed 20 November 2023).

CROSS-CUTTING AREAS

RECOMMENDATIONS

Prepare polio resilience plans

Recommended action		GPEI
11	**Each polio-affected and polio-vulnerable country in the WHO African and Eastern Mediterranean Regions should be helped to prepare a polio resilience plan, listing and costing what is needed to prevent or respond effectively to polio emergences over the next five years.**	✓ Agrees in principle

In the midterm review, the Independent Monitoring Board (IMB) suggests that forward-looking resilience plans are not merely a matter of transition: to the contrary, eradication will fail unless transition is already under way.

The GPEI views resilience planning as an opportunity to support the regional offices that have a role in keeping countries engaged on the threat of outbreaks and the need for timely response. This is already common practice in the WHO Eastern Mediterranean Region, where countries systematically and regularly review and update outbreak response plans and carry out simulation exercises for outbreak preparedness. The investment is frequently small, and the return substantial. The process imposes a discipline by which countries stay focused on preparedness. By the same token, the challenges of staff turnover are reduced as simulation exercises acquaint incoming personnel with outbreak risks for circulating vaccine-derived polioviruses (cVDPVs) and required responses. The WHO African Region is likewise conducting simulations. Seven countries have completed these exercises, including multiple countries that subsequently faced outbreaks. Beyond simulations, detailed response plans are a worthwhile undertaking in countries that have not yet prepared them. Regional-level planning is also warranted given the scale of the risk.

Such planning at the regional and country levels also presents an opportunity for the global programme to formalize the framework for vaccine stockpiling and deployment. Stockpiling of the bivalent oral polio vaccine (bOPV), novel oral polio vaccine type 2 and eventually novel oral polio vaccines types 1 and 3 will provide the tools for outbreaks. Meanwhile, bOPV, the first and second doses of inactivated polio vaccines (IPV1, IPV2) and the hexavalent vaccine will be administered by essential immunization programmes.

Support integrated immunization campaigns

Recommended action		GPEI
15	**The polio programme, the [Expanded] Programme on Immunization and Gavi should open up and act on the many opportunities to run more vaccination initiatives that build in polio.**	✓ Agrees

Under the *Polio Eradication Strategy 2022–2026*, expanded integration efforts and unified partnerships are prioritized as strategic objectives. However, integration efforts have not been well coordinated across global, regional and country teams. Consequently, the midterm review calls for scaled-up co-delivery of antigens, including the co-delivery of bOPV during measles and yellow fever campaigns, for example. The IMB challenges the GPEI to anticipate opportunities for integrated campaigns, with both GPEI and Gavi Alliance partners leveraging their voices to make sure in-country polio eradication teams are at the table when wider campaigns are being planned.

The GPEI broadly agrees and is strengthening its collaboration with the Gavi Alliance and the Expanded Programme on Immunization (EPI), as well as with other partners involved in health emergency and humanitarian response. An integration function will be established across the country, regional and global levels, and the Polio Oversight Board has endorsed a plan for this work. The effort will require reciprocal engagement from the programme's counterparts. It also will include articulating the roles and responsibilities of the different actors and providing a more deliberate structure for seizing opportunities of the kind the IMB flags.

Importantly, final accountability lies with the countries themselves. The Africa Centres for Disease Control and Prevention is among the partners highlighting the need for a bottom-up approach. Under the country leadership, various integrated efforts have been launched.

- The Democratic Republic of the Congo conducted a week-long integrated campaign for polio and measles in the North Kivu province in May 2023. The country has also set up 7804 community health care sites in hard-to-reach areas, where community relays will be trained to search for cases of acute flaccid paralysis and zero-dose and under-vaccinated children as well as educated on family health practices.
- Malawi conducted an integrated campaign in May 2023 for bOPV, measles-rubella (MR) and typhoid conjugate vaccines, along with vitamin A supplements.
- In the north-west of the Syrian Arab Republic, polio and MR vaccines were given to children aged under 5 years as part of multi-antigen national immunization days in March 2023.
- Somalia conducted an integrated supplementary immunization activity in November 2022 to provide polio and measles vaccines plus vitamin A and albendazole (for deworming), reaching about 2.6 million children.

The GPEI will develop an enabling environment for integration that helps to identify and support country-led efforts so they become the norm rather than opportunistic elements of programme operations. In addition, the programme is working with Gavi Secretariat and Alliance partners to explore immediate integration opportunities with countries approved by Gavi's Independent Review Committee for measles or MR campaigns in 2024 – a list that includes Burkina Faso, Chad, Mali and the United Republic of Tanzania, among others.

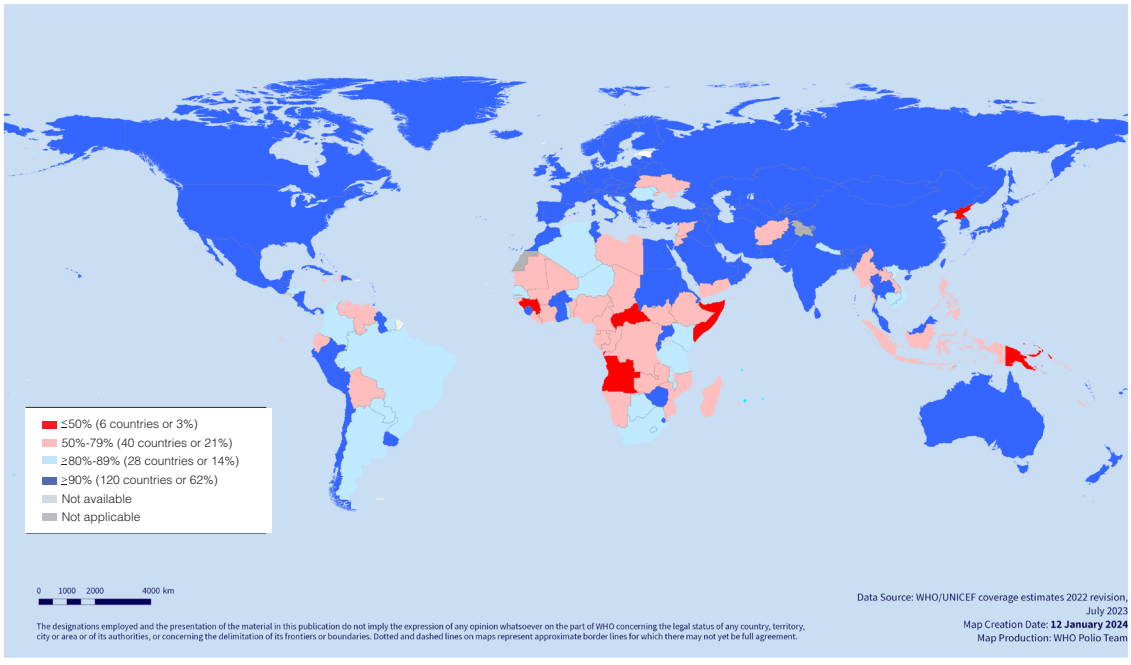
RISK 2.1: The risk of essential immunization coverage remaining at low levels

Countries must take ownership of essential immunization, albeit with the support of immunization partners, such as EPI and the Gavi Alliance, and platforms such as the Immunization Agenda 2030 (IA2030). Success in this area has clear implications for the polio eradication programme, since essential immunization defends against cVDPVs and impacts the intensity of response required to close outbreaks. While recognizing the constraints of the GPEI's role, the programme champions country-led immunization efforts and seeks to support and collaborate with them. Still, the latest UNICEF and WHO coverage data confirm that most countries in the WHO African and Eastern Mediterranean Regions have coverage rates stagnating at pre-pandemic levels.

The GPEI welcomes the introduction of Gavi-supported hexavalent vaccine into EPI programmes. Likewise, the GPEI supports the introduction of IPV2 in the remaining 41 countries where it has yet to be introduced. However, for the programme's aggressive response to immunity gaps that pose a threat to eradication, the main priority must be on improving IPV1 coverage in those countries of the WHO African Region with suboptimal vaccination rates at national and subnational levels (**Fig. 6**).

Risk 2.1	
Inherent risk	**High**
Residual risk	**High**

Fig. 6 IPV1 immunization coverage in infants, 2022



IPV1 = inactivated polio vaccine first dose.

Source: WHO.

GPEI-IDENTIFIED RISKS

RISK 3.1: The risk of inaccessibility and insecurity

The GPEI suggests inaccessibility and insecurity as an addendum to the risks detailed in the midterm review. These interrelated challenges represent one of the most formidable obstacles to reaching every last child with polio vaccine.

The programme has several work streams in place to mitigate their consequences, including negotiating access; pre-positioning funding and vaccines, where feasible; consistently monitoring inaccessible children; working closely with the United Nations Department for Safety and Security; and ensuring staff are prepared to go into the field during those windows when security can be provided. Despite the GPEI's experience in finding solutions to these challenges, some geographies remain totally or predominantly inaccessible to campaigns at the time of writing.

Risk 3.1	
Inherent risk	**High**
Residual risk	**High**

RISK 3.2: The risk of suboptimal operational effectiveness

There is room to improve the operational effectiveness of the partnership at the global, regional, national and subnational levels. The GPEI will adjust where necessary. The GPEI partners' senior leadership should continue advocating for programme priorities and bolster support within their respective agencies and with key political and community leaders, as well as with the donor community. The restructuring of the outbreak budget and planning framework is an operational improvement that will enable a clearer focus on consequential geographies, ongoing outbreaks and new outbreaks, thereby supporting bigger, faster and better outbreak responses. The programme will additionally benefit from greater visibility into non-financial resource requirement investments.

Risk 3.2	
Inherent risk	**Medium**
Residual risk	**Low**

CONCLUSION

The GPEI recognizes serious challenges lie ahead. While the world is not yet in a position to celebrate the interruption of the last remaining strain of wild poliovirus, the programme believes – and the evidence suggests – that by intensifying proven approaches in the endemic countries, reaching every last child with vaccine and stopping the last chains of transmission from regaining their footholds, this goal will be achieved within months, placing the world on track to certify eradication of wild poliovirus type 1 (WPV1) by 2026. Meanwhile, the progress to date in addressing outbreaks of circulating vaccine-derived polioviruses (cVDPVs) needs to be accelerated, something the GPEI will seek to accomplish in 2024 through improved outbreak response budgeting and a speed-focused operational framework for new emergences. The programme expects certification of WPV1 eradication in 2026 to inspire and energize partners, including national governments, as the world stamps out cVDPVs.

This optimism is underpinned by the work of the Independent Monitoring Board and many other counterparts whose deep, critical analyses of the eradication mission and its obstacles have led to the present report. The GPEI is grateful for their diligence and insight. By looking squarely at challenges and risks and investing in corrective actions, the programme will build on existing momentum, optimize response, improve campaigns, accelerate detection and ultimately overcome the remaining hurdles to deliver the polio-free world the children of today and tomorrow deserve.

ANNEX A. SUMMARY OF RISKS

Tables A1 and **A2** summarize risks identified in the Independent Monitoring Board (IMB) midterm review. **Table A3** presents GPEI-identified risks. The GPEI has categorized risks, with inherent risk defined as the severity of the risk in the absence of mitigating actions, and *residual risk* characterized as the ongoing severity of the risk after mitigating actions are applied. (Last updated: 10 October 2023)

Table A1 Summary of Goal One risks

No.	Rec. action	Inherent risk	Residual risk	Description	Notes
1.1	6	High	Medium	Loss of continuity of political commitment, alignment and security support in Pakistan	• Mitigation plans are in place. • Deputy commissioners will rotate. • Election-related security gaps should be short-lived.
1.2	5	High	Medium	Weakening newly established resilience in former polio reservoirs in Pakistan	• Steps are under way to bolster campaigns and essential immunization in the historic reservoirs, with emphasis on Peshawar.
1.3	5	High	Medium	Re-establishing transmission in Quetta Block	• Mitigating efforts include extra immunization rounds, renewed attention to SIA quality and intensified surveillance.
1.4	n/a	High	Medium	Solely incremental, instead of transformative, improvements in access and programme performance in southern Khyber Pakhtunkhwa	• Advocating with the federal Minister of Health continues. • The Reaching the Unreached strategy is making progress; synergies with the EPI will improve coverage.
1.5	n/a	High	Medium	Lack of a critical mass of integrated methods of polio programme delivery	• The programme is building out its integration function; a detailed workplan for POB review received endorsement.
1.6	n/a	-	-	The continuation of poor sanitary conditions in polio-endemic areas and those places vulnerable to re-established transmission	• Large WASH investments exceed programme resources but the GPEI continues to advocate with development partners for WASH investments in polio-affected countries.
1.7	9	Medium	Low	Weakened cohesiveness of the Eastern Mediterranean Regional Subcommittee for Polio Eradication and Outbreaks after the retirement of the current WHO regional director	• Commitment remains firm among Member States; the new regional director was appointed at the October Subcommittee meeting; the POB has an opportunity to engage with the new regional director.
1.8	6	High	Medium	Disruptions posed by community boycotts in Pakistan	• The best mitigation lies in engaging provincial chief secretaries and enhanced community engagement.
1.9	12	High	High	Re-establishment of wild poliovirus circulation in Kandahar	• The lack of H2H campaigns remains the most significant challenge; mitigation efforts and diplomacy continue.
1.10	5	High	Medium	Loss of momentum to close the immunity gap in eastern Afghanistan	• Engaging regional ministers of health and the Regional Subcommittee will help ensure insulation from political disruption.
1.11	14	High	High	Lack of funding preventing Afghanistan from sustaining gains in interrupting wild poliovirus transmission	• The GPEI agrees, and efforts should be led by regional actors; external funding and PHC are critical; the programme will review a roadmap currently under development.
1.12	5	High	Medium	Cross-border transmission	• GPEI approaches the area as a single epidemiological block, increasing coordination throughout, including specific SIA schedules in endemic zones, three large outbreak response campaigns targeting over 2 million children, four risk-reduction campaigns in high-risk districts and SIAs as part of national immunization days.

EPI = Expanded Programme on Immunization; H2H = house-to-house (campaign modality); PHC = primary health care; POB = Polio Oversight Board; SIA = supplementary immunization activity; WASH = water, sanitation and hygiene.

Table A2 Summary of Goal Two risks

No.	Rec. action	Inherent risk	Residual risk	Description	Notes
2.1	15	High	High	Essential immunization coverage remaining at low levels	• Countries must own essential immunization programmes; EPI, Gavi and IA2030 partners need to support countries to improve EI and reach zero-dose children. • The Big Catch-Up plan is targeting key polio-affected states.
2.2	n/a	High	Medium	Emergency outbreak response implementation continuing to be weak	• An aggressive scaled-up outbreak response is planned in 2024.
2.3	2	High	Medium	Insufficient resources necessitating unsatisfactory prioritization decisions	• Aggressive outbreak response brings the overall budget to US$ 1.1 billion for 2024 but the programme currently has US$ 0.9 billion; if new funds cannot be secured, the use of non-FRR funds may be a route forward.
2.4	n/a	High	Low	Failure to get vaccine strategy right	• The GPEI has anticipated this risk and has acted by developing a vaccine security strategy, establishing a bOPV cessation team and undertaking a lessons-learned exercise from the 2016 switch. • Work streams are in progress to improve demand and supply forecasting; efforts are under way to expand OPV suppliers.
2.5	3	High	High	Large outbreaks of vaccine-derived poliovirus type 1	• Immunity gaps continue due to poor EI; preventive bOPV rounds may reduce risk but depend on sufficient funding or non-FRR funds being made available. • The GPEI prioritizes active outbreak response above prevention; the GPEI will respond to any type 1 outbreak quickly and comprehensively.
2.6	13	High	High	Nigeria eliminating polio again and remaining vulnerable to another slide back because of the lack of developing a long-standing vision to develop strong, comprehensive primary care	• Dr Pate's ministerial appointment and the Presidential Task Force represent opportunities; there is a push to establish a statewide scorecard for performance and monitoring on polio eradication, EI and PHC.
2.7	n/a	High	Medium	Temporary diminished commitment if 2023 goals are not achieved	• Aggressive intensification of outbreak response is a core focus for the programme. • Robust advocacy planning and donor engagement are under development; it is urgent to remain focused and intensify efforts.
2.8	n/a	High	Medium	Collapse or major disruption of supply of novel oral polio vaccine	• Projected supply is expected to exceed programme needs in 2024, but the risk of disruption remains; the GPEI is funding tech transfer to a second manufacturer, which may come online in 2024.

bOPV = bivalent oral polio vaccine; EI = essential immunization; EPI = Expanded Programme on Immunization; IA2030 = Immunization Agenda 2030; non-FRR = non-financial resource (budgetary) requirements; OPV = oral polio vaccine; PHC = primary health care.

In the first recommended action of the midterm review, the IMB asks the GPEI to identify any important risk omissions. **Table A3** presents a summary of additional risks that are also discussed in this report (see **Cross-cutting areas: GPEI-identified risks**).

Table A3 Summary of additional GPEI-identified risks

No.	Rec. action	Inherent risk	Residual risk	Description	Notes
3.1	1	High	High	Inaccessibility and insecurity	• The programme has several mitigating work streams in place, including negotiating access, pre-positioning funding and vaccines where feasible, monitoring inaccessible children, working closely with the UN Department for Safety and Security and ensuring staff are prepared to go into the field when security can be provided. • The GPEI has a track record of finding a way even in the most difficult circumstances.
3.2	1	Medium	Low	Suboptimal operational effectiveness	• The operational effectiveness of the partnership at the global, regional, national and subnational levels can be improved; the GPEI will adjust where necessary. • The GPEI partners' senior leadership need to continue advocating for programme priorities and bolster support within their respective agencies and with key political and community leaders, as well as with the donor community. • Given the importance of a scaled-up outbreak response, the outbreak budget and planning framework has been restructured to enable a clearer focus on consequential geographies, ongoing outbreaks and new outbreaks. • Greater visibility into non-FRR investments, especially in consequential geographies, will also be required.

non-FRR = non-financial resource requirements.

ANNEX B. DECISIONS OF THE POLIO OVERSIGHT BOARD

As the GPEI follows through on the recommended actions and risk mitigation activities identified in this report, several forthcoming decisions from the Polio Oversight Board (POB) are expected. As materials reflecting these decisions become available, they will be added below.

These include:

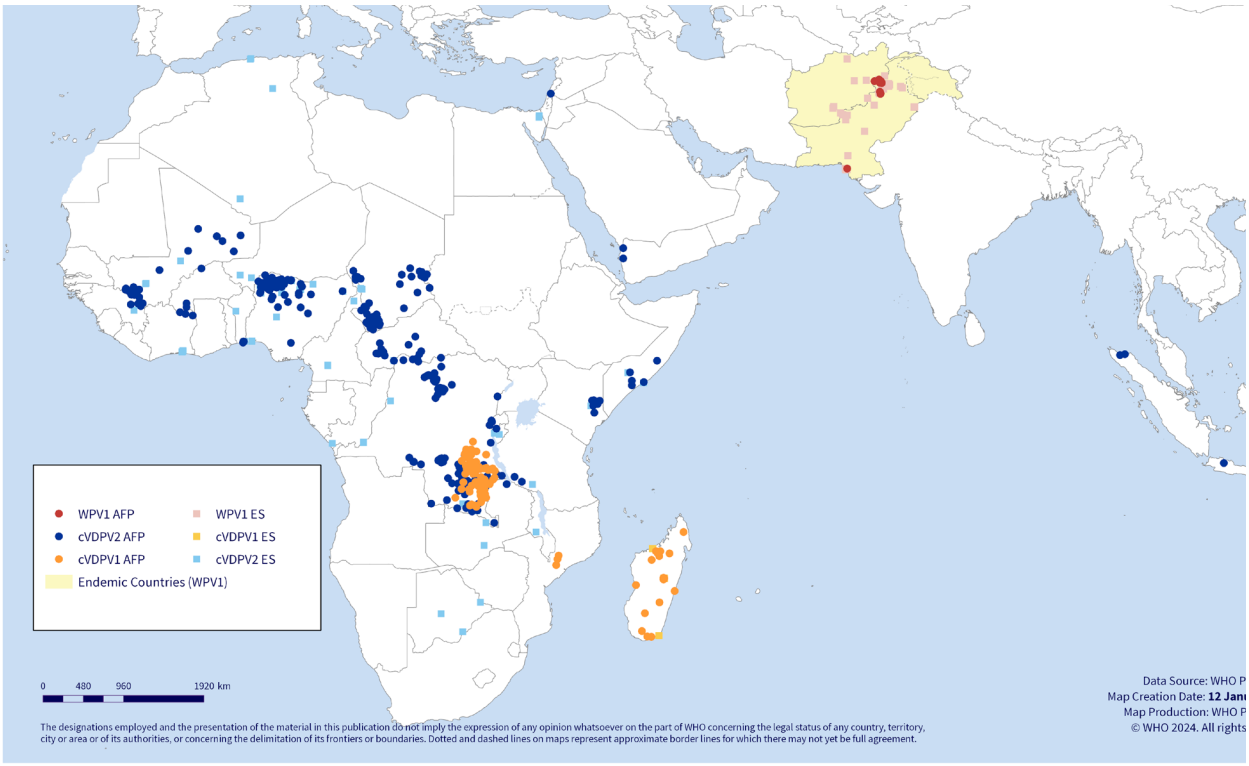
- a formal extension of the strategy period;
- renewed strategy milestones, particularly for Goal Two;
- confirmation of new criteria brought forward by the Global Commission for the Certification of the Eradication of Poliomyelitis (GCC) to certify the interruption of circulating vaccine-derived polioviruses (cVDPVs); and
- a revised multi-year budget.

(Last updated: 14 November 2023)

ANNEX C. CURRENT EPIDEMIOLOGICAL STATE

GLOBAL OVERVIEW

Fig. C1 Overview of global WPV1 and cVDPV positive isolates, 2023



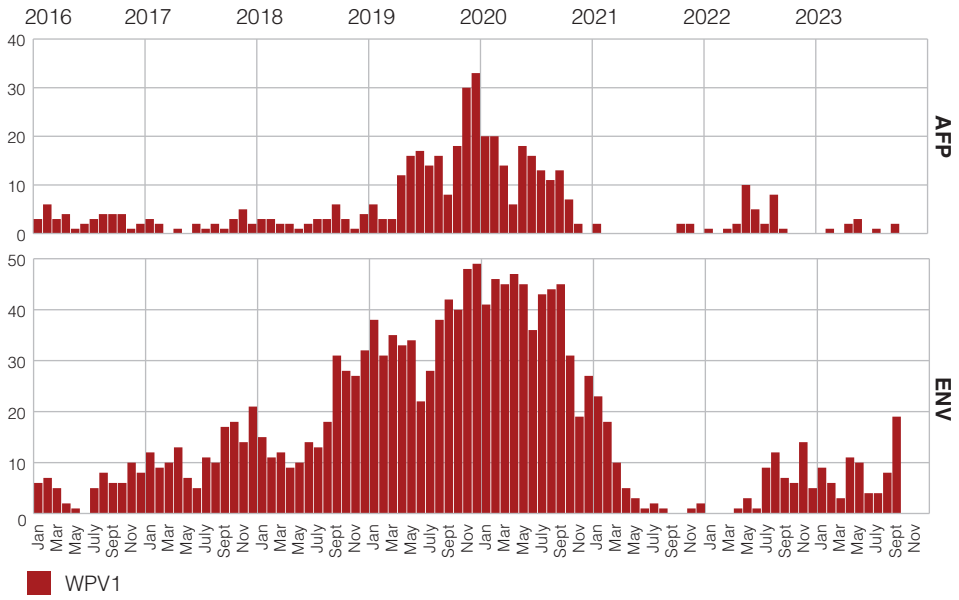
AFP = acute flaccid paralysis; cVDPV = circulating vaccine-derived poliovirus; cVDPV1 = circulating vaccine-derived poliovirus type 1; cVDPV2 = circulating vaccine-derived poliovirus type 2; cVDPV3 = circulating vaccine-derived poliovirus type 3; ES = environmental surveillance; WPV1 = wild poliovirus type 1.

Source: WHO. Data as of 10 October 2023.

All data are from WHO POLIS and are up to date as of 10 October 2023.

GOAL ONE: ENDEMIC TRANSMISSION IN AFGHANISTAN AND PAKISTAN, WPV1 IMPORTATIONS

Fig. C2 **Global WPV1 AFP cases and environmental surveillance isolates, 2016–2023**



AFP = acute flaccid paralysis; ENV = environmental surveillance isolates; WPV1 = wild poliovirus type 1.
Source: WHO.

Non-endemic WPV1 importations

Zero WPV1 cases in 2023, down from:

- one case in Malawi with date of onset in November 2021; and
- eight cases in Mozambique in 2022.

All data are from WHO POLIS and are up to date as of 10 October 2023.

Endemic countries

(as of 10 October 2023)

Afghanistan

- In 2023, six WPV1 cases have been reported, all from Nangarhar.
- Nangarhar was covered during the subnational immunization days in May and July as part of intensified efforts to interrupt persistent local WPV1 transmission in the area.

Pakistan

- In 2023, three WPV1 cases have been reported.
- Intensified efforts continue to be implemented in the country, particularly in the southern area of Khyber Pakhtunkhwa, to urgently eradicate the remaining endemic WPV1 transmission.

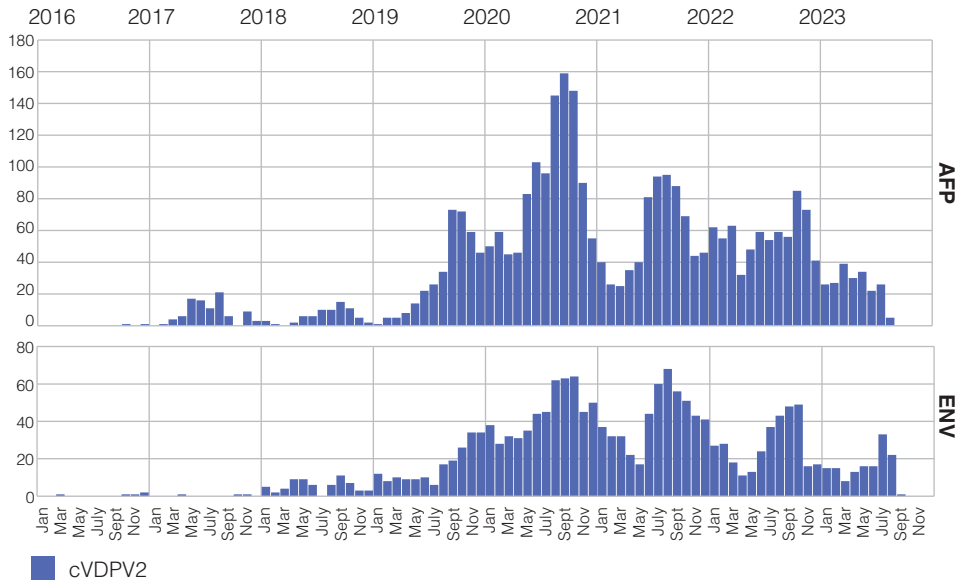
Post-publication update

The latest epidemiology for Goal One	The main body of this report reflects the epidemiological context as of 10 October 2023. Since the time of writing, two additional WPV1 cases were reported in Sindh province, bringing the total number of cases in 2023 to five in Pakistan and six in Afghanistan. Through environmental surveillance, 34 new WPV1-positive samples were detected across Pakistan and Afghanistan, bringing the 2023 total to 108. In Pakistan, the WPV1-positive environmental samples were reported in Balochistan (7), Khyber Pakhtunkhwa (8), Sindh (9) and Punjab (3). In Afghanistan, new WPV1-positive environmental samples were reported in Kabul (1), Kandahar (1), Nangarhar (4) and Zabul (1).
Geopolitical developments	On 3 October, the Government of Pakistan announced plans to repatriate "illegal foreigners", with a deadline of 1 November for affected populations to leave the country. An estimated 1.3 million undocumented Afghans reside in Pakistan. The impact of this mass movement on the polio eradication programme in both countries is yet to be fully determined, but GPEI partners are working closely with the United Nations High Commissioner for Refugees to provide immunization (for instance, between 5 and 11 November, more than 59 000 returnees were vaccinated with oral polio vaccine) and disease surveillance, as well as broader health emergency support.

Situation as of 14 November 2023

GOAL TWO: CVDPV OUTBREAKS IN NON-ENDEMIC COUNTRIES

Fig. C3 Global cVDPV2 AFP cases and environmental surveillance isolates, 2016–2023



AFP = acute flaccid paralysis; cVDPV2 = circulating vaccine-derived poliovirus type 2; ENV = environmental surveillance isolates.
Source: WHO.

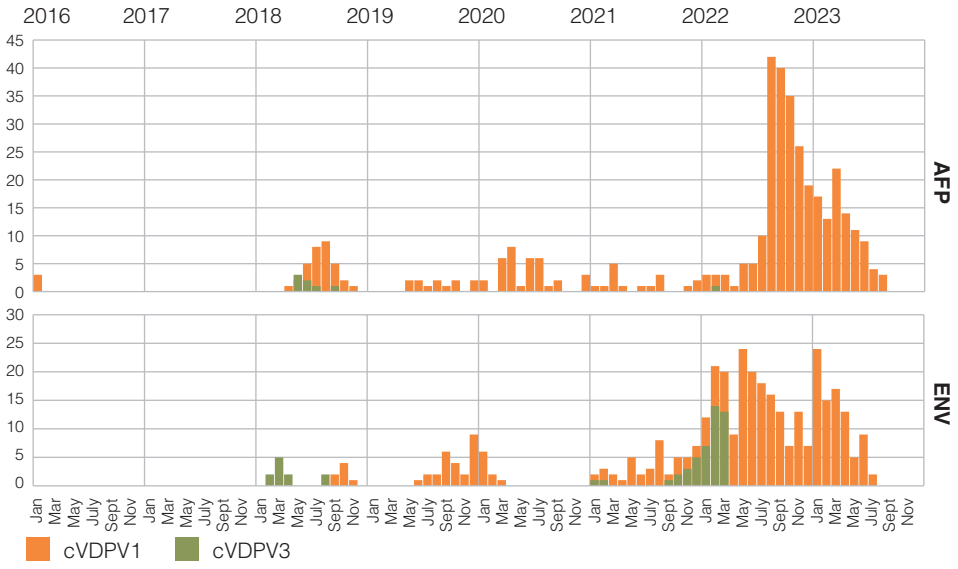
cVDPV2 situation
(as of 10 October 2023)

- In 2023, there have been 211 cVDPV2 cases.
- The number of AFP cases since 2020 is consistently down.
- Since January 2022, cVDPV2 cases in the Democratic Republic of the Congo, Nigeria, Somalia and Yemen have accounted for over 70% of global cases.
- The number of cVDPV2-infected districts is declining year over year

cVDPV1 situation
(as of 10 October 2023)

- Since 2016, 14 cVDPV1 outbreaks have been reported across 10 countries.
- In 2023, 92 cVDPV1 cases have been reported across three countries: Democratic Republic of the Congo, Madagascar and Mozambique.
- In countries experiencing cVDPV1 outbreaks, poor coverage of bivalent oral polio vaccine (bOPV) and inactivated polio vaccine from essential immunization and the deprioritization of preventive bOPV campaigns have negatively affected population immunity.

Fig. C4 Global cVDPV1 and cVDPV3 AFP cases and environmental surveillance isolates, 2016–2023



AFP = acute flaccid paralysis; cVDPV1 = circulating vaccine-derived poliovirus type 1; cVDPV3 = circulating vaccine-derived poliovirus type 3; ENV = environmental surveillance isolates.
Source: WHO.

All data are from WHO POLIS and are up to date as of 10 October 2023.

Post-publication update

The latest epidemiology

The main body of this report reflects the epidemiological context as of 10 October 2023. Since the time of writing, 16 new cVDPV1 cases have been reported, bringing the total for 2023 to 108. In cVDPV2 outbreaks, 49 new cases have been reported, bringing the 2023 total to 260. Detection through environmental surveillance found 55 additional cVDPV-positive samples, for a year-to-date total of 279.

Situation as of 14 November 2023

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