

Ex-post evaluation

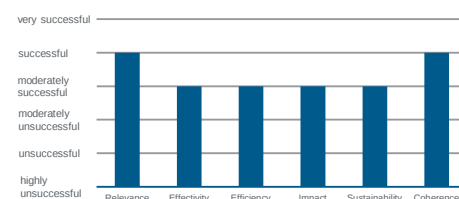
Polio eradication, Nigeria

Title	Polio eradication, Phases VII to XI		
Sector and CRS code	Infectious disease control 12250		
Project number	BMZ No. 2015 68 047 / 2015 69 201 / 2016 68 854 / 2018 68 652 / 2019 68 205		
Commissioned by	BMZ		
Recipient/Project-executing agency	Federal Republic of Nigeria, represented by the Ministry of Foreign Affairs / National Primary Healthcare Development Agency (NPHCDA), Implementing Partners UNICEF and WHO		
Project volume/ Financing instrument	Phases VII - XI: EUR 97.22 million (FC grant)		
Project duration	2016-2022		
Year of report	2024	Year of random sample	2024

Objectives and project outline

Objectives at the outcome level were to immunise of all children under 5 years against poliomyelitis (polio) and to deploy an effective surveillance and monitoring system. This aimed to achieve the interruption of polio transmission in Nigeria at the impact level and thus contribute to the global eradication of the poliovirus. The annually updated polio eradication emergency plans were crucial for the project design. WHO and UNICEF were responsible for the preparation and implementation of polio vaccination campaigns, including supplementary measures, on behalf of the Nigerian Health Authority (NPHCDA).

Overall rating:
moderately successful



Key findings

Through long-term and significant financial support of the Nigerian polio programme, the project (Phases VII-XI) contributed to the eradication of the poliovirus in Nigeria, which was certified as polio-free in 2020 as the last country in Africa.

- Relevance and coherence were good, as Nigeria, alongside Pakistan and Afghanistan, was one of the last three countries where the poliovirus was endemic. The vertically focused measures on polio eradication were embedded in national and international health plans and programmes.
- While no further polio cases from wild polioviruses occurred since 2016, numerous outbreaks from circulating vaccine-derived polioviruses emerged from 2019 onwards. In the last two years, the situation was stabilised, mainly through the use of new, genetically more stable vaccines.
- The surveillance and monitoring system proved functional and can be used for other health programmes and pandemic prevention (as in the COVID-19 pandemic).
- Despite high costs for transport and protection of vaccination teams, efficient implementation was ensured by experienced implementing partners WHO and UNICEF, using established structures.
- The sustainability of the project is threatened by a persistently precarious security situation, decreasing ownership, and an inadequate routine immunisation programme, which must take over polio immunisation in the long term - Nigeria has the second highest number of children worldwide who have never received a vaccination.

Conclusions

- Nigeria remains crucial for global polio eradication due to the high risks of reoccurrence of polio cases, even after certification as a polio-free country.
- Sustainable success can only be achieved through an improvement in the routine immunisation programme and a significant reduction in the number of so-called "zero-dose" children.
- For supporting the routine immunisation programme, close cooperation between the Global Polio Eradication Initiative (GPEI) and the vaccine alliance Gavi is required at the global level.

Ex-post evaluation – assessment according to OECD DAC criteria

Overview of the rating per criterion:

Relevance	2
Coherence	2
Effectiveness	3
Efficiency	3
Overarching developmental impact	3
Sustainability	3
Overall rating	3

General conditions and classification of the project

Poliomyelitis (polio) is a highly contagious infectious disease that primarily affects children under the age of five. The virus is transmitted through personal contact and is most commonly found in contaminated water. The pathogen attacks the central nervous system, leading to paralysis and sometimes death. The disease is incurable, but infection can be prevented through vaccination.

In 1988, the World Health Organisation (WHO), together with its partners, decided to eradicate poliomyelitis as part of the Global Polio Eradication Initiative (GPEI). Since the establishment of the GPEI, there has been a worldwide reduction in polio cases by over 99%; vaccination campaigns have saved more than 20 million people from paralysis and at least 1.5 million people from death due to polio. The drastically falling polio numbers made it seem possible to completely eradicate the poliovirus with vaccines, especially since the vaccines provide immunity lasting for decades and humans are the only reservoir for the poliovirus. There are three wild polio types: WPV1, WPV2, and WPV3, with WPV2 (2015) and WPV3 (2019) considered eradicated. Additionally, there are vaccine-derived polioviruses. Despite all efforts, the disease has not been completely eradicated to date. Currently, only WPV1 circulates in two polio-endemic countries: Pakistan and Afghanistan. Nigeria was certified polio-free in 2020. Vaccine-derived polioviruses still circulate in more countries.

There are **two types of polio vaccines**, each with advantages and disadvantages:

- An inactivated vaccine (IPV, inactivated polio vaccine): The IPV vaccine is injected and ensures that the vaccinated individuals develop protective antibodies against polio (all three wild types) protecting them from the severe consequences of an infection. However, infection can still occur, for example, through polioviruses ingested through contaminated drinking water. For the vaccinated, this is usually unproblematic, as they remain asymptomatic or have only mild symptoms. However, the pathogens can multiply in vaccinated people and be shed in the intestines, potentially infecting unvaccinated people.
- A live vaccine (OPV, oral polio vaccine): The orally administered OPV vaccine contains specific, attenuated polioviruses (up to three wild types, depending on the vaccine) and has the advantage of being highly effective, low-cost, and easy to administer. In Africa and Asia, oral vaccination with live vaccines is still widely used. The risk of vaccine-induced polio is very low, but this is accepted in favour of ease of administration and cost-effective, widespread immunisation of the population. The vaccine is generally no longer used in polio-free countries.

Following oral vaccination, in which the vaccinated person receives the attenuated virus through oral administration, the vaccine virus can be shed in the stool for several weeks. These viruses can be picked up by other persons in contact with the vaccinated person through smear infections, which can either lead to a "passive" immunisation of the contact person, giving him or her vaccine protection. This effect is considered positive, as it indirectly vaccinates unvaccinated individuals. In rare cases, however, transmission can lead to polio with acute flaccid paralysis (AFP). Because the oral vaccine virus is weakened, the chain of infection usually ends quickly. In people who are under-vaccinated or not vaccinated at all, the weakened oral vaccine virus can circulate undetected for a long time, change, and

eventually cause infections with symptomatic disease and acute flaccid paralysis. Because of the very small number of cases with symptoms, a proven case may be associated with about 200 additional unrecognised infections. The longer the virus circulates, the greater the risk that altered viruses will emerge that can cause symptomatic disease after infection. These viruses are called "**circulating Vaccine-Derived Polioviruses**" (cVDPV). They occur mainly in areas where a high proportion of the population is unvaccinated.

In recent years, infections with circulating vaccine-derived polioviruses, particularly type 2 (cVDPV2), have been a major concern. Following the global switch in vaccination strategy in 2015/16 from trivalent oral polio vaccine (tOPV) to bivalent live polio vaccine (bOPV, containing poliovirus types 1 and 3) plus one dose of inactivated polio vaccine (IPV, containing all three virus types), cVDPV2 outbreaks occurred in 17 countries in 2016. The change in vaccination strategy posed logistical challenges (including supply shortages) for many countries, resulting in vaccination delays and gaps. The use of a new OPV (nOPV), which is genetically more stable than the original OPV2 (i.e. it does not mutate as quickly), is expected to reduce cVDPV2 outbreaks. Since March 2021, more than 600 million doses of nOPV2 have been administered in 28 countries, including Nigeria¹. Infections with vaccine-derived viruses, i.e. the number of cVDPV2 cases, have declined in 2021-2023.

Due to the emergence of WPV1 cases in the security-threatened southern provinces of Pakistan and adjacent districts in eastern Afghanistan, the 2023 eradication target of the current GPEI strategy has not been met and will not be met by 2026. It is also foreseeable that the second major goal of the current GPEI strategy, the interruption of infections with vaccine viruses, will not be achieved. Thus, two major challenges remain to achieve the global eradication goal: (1) high-quality surveillance to detect poliovirus in a timely manner through acute flaccid paralysis (AFP) surveillance and sewage testing; and (2) implementation of effective outbreak response (vaccination in outbreak situations) and high global vaccination coverage to prevent international spread. This is reflected in the current GPEI Strategic Plan 2022-2026, with two main global goals: (1) eradication of WPV1 in the last two endemic countries, Pakistan and Afghanistan, and (2) interruption of cVDPV transmission and prevention of outbreaks in non-endemic countries.

Germany is deeply committed to polio eradication and is one of the three largest government donors to the GPEI. By 2021, the German government had provided USD 772 million in bilateral funding for polio eradication in Afghanistan, India, Nigeria and Pakistan. Since 2020, Germany has been directly supporting the GPEI at the international level with an annual contribution of 35 million euros and has been actively shaping the strategic direction of the GPEI. It is particularly important to ensure that the health structures financed by the GPEI also strengthen national health systems, thereby safeguarding polio eradication in the long term. Support for Gavi, the Vaccine Alliance, is also relevant to polio eradication, and Germany has been and continues to be a major donor to Gavi. Gavi² works closely with the GPEI and makes an important contribution to polio eradication through routine immunisation.

Brief description of the project

The eradication of polio in Nigeria has been supported by German Financial Cooperation (FC) since 2004. With a total of XI phases, the FC programme has made a significant contribution to the national polio eradication programme, which is also funded by other donors, international organisations and the Nigerian government itself. The national polio programme is implemented vertically to directly address polio until eradication is achieved and the routine immunisation programme, including polio, is effectively implemented nationwide.

To date, two ex-post evaluations (EPE) of the FC programme have been carried out: in 2014 for phases II and III (rating 3) and in 2017 for phases IV-VI (rating 2). The objective of the FC polio eradication programme was to interrupt the transmission of polio in Nigeria. The project financed polio surveillance activities, vaccination campaigns and community awareness and mobilisation. In addition, Phase XI supported the deployment of polio programme staff and infrastructure to fight COVID-19 with 5 million euros. As in previous phases, the emergency

¹ This vaccine has so far triggered seven cases of acute flaccid paralysis (AFP) in children in the Democratic Republic of Congo and the Republic of Burundi with evidence of nOPV2.

² The Gavi Immunisation Alliance is a public-private partnership that aims to protect people in developing countries against preventable diseases through immunisation. Among other things, Gavi supports the expansion of national routine immunisation programmes, the introduction of new vaccines and the sustainable financing of immunisation campaigns (source: BMZ Lexicon).

plan targeted all children under five years of age, focusing on the northern states and some 178 Nigerian islands in the Lake Chad Basin, which were poorly reached by vaccination campaigns.

Phases VII to XI, evaluated here, continued financial support for Nigeria's ongoing polio eradication programme from 2016 to 2021. As in the previous phases, the National Primary Health Care Development Agency (NPHCDA) was the project partner, and WHO and UNICEF were the implementing partners. Since the start of support for the Nigerian polio programme, a total of EUR 188.72 million in FC funds has been provided. The design and implementation of the phases evaluated here do not differ, so they are all evaluated together.

Breakdown of total costs

According to WHO and UNICEF, the total expenditure of the Nigeria Polio Eradication Initiative (PEI) between 2016 and 2021 (Phases VII-XI) is about EUR 762.3 million. The FC contribution over the period amounted to EUR 97.22 million, corresponding to around 13% over the years, with annual contributions fluctuating up to 34% in 2020. In Nigeria, in addition to FC, the World Bank, the Bill and Melinda Gates Foundation (BMGF), the European Union (EU), Canada, USAID, DFID (UK), Rotary International and the CDC (USA) have co-financed the activities of the national emergency plan.

The annual investment costs and Nigerian counterpart contributions were provided by WHO and UNICEF on request during the EPE, from which the total external financing was derived. An average exchange rate of USD 1.15 per EUR for the years 2016 to 2021 was used to convert the reported USD to EUR. Funds are reported for the years of their predominant implementation, but were mostly disbursed in the previous year.

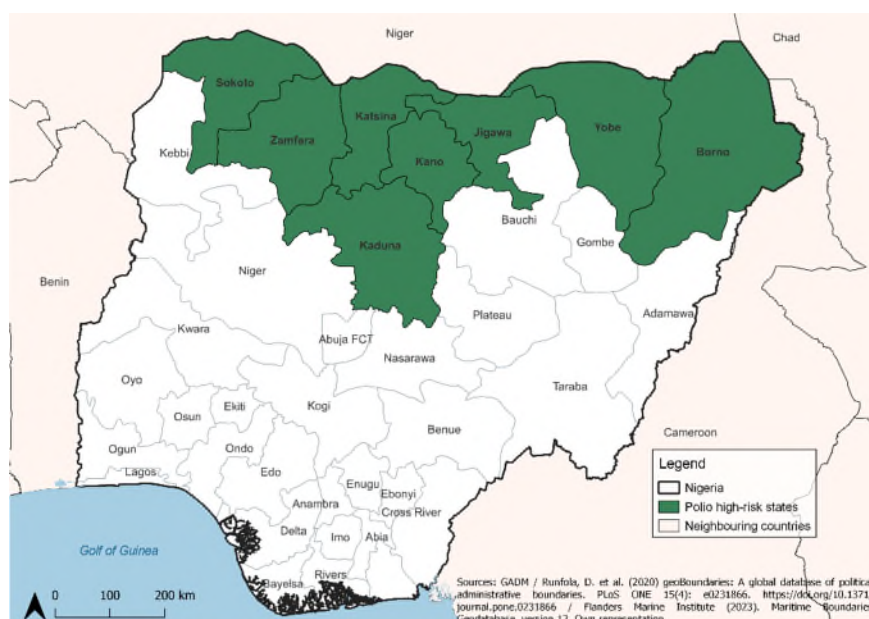
	2016 (planned) actual	2017 (planned) actual	2018 (planned) actual	2019 (planned) actual	2020 (planned) actual	2021 (planned) actual
Phase	VII	VII / VIII	IX	X	XI	XI
Total cost	(264)	(159,5)	(129,5)	(99,9)	(98,7)	(105,9)
EUR million	199,9	151,3	132,8	125,4	78,3	74,6
Counterpart contribution EUR million	38	26,6	14,3	18,8	3,8	2,9
Financing EUR million	162	124,7	118,5	106,6	74,5	71,7
of which BMZ funds EUR million	5,0*	15,02	29,9	15,5	26,8	5,0**

*The EUR 10 million for phase VII was split equally between 2016 and 2017

**these EUR 5 million were pledged as a top-up in the context of the COVID pandemic

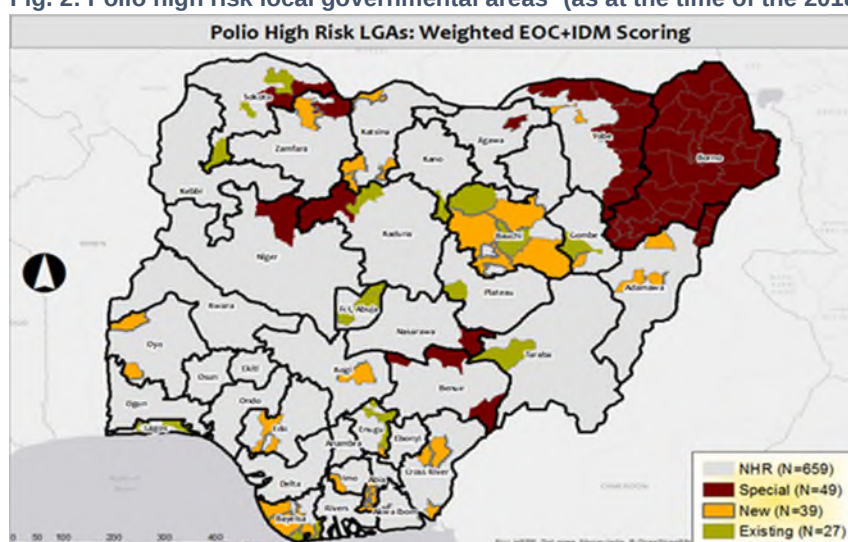
Map of the project country incl. project areas

Fig. 1: Map of polio high-risk states in Nigeria (status at the time of the 2013 audit)



Source: Marking of polio high-risk countries according to WHO³ data, own illustration

Fig. 2: Polio high risk local governmental areas⁴ (as at the time of the 2018 audit)



Source: 2018 NPEEP: Polio Highrisk LGAs

Rating according to OECD DAC criteria

³Polio high-risk states referred to the high-risk states in northern Nigeria (with a total of 296 LGAs), where polio was endemic for a long time.

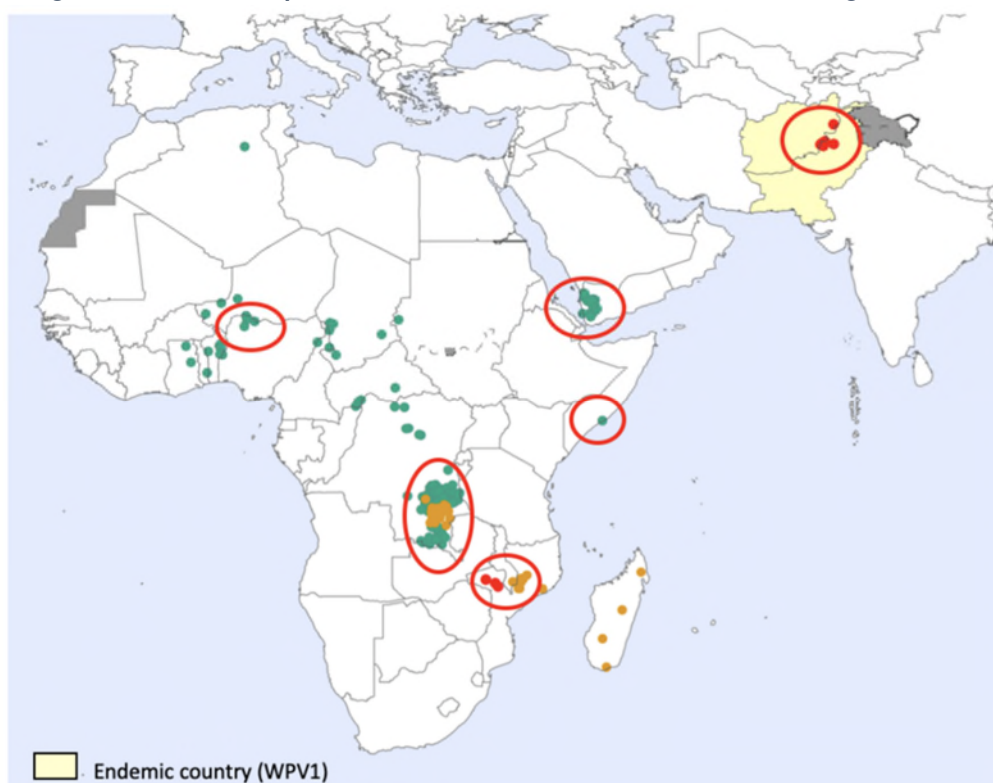
⁴ The 115 current polio high-risk districts (LGAs) were identified at the beginning of 2018 by the National Polio Emergency Operation Centre (EOC) and the Institute of Disease Modelling (IDM). This categorisation includes both LGAs in the northern high-risk states and LGAs in the south of the country, where the polio risk is elevated.

Relevance

1. Alignment with policies and priorities

At the beginning of the review period, 2016-2021, Nigeria was one of three countries in the world, along with Afghanistan and Pakistan, where the poliovirus was still endemic, making it critical to achieving the global goal of polio eradication. Since 2016, no wild polio cases have been reported in Nigeria, and in 2020, Nigeria was certified polio-free by the WHO. However, Nigeria remains one of the countries with the highest number of outbreaks of vaccine-derived viruses. During the evaluation period and to date, Nigeria has experienced significant outbreaks of circulating vaccine-derived viruses. Nigeria is one of the seven areas defined by the GPEI to account for 90% of new polio outbreaks (wild and vaccine-derived) worldwide (see Figure 3), with wild poliovirus endemic only in Afghanistan and Pakistan. All of these "high impact geographies" are characterised by a high proportion of children who have never been immunized or whose immunization status is inadequate (known as "zero-dose children"). This is often due to insecurity or other humanitarian crises that prevent access to communities. Even after the wild-type virus has been eradicated, Nigeria remains a key country for global polio eradication because of the insecurity in the northern part of the country caused by the activities of the Islamist terrorist group Boko Haram, which is also active in neighboring Chad, Niger and Cameroon. Boko Haram attacks have caused significant destruction and loss of life in Nigeria. In 2016, the World Bank estimated the damage in the affected region at nearly USD 6 billion and reported more than two million refugees and displaced persons. In the worst-affected state of Borno, around 30% of all private homes were destroyed, along with more than 500 educational facilities and over 200 health facilities. The conflict continues today and has claimed many more victims during the reporting period, including health workers and vaccinators.

Fig. 3: '90% of all new polio cases worldwide are in the most affected regions'



Source: GPEI Publikation vom 24.01.2023: „2023 – zero-dose children in seven subnational consequential geographies hold key to success – GPEI“

Health is not a focus of German Development Cooperation with Nigeria, which is why there is no overarching development programme. However, the project is embedded in the global fight to eradicate polio: The international donor community, in collaboration with the NPHCDA, has developed the annually updated Nigerian Polio Eradication Emergency Plans (NPEEPs) for the implementation of the global endgame strategy to eradicate polio. As in the previous phases of the FC programme, phases VII-XI contributed to the financing of the respective NPEEPs.

In addition to nationwide routine vaccinations, which are financed through the Nigerian budget (with support from Gavi), NPEEPs include nationwide and regional Supplemental Immunization Activities (SIAs), which were primarily financed by donors and partially through bilateral FC within the framework of the GPEI. According to the 2014 evaluation report for Phase VII, the geographical focus of the supplemental immunization activities was on the 8 northern high-risk states (see Fig. 1) and according to the 2018 evaluation report on the 178 Nigerian islands in the Lake Chad basin, where polio was endemic until 2016, as well as on the 115 districts (so-called Local Government Areas, LGAs) with particularly high risk of polio transmission (see Fig. 2).

The project was embedded in the global fight to eradicate polio: The international donor community, in collaboration with the Nigerian health authority (NPHCDA), developed the NPEEPs for the implementation of the global endgame strategy to eradicate polio. The plans were continuously adapted depending on epidemiological, security-related, and financial developments.

A positive impact was that in Nigeria, the political will to eradicate polio was strong, and the certification as a polio-free country had high political priority. This was demonstrated by the establishment of the President's Taskforce on Polio Eradication (PTFoPE), composed of governors from states with high polio risk (so-called high-risk states), as well as the establishment of the National Polio Emergency Operation Center (NEOC) in 2012. The continuous development and implementation of the annual NPEEPs also reflected the importance attributed to polio eradication. However, there are indications that after achieving certification as a polio-free country in 2020, political support at both the national and federal state levels decreased, and thus the mobilisation of financial resources at both the national and international levels dwindled (see table "Breakdown of Total Costs", counterpart contributions).

With the financial participation of German FC in polio eradication in Nigeria, a global problem was addressed; because with every polio infection occurring worldwide, there is a risk of spreading to other countries and the outbreak of a cross-border epidemic. Thus, the FC project corresponded to the strategic goals of German development policy in the health sector, to prevent the transmission of epidemics and diseases worldwide and to combat communicable diseases globally. In addition it is part of Germany's support for the GPEI as its third-largest governmental donor. Furthermore, the financial participation also contributed to the Agenda 2030, particularly to Sustainable Development Goal 3 (Good Health and Well-being).

2. Alignment with the needs and capacities of the beneficiaries and stakeholders

According to UNICEF estimates, approximately 31 million children under the age of 5 lived in Nigeria in 2016. These formed the general target group of the project. The specific target group of the project were children living in the high-risk states classified by WHO Nigeria. High-risk states, primarily characterized by low routine immunization rates and a predominantly volatile security situation, have an increased risk of polio outbreaks. The selection was made solely based on age, without regard to income, gender, or ethnic affiliation. Indirectly, the entire population of the country and the population of neighboring countries benefit from this, as the spread of vaccine-derived viruses from Nigeria to African neighboring countries has shown. Since the introduction of polio can occur worldwide, the support for the eradication of polio in Nigeria is to be considered a global good.

The relevance is somewhat relativized by the health priorities of the target group. Given the prevalence and disease burden of other diseases (e.g., malaria, measles, whooping cough) and the fundamental health problems in Nigeria, the goal of eradicating the poliovirus has a rather subordinate priority for the immediate target group. Nigeria has one of the highest child mortality rates worldwide (e.g., 2020: 114/1,000 live births), with polio accounting for a barely measurable share. However, given the global approach of the program, this does not weaken the relevance.

From the beginning of the observation period to today, the capacities of the partners have been shaped by challenges in the area of governance. In the Corruption Perception Index (CPI), Nigeria slipped from 136th place out of 180 countries in 2016 to 154th place in 2021. Nigeria's political environment and administrative bodies are characterized by a lack of transparency, corruption, and actors pursuing self-interests.

Furthermore, Nigeria's federal administrative system, with pronounced autonomy of the states, complicates the management and coordination of nationwide vaccination campaigns by the central government. The persistently low political engagement of governors and chairpersons in some high-risk areas poses a particular challenge for polio eradication measures.

3. Appropriateness of design

To achieve the goal of global polio eradication, it is a priority to interrupt transmission in endemic countries, which included Nigeria until 2020 (Impact). If over 80% of the target group is vaccinated, herd immunity is created, making the transmission of polioviruses highly unlikely. Therefore, the goal of the Nigerian polio eradication programme and the FC measures at the outcome level was and is to increase vaccination rates through special vaccination campaigns and thereby interrupt the transmission of the virus. At the same time, closing vaccination gaps and increasing basic immunisation should prevent or hinder the emergence or transmission of vaccine-derived polioviruses. Surveillance measures to detect and control acute flaccid paralysis and environmental samples should monitor the spread of the viruses and trigger an immediate response with vaccination campaigns. Through vaccination and monitoring, a vaccination coverage should be achieved that protects the population and interrupts the further spread of polioviruses at the international level (Impact level). This chain of effects is plausible even from today's perspective and is in line with WHO recommendations.

The chosen indicators were appropriate in their entirety: (1) vaccination coverage in special vaccination campaigns, and additionally, during evaluation, the following indicator for monitoring the polio situation was newly included (2) the rate of non-polio-associated AFP at the outcome level. At the impact level, success is measured by the absence of new polio infections caused by wild viruses in Nigeria. The design of the Nigerian polio programme, which is updated annually in the NPEEP, is fundamentally suitable in technical, organisational, and financial terms to contribute to national and global goal achievement. For sustainable successful polio eradication, routine vaccinations in Nigeria—as well as worldwide—must be consistently and comprehensively carried out. Polio vaccinations have been part of the routine vaccination programme in Nigeria for many years; Nigeria was even one of the first countries to integrate the inactivated polio vaccine (IPV) alongside the oral polio vaccine (OPV) in 2015⁵. However, the coverage of the routine vaccination programme is particularly insufficient in high-risk areas. According to estimates by WHO and UNICEF, the number of children under 5 years who have not received any vaccination is approximately 2.5 million (zero dose children). This number remained largely constant during the observation period and until today, which, given the population growth in Nigeria, at least represents a partial success of the routine vaccination programme. Nevertheless, the special vaccination campaigns within the framework of the evaluated polio programme remain significant for interrupting (vaccine-derived) polio transmissions until routine vaccinations achieve sufficient coverage of the population.

Since Nigeria's health system has significant deficiencies and the routine vaccination programme does not provide sufficient coverage, the chosen design as a vertical programme for the efficient provision of polio vaccines was appropriate and indispensable for the purpose of the intended vaccination coverage of all children under five years for the national special vaccination campaigns as well as the reactive campaigns for cVDPV outbreaks. WHO and UNICEF were suitable cooperation partners thanks to their normative power, technical expertise, and long-standing experience with globally coordinated and internationally funded polio eradication programmes. The implementation structure essentially corresponds to all previous FC projects for polio eradication worldwide (besides Nigeria, Pakistan, India, and Afghanistan were supported with bilateral funding within the framework of the GPEI), for which a total of 772 million USD has been provided and implemented by the federal government for polio eradication.

4. Adaptability – response to change

During the observation period of the FC co-financing, the Nigerian polio programme had to respond to frequently changing security situations in high-risk areas and developed partly innovative strategies to reach all or as many children as possible within the framework of vaccination campaigns. Additionally, it had to react to various cVDPV2 outbreaks with special vaccination campaigns.

The challenges that have changed over the period, in particular the prevention of new cases of wild-type polio and the containment of vaccine-induced polio outbreaks, have been effectively addressed overall. The FC project supported the necessary flexible use of resources in that there was no specific "earmarking" of funds, and the implementation partners, under the coordination of the national health authority and within the respective areas of work and responsibilities of WHO and UNICEF, could react quickly with the FC co-financing if necessary.

Rating summary:

⁵ The current polio vaccination schedule in routine immunisation: IPV 6th and 14th week; OPV birth, 6th, 10th and 14th week.

The project addressed the core problems of polio eradication in Nigeria and its implications for the global eradication of polio with an appropriate design and using an established implementation structure. The project was relevant both at the time of appraisal and from today's perspective.

Relevance: 2 (for all phases)

Coherence

5. Internal coherence

Health is not a focus of German Development Cooperation with Nigeria, which is why there is no overarching development programme. However, Germany is intensively involved in the global fight against polio and is one of the three largest governmental donors to the GPEI. By the end of 2021, the federal government had provided 772 million USD in bilateral funds for polio eradication, not only for Nigeria but also for programmes in Afghanistan, India, and Pakistan. A consistent principle of this funding is the co-financing of the implementation of polio eradication programmes developed at the national level within the framework of the GPEI. For sustainable success in polio eradication, strengthening the respective national routine immunisation programmes is necessary, which is also supported by German Development Cooperation through the global vaccine alliance Gavi. Based on the experiences of the FC programmes, the BMZ has pointed out the importance of institutional collaboration between GPEI and Gavi to strengthen routine immunisation in the relevant committees. Gavi is now a formal member of the GPEI, and there is a detailed cooperation plan for the endemic countries Pakistan and Afghanistan, as well as for countries with increased outbreak risk, including Nigeria.

The project contributes to the realisation of the human right to health and is aligned with the SDGs and the GPEI's global strategy for polio control and eradication, currently the Polio Eradication Strategy 2022-2026: Delivery in a Promise.

Vaccinations are indisputably essential measures to protect the life and health of the target group. The WHO estimates that since 1988, more than 20 million cases of paralysis and approximately 1.5 million deaths have been prevented worldwide through polio vaccinations. Polio vaccinations directly protect the target group, prevent national and regional spread, and serve the global goal of eliminating this disease. The GPEI provides a coherent global framework that guides the national polio programme, and established structures were utilised in the project. The implementation partners, WHO and UNICEF, commissioned and coordinated by the national health authority, ensured the coherence and stringency of the national polio eradication efforts with the global programme and its surveillance and monitoring system. This was particularly crucial for Nigeria as one of the last remaining endemic polio countries. Furthermore, the existing basic health structures in Nigeria would not have been capable of implementing the polio programme.

The Nigerian counterpart contribution primarily involved the participation of health authority staff and subordinate authorities in the campaigns conducted. Additionally, the Nigerian government made significant expenditures for the security of vaccination personnel during the campaigns. Overall, the counterpart contribution averaged 5-10% of the annual total costs but significantly decreased during the observation period after the eradication of the WPV1 virus.

The Nigerian Polio Eradication Initiative (PEI) was advised at the national level by the Technical Advisory Group (TAG); furthermore, international experts from the Independent Monitoring Board (IMB) played an advisory role, which was commissioned in 2010 by the Executive Boards of the WHO and the World Health Assembly to review the progress and achievements of the GPEI. The 23 reports to date include special sections for the endemic countries (currently still Afghanistan and Pakistan), as well as the most important countries in the transition phase⁶, including Nigeria. The status report of the Nigerian polio programme and the recommendations in the current IMB report reflect the analysis of the world's most competent experts in the field of polio eradication and is likely the most objective source for assessing the course of polio eradication in Nigeria and its perspective.

⁶ The transition phase concerns the two countries that are still endemic and the countries with an increased risk of outbreaks, to which 90% of GPERI resources are channelled. The critical infrastructure established for polio control is to be maintained and integrated into the health system to strengthen routine immunisation, surveillance and the ability to respond to new outbreaks.

Rating summary:

The support for the Nigerian vaccination programme was not linked to other measures of German Development Cooperation, and there was no direct influence from the FC regarding programme management. However, on a global level, the experiences from Nigeria (as well as from Pakistan and Afghanistan) were incorporated by the BMZ into the discussion of future GPEI strategies. Due to Nigeria's significant contribution to achieving the global goal of polio eradication, the integration into the GPEI and the use of its established implementation structures was indispensable.

Coherence: 2 (for all phases)

Effectiveness

7. Achievement of (intended) objectives

The adjusted objective at the outcome level within the framework of the EPE were the consistent immunisation of all children under 5 years against poliomyelitis and the use of a functional surveillance and monitoring system. The achievement of the targets is summarised in the following table

Outcome Achievement Table:

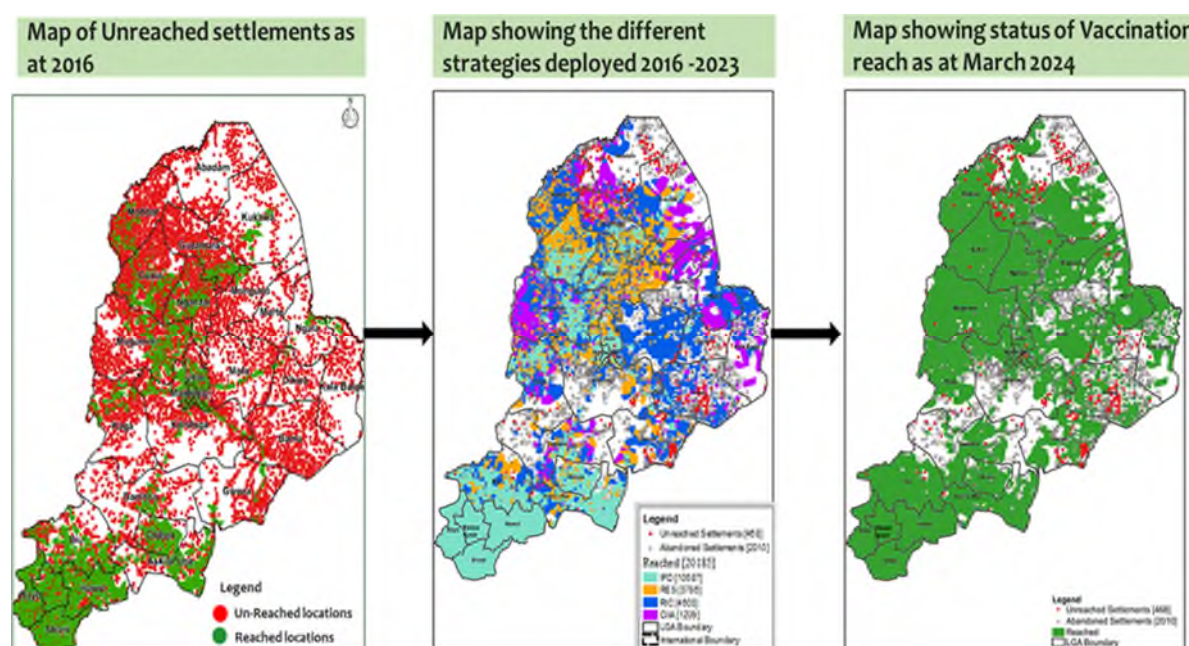
Indicator	Status at PA	Target value at PA/ at EPE	Actual value at final inspection	Actual value for EPE
(1) Supplemental Immunisation Activities (SIAs) achieve polio vaccination coverage of >90% of children under 5 years of age in at least 85% of all LGAs and in at least 90% of high-risk LGAs.	2017: On average, 74% of all LGAs and 86% of high-risk LGAs have >90% immunisation coverage 2019: 74% of all LGAs and 86% of high-risk LGAs >90%	SIAs achieve polio immunisation coverage of >90% in at least 85% of all LGAs and at least 90% of high-risk LGAs	2021: 98.1% of all LGAs and 95.7% of high-risk LGAs have >90% vaccination coverage	2023: 89% of all LGAs and 85% of high-risk LGAs have >90% vaccination coverage Fulfilled with regard to LGAs Not fulfilled with regard to high-risk LGAs
(2) The rate of non-polio-associated AFP (NPAFP) is >3/100,000 in children under 15 years of age...	2017: 19,6 2019: 7,4	>3/100.000	2021: 6.9	2023: 10,4 Value Fulfilled

The WHO uses the Lot Quality Assurance Sampling (LQAS) to verify the effectiveness of vaccination campaigns, estimating the number of children reached based on results from samples of smaller groups (lots). Due to outdated state population data, LQAS provides relatively more reliable statements about vaccination coverage compared to government data. During the implementation period of the evaluated phases from 2016 to 2021, a 90% vaccination coverage of the target population was gradually achieved in almost all (98%) of Nigeria's administrative Local Government Areas (LGAs) (see Indicator 1). Subsequently, successes have declined, which can be attributed, among other things, to the diversion of capacities in the context of the COVID-19 pandemic and increasing security problems, especially before the 2023 elections, as well as a general decline in prioritisation for polio in Nigeria.

The increased immunisation rates in recent years and the absence of new wild polio cases demonstrate the success of the Nigerian polio vaccination programme with its special vaccination campaigns and numerous measures to improve accessibility and coverage. The number of children who remained unreached until August

2016, particularly in the high-risk areas in the northeast of the country, decreased from over 600,000 to 70,000 in 2018, around 60,000 in January 2019, and about 34,000 by the end of 2019, representing a reduction of 94%. The missed children during Supplemental Immunisation Activities (SIAs) remained unchanged at 1% for door-to-door household campaigns and 2% for other SIAs from 2017 to 2023. The following figure, provided by the WHO office in Nigeria as part of the evaluation, exemplarily shows the development of accessibility for vaccination campaigns in Borno State during the observation period. While in 2016, the majority of settlements could not be reached (red points), the proportion of unreachable settlements was significantly reduced by 2024 through various strategies over the years 2016 to 2023.

Fig.4: Inaccessible settlements in Borno State, Nigeria 2016 to March 2024



Source: Communication with WHO headquarters in Geneva and WHO office in Nigeria as part of the evaluation

The politically and militarily precarious situation in northern Nigeria has posed and continues to pose an ongoing challenge. The increasingly worsening security situation in high-risk areas crucial for polio eradication and the accompanying access difficulties to the immediate target group of children under 5 years hinder the comprehensive implementation of the programme and vaccination campaigns. Every year, there are reports of vaccination workers and accompanying security personnel being attacked, kidnapped, or killed – this also occurred during the implementation period of the FC projects.

These challenges are addressed with specially adapted campaigns, or vaccination actions in particularly insecure areas are fully delegated to the military (Reaching Inaccessible Children, RIC). The security forces were trained by WHO in health-related and human rights issues. Monitoring of interventions carried out by the military by WHO was only partially possible due to confidentiality reasons. For example, GPS tracking of the forces was used in some cases but could not be utilized comprehensively. According to WHO, there have been no complaints related to the use of security forces in vaccination measures since 2016.

Additionally, increasingly specific measures were taken to locally adapt and enhance effectiveness. As soon as the security situation allowed, short and intensive campaigns in the sense of "Hit and Run" were launched. Vaccination belts were established around inaccessible areas. Vaccination actions in refugee camps, border crossings, and public transit points accounted for the migration movements of the population. With the Reaching Every Settlement (RES) strategy, vaccination teams were accompanied or protected by members of the civilian Joint Task Force (cJTF). Better training and monitoring of vaccination workers potentially increased the effectiveness of vaccination campaigns. To increase acceptance of vaccination campaigns, traditional and religious leaders were involved, awareness and mobilization campaigns were conducted, and further basic health services were offered to the extended household of the core target group.

While most of these strategies were developed and applied in previous phases, digital technologies were particularly developed or further developed during the observation period to increase the quality and effectiveness of vaccination coverage and surveillance (AFP and environmental). Geographic Information Systems (GIS) and

electronic data transmissions from the field enable evidence-based and systematic monitoring and case search in real-time. Data is collected and transmitted via smartphones by special community members and health personnel. Activities are visualized in maps for analysis purposes using GIS data (GIS mapping). Special applications were developed for monitoring vaccination activities, AFP identification and clarification, and environmental surveillance, which can also be used for other diseases: Auto Visual AFP Detection And Reporting⁷ (AVADAR) serves AFP monitoring in the field by showing the informant a video on AFP weekly and then indicating whether a child with corresponding abnormalities has been seen that has not yet been reported; upon AFP reporting, the reporting officer is directly informed and clarification is initiated. The eSURV (electronic surveillance) platform developed in Nigeria serves real-time monitoring of field activities and facilitates the detection of areas with missing reporting and inadequate surveillance. The Integrated Supportive Supervision (ISS) programme improves the quality of work in the field. The vaccination coverage of the campaigns is also subjected to quality control in electronic LQAS.

The backbone of the Nigerian polio programme are the female vaccination workers, who usually have better access to households than male vaccination workers. Nigeria has committed to empowering women in the polio programme, so more than 80% of frontline staff are female; overall, 90% of vaccination personnel are female. On the one hand, the polio programme offers income opportunities, on the other hand, vaccination workers, especially in high-risk areas, are exposed to significant security risks, which lead to the death of vaccination and security personnel every year. On the target group side, vaccination campaigns aim to fully reach all girls in the risk states. To achieve vaccination coverage, great emphasis is placed on addressing mothers in awareness and sensitization campaigns and convincing them of the importance of polio vaccination. Women and mothers thus play a special role in successful polio eradication. Additionally, mothers benefit particularly from the eradication of polio, as sick children are usually cared for and looked after by mothers.

For a transition of polio immunization and surveillance from the vertical structures of the PEI to the structures of routine immunization, the expansion of routine immunization and basic health care as a central structure is still lacking. Despite all efforts, according to WHO, in 2021, only 14% of children in some high-risk states received immunization through routine vaccinations of the state health system. The report of the Independent Monitoring Board (IMB) of the GPEI from September 2023 estimates that in 48,000 settlements, especially in the northwest of the country, about 4.9 million children are difficult to reach with vaccination programmes. The report further states that although 400,000 of the zero-dose children were recently reached, there are still 2.5 million children in Nigeria who have not received any vaccination (neither polio nor other routine vaccinations). Thus, Nigeria is home to half of all zero-dose children on the African continent⁸.

A crucial pillar of polio eradication is the comprehensive monitoring of polio events through the identification of acute flaccid paralysis (AFP) and environmental samples. The monitoring measures were also partially supported by the FC. Indicator 2 for monitoring the sensitivity of **AFP surveillance** states that the monitoring of acute flaccid paralysis must be comprehensive and AFP cases must always be screened for polio. The goal is to immediately identify all polio cases, isolate them, and protect the environment with special vaccination campaigns. The international target value is that with good AFP surveillance, at least 3 cases of non-polio-induced acute flaccid paralysis are diagnosed annually per 100,000 children under 15 years of age, regardless of the polio situation. In suspected cases, 2 stool samples (minimum interval of sample collection 24-48 hours) should be sent to the polio examination centers within 14 days of the onset of the disease for virus isolation⁹.

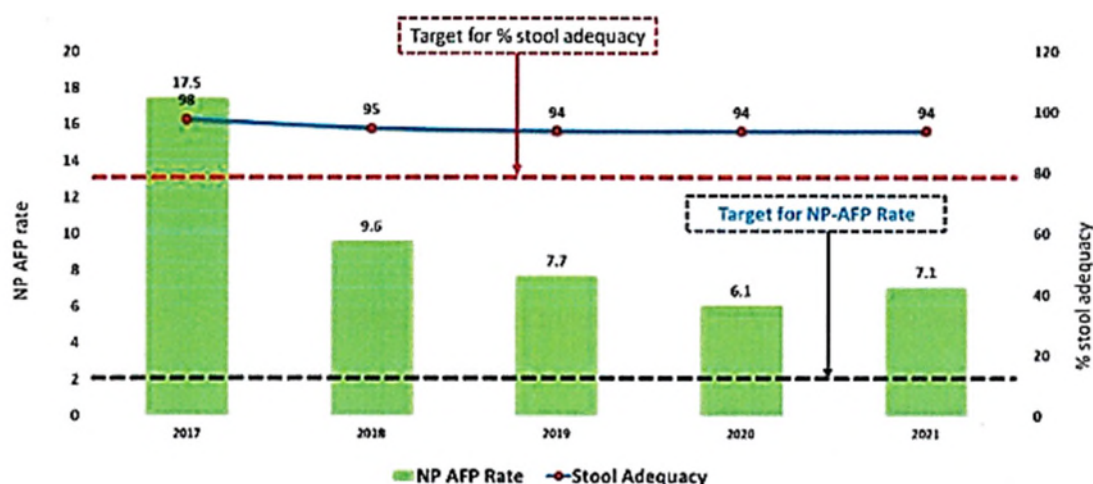
In 2020, the absolute number of non-polio-induced paralysis cases detected was slightly declining with 3,351 compared to 3,631 in 2019. It is assumed that the declining case rate is more likely due to the additional personnel commitment of the polio programme in the area of COVID-19 and the partially interrupted access to certain surveillance areas due to security concerns than an actual overarching decline in the occurrence of AFP. The following figure 5 shows the rate of non-polio-induced acute flaccid paralysis (non-polio AFP rate) from 2017 to 2021. The percentage of cases with early stool samples and timely transport was above the WHO minimum value of 80%.

⁷ Electronic reports are submitted by individuals in the community via the app, extending the monitoring network beyond healthcare professionals.

⁸ 22nd Report of the Independent Monitoring Board of the GPEI

⁹ The correct stool examination procedure is measured using the 'stool adequacy' indicator, which should be at 80%.

Fig. 5: AFP surveillance during the observation period of the FC projects



Source: NPHCDA, Technical Report, submitted to KfW in 2022

8. Contribution to the achievement of objectives

According to figures provided by WHO and UNICEF, the FC financing accounted for 17.4% of the total costs of the Nigerian Polio Programme during the implementation years 2016 to 2021 (Phase VII-XI). The FC funds were used for co-financing and implementing the Nigeria Polio Eradication Emergency Plans (NPEEPs) from 2016 to 2021 and were channelled into the activities of WHO and UNICEF, in line with the established and coordinated division of labour between the two implementing partners.

The Nigerian Polio Programme, partially financed by the FC, primarily focused on Supplementary Immunization Activities (SIAs) and outbreak response campaigns (ORCs) to contain polio outbreaks. Between 2017 and 2021, approximately 1.16 billion polio vaccine doses were administered in 105 national and subnational vaccination campaigns. During planned supplementary immunization campaigns, additional vaccinations against other relevant infectious diseases were frequently offered (known as Immunization Plus Days).

For the preparation, coordination, implementation, and evaluation of the vaccination campaigns, WHO recruited approximately 2,000 staff and over 1,400 local consultants, as well as identified, trained, coordinated, and supported around 89,000 vaccination helpers at the community level with 200 project vehicles. Each year, WHO processes an average of 2.4 million financial transactions for personnel services within the framework of the vaccination campaigns. Payments were made directly and electronically to the recipients' bank accounts (Direct Disbursement Mechanism).

The procurement and distribution of polio vaccines were organized and managed by UNICEF. Vaccines were delivered by air freight and initially stored in Abuja at the National Strategic Coldstore. From there, the vaccines were distributed quarterly to 6 regional warehouses and then, also quarterly, to the 37 warehouses of the federal states. From these, 774 warehouses of the Local Government Areas (LGAs) were supplied monthly, from which health facilities were provided as needed.

In general, there was no "earmarking" of the FC funds, allowing them to be used flexibly and situationally as needed. This included, in addition to the implementation and preparation of supplementary immunization campaigns, monitoring measures, technical support, communication measures, and transition activities for the shift from the emergency plan to routine programmes.

9. Quality of implementation

The political coordination of the polio programme took place at the highest level among partners within the framework of the Presidential Task Force on Polio. However, after Nigeria was certified as a wild polio-free country in 2020, the Task Force's role was perceived by some development partners as somewhat neglected. The Inter-Agency Coordination Committee, chaired by the Nigerian Health Minister, ensured coordination among various national actors, while technical committees such as the Expert Review Committee oversaw the implementation. The actual implementation—the operational core of the polio programme—was ensured by strategic and

technical working groups of the National Emergency Operation Centers (NEOC), which were complemented at the state level by additional operation centers down to Ward Health Committees at the lowest administrative level of the health system. Furthermore, progress and achievement of goals regarding the implementation of the fight against polio are regularly monitored by the Independent Monitoring Board (IMB) of the GPEI.

To ensure high quality of vaccination campaigns, an Accountability Framework was developed for WHO personnel, which was used for monitoring and controlling accountability down to each individual actor in the vaccination campaigns. By developing clear operational procedures and carefully selecting process and outcome indicators, an effective instrument was established through which the performance of each actor was evaluated and, if necessary, follow-up actions were initiated. Verification of information sources was ensured through external observers and various evaluation tools.

Although the project was conducted in a fragile context, a dual objective was not established within the framework of the ex-post evaluation. The approach did not aim to address the fragile context per se. However, the vertical approach of the project, for which UNICEF and WHO were responsible, was implemented sensitively to conflicts by seeking continuous dialogue with religious influencers and local opinion leaders to increase acceptance of polio vaccinations. The contribution to building efficient state structures in the public health sector and strengthening the health system is relatively minor; the Nigerian counterpart contribution primarily served the safety of vaccination personnel and not the reduction of conflicts.

Regarding implementation quality, it is positively noted that the AFP surveillance system in Nigeria has proven to be robust and reliable; the environmental surveillance, i.e., virus isolation from environmental samples, is also efficient and effective. It serves as an important early warning system for impending outbreaks of both WPV1 and cVDPV2. The surveillance system is overall a crucial pillar for achieving the eradication goal.

10. Unintended effects (positive or negative)

The increase in Phase XI by EUR 5 million provided a financial contribution to support the fight against COVID-19 in Nigeria through the national polio programme. The NEOC was temporarily transformed into a national coordination centre against COVID-19. Almost all personnel of the polio programme at national, federal, and local levels temporarily dedicated themselves to combating COVID-19. Polio vaccination campaigns were temporarily suspended, and instead, community helpers from the polio programme supported vaccination measures against COVID-19 and conducted awareness campaigns regarding COVID-19. The analysis of COVID-19 tests was supported by two laboratories of the polio programme. Overall, COVID-19 in Nigeria could have been far less effectively combated without the existing infrastructure of polio eradication, particularly laboratories and an elaborate vaccine logistics system. In the past, the capacities of the polio surveillance system have been repeatedly used to detect other disease outbreaks such as Ebola and Lassa fever. It is expected that the polio surveillance system, especially environmental surveillance (ES), will continue to be significant for the Nigerian health system in pandemic prevention and control.

It should also be noted that the pandemic-related suspension of polio vaccination campaigns and the focus of polio programme personnel on combating COVID-19 contributed to the increase in circulating vaccine-derived polioviruses due to expanding polio vaccination gaps.

The developments in digital technologies from the polio programme to improve vaccination coverage and surveillance (including GIS Mapping, AVADAR, e-SURV) were successfully used in Nigeria to combat other diseases (e.g., Lassa fever, yellow fever, COVID-19) and through technology transfer via WHO and UNICEF in other countries as well. **Rating summary:**

Significantly improved vaccination rates of the target group, especially in high-risk areas, have contributed to sustainably interrupting WPV1 transmission. Since reliable data is only available in the LGAs where campaigns can be conducted, the extent of accessibility in high-risk regions must also be considered for indicator evaluation. Here, too, a positive development was evident thanks to the deployment and further development of established strategies. It is limiting to say that the quality and effectiveness of vaccination actions and the surveillance system have deteriorated again, mainly due to the impacts of the COVID-19 pandemic; this is likely also true for the already inadequate and patchy routine immunisation programme.

Effectiveness: 3 (for all phases)

Efficiency

11. Production efficiency

The production efficiency, meaning the cost-minimal achievement of results, is difficult to assess as only data from other countries are available for comparison. Costs per vaccination cannot be determined due to the data situation; these would also need to be assessed context-specifically due to the partly precarious security situation in northern Nigeria, as additional costs arise for the transport and protection of vaccination teams.

UNICEF (responsible for the distribution of approximately 60% of the global vaccine supply) and WHO were very competent partners for cooperation with long-standing experience in the efficient use of resources in globally coordinated and internationally funded polio eradication programmes. The handling fees were 7% for WHO and 5% for UNICEF. This was in line with comparable FC projects in Pakistan, Afghanistan, and India and can be considered appropriate.

Potential for increasing production efficiency arises particularly in the coordination and gradual integration of polio eradication into the routine immunisation programme—while simultaneously strengthening the structures of basic health and maintaining the fundamental pillars of polio eradication, such as surveillance and outbreak response capability. This transition process, which has been ongoing since 2015, is proving to be lengthy and arduous, so the expected efficiency gains from enhanced coordination and integration have not yet been realised.

Significant delays in the implementation of FC funds, which were disbursed in a single tranche to WHO and UNICEF in both phases, were not observed. This was partly because the FC co-financing funds could be used flexibly within the framework of the division of labour by WHO and UNICEF.

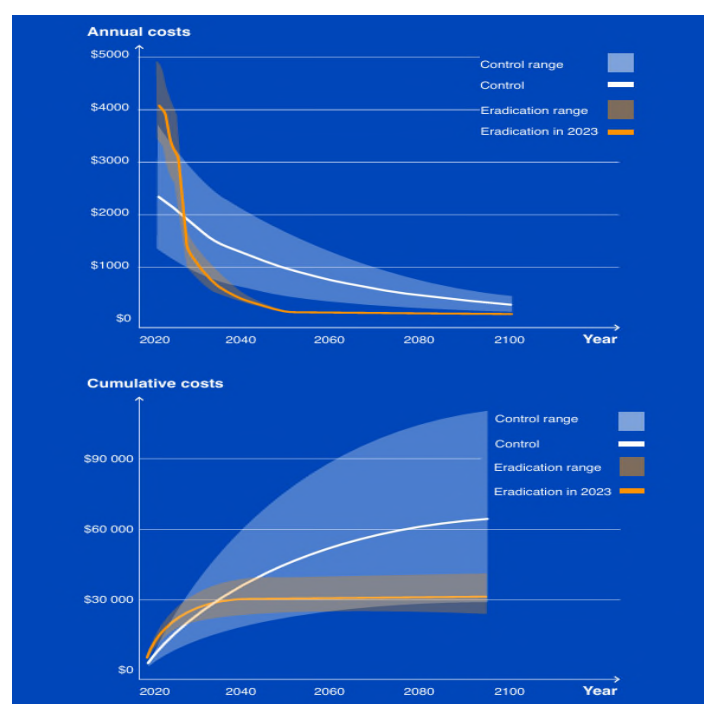
12. Allocation efficiency

Current global cost-benefit analyses of measures to interrupt polio infections within the framework of the GPEI showed, under the assumption that polio would be eradicated by 2023, a net benefit of USD 28 billion. An earlier cost-benefit analysis from 2010 calculated a net benefit of USD 47 billion under the assumption that the eradication goal would be achieved by 2012. The decline in the expected net benefit is due, on the one hand, to the delayed success of eradication and, on the other hand, to higher costs for altered and adapted vaccination strategies, such as the increased use of inactivated polio vaccines (IPV) and novel OPV (nOPV), which are genetically more stable.

It should also be noted that the aforementioned analysis, which was conducted before the COVID-19 pandemic, did not include non-polio-specific benefits that arose—in the case of COVID-19—for pandemic control and prevention. Furthermore, the current GPEI Polio Eradication Strategy pursues a holistic approach that also includes non-polio-specific results and impacts, such as health system strengthening, integrated services, and gender equality.

An alternative scenario to polio eradication would be to maintain or control polio infections at a low level. However, analyses by the GPEI show that with current investments according to the current GPEI needs for polio eradication, cumulative savings of over USD 100 billion can be achieved by 2100 compared to a control scenario (see Fig. 6).

Fig. 6: Annual total costs and cumulative costs for an eradication scenario vs. a control scenario (USD in millions, 3% annual discount rate)



Source: GPEI Investment Case 2022-2026: Investing in the promise of a polio-free world

Globally, given Nigeria's role in achieving the global eradication goal, investment in the Nigerian polio programme is of extreme importance. This allocation efficiency is not equally given from a national perspective and from the perspective of the immediate target group. The disease burden from polio infections is significantly lower than other infectious diseases in children under 5 years, even with increased cases, and the often desolate basic health care in high-risk areas contrasts with the personnel- and resource-intensive vaccination campaigns of the polio programme. **Rating summary:**

Through collaboration with the established vertical structures of the implementing partners, particularly UNICEF as the central procurement unit, production efficiency is rated as good. However, there are indications that the potential for increasing efficiency in the transition phase, particularly the gradual integration of polio vaccinators into the routine immunisation programme and strengthening of basic health care, has not been sufficiently utilised. From an allocative perspective, the eradication strategy of the GPEI and the efficiency of vaccinations are generally rated as high. Given the programmatic inefficiencies between the vertical polio programme and routine immunisation, overall efficiency is rated as moderately successful.

Efficiency: 3 (for all phases)

Overarching developmental Impact *Overarching (intended) developmental changes*

As in the previous phases of the FC polio programme in Nigeria, the impact objective of phases VII to XI (evaluation period) was to interrupt the transmission of the wild poliovirus in Nigeria and thereby contribute to global polio eradication. The WHO regulation serves as an indicator, which is applied when a country is declared polio-free: when no new WPV infections are reported for three years. In Nigeria, no WPV infections were reported for over two years until August 2016, but four cases were notified in the second half of 2016. These four cases occurred exclusively in inaccessible areas, underscoring the successful geographical containment up to that point; nevertheless, the impact objective was not achieved by phase VI. Therefore, the same indicator as in the previous phases was defined for phases VII - XI. The achievement of the objective at impact level can be summarised as follows.

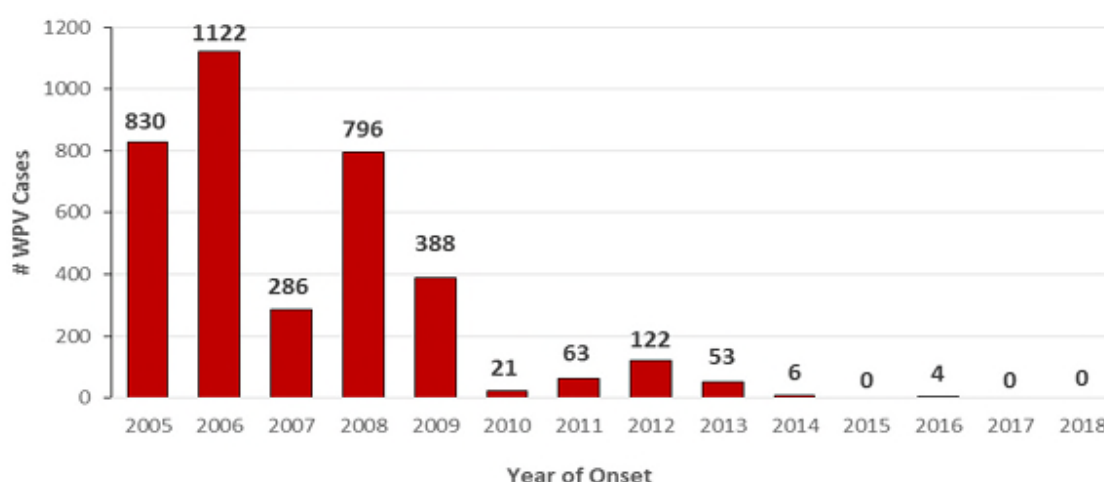
Table Target achievement Impact:

Indicator	Status at PA	Target value at PA/ at EPE	Actual value at EPE
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(1) No new wild poliovirus infections in Nigeria	2014: 6 2016: 4 Seit 2017: 0	0	0 achieved
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Since August 2016, no new wild polio infections have been reported in Nigeria. After the three-year period without new wild polio cases, the Africa Regional Certification Commission (ARCC) initiated the process for certifying Nigeria as polio-free at Nigeria's request in December 2019. As part of the certification, evidence was gathered for a functioning surveillance system, the vaccination coverage of children through routine immunisations, compliance with the recommendations of the GPEI and WHO regarding the handling of (potentially) infected materials and laboratory safety, as well as the readiness to implement special measures in the event of a new wild polio case. The certification process was successfully completed in 2020.

Fig. 7: Number of reported WPV1 cases in Nigeria 2005 – 2018



Source: 2019 Nigeria Polio Eradication Emergency Plan, NPHCDA

In addition to the successful eradication of wild polio, a remarkable reduction in vaccine-derived polio outbreaks (cVDPV2) by 95% since the peak of cases in 2021 was achieved. The genetic diversity of vaccine-derived polioviruses was reduced from seven different strains in 2019 to only one strain in 2023.

14. Contribution to overarching (intended) developmental changes

Through the long-standing support of the Nigerian polio programme, the FC was able to contribute to polio eradication via the implementing partners WHO and UNICEF. The impact-level goal of phases VII-XI of the project, to contribute to the interruption of polio transmission in Nigeria, has been achieved with Nigeria's certification as polio-free.

The evaluation period was marked by a persistently precarious security situation in the high-risk areas of north-eastern Nigeria, which worsened again since 2016 and particularly in the run-up to the presidential elections in 2023. The security risks for the personnel of the polio programme significantly reduced access to the target group in high-risk areas, and the impacts on the implementation of vaccination measures are severe; these were foreseeable but not fundamentally influenceable by the project. Without a political and societal solution to the security problem, long-term eradication of vaccine-induced polioviruses will not be possible, increasing the permanent risk of WPV1 re-emergence.

The COVID-19 pandemic in 2020/21 additionally had a significant negative impact on the original polio programme. Due to lockdowns, contact and mobility restrictions, and occasional procurement issues, planned measures were often not implementable. A reduced frequency of visits to health stations was observed in the population, and polio surveillance activities were significantly restricted. In the politically prioritised fight against COVID-19 by polio personnel, vaccination campaigns and polio surveillance were reduced; simultaneously, a

dramatic increase in cases of cVDPV2 was observed. The impacts of COVID-19 are severe, were hardly foreseeable, but could have been mitigated at least by avoiding the withdrawal of polio personnel.

Despite these adverse conditions, it has been possible to prevent a re-emergence of WPV1 up to now (as of October 2024). A significant share of this success is attributed, according to GPEI analysis, to the predominantly Nigerian polio programme-developed digital innovations to improve the quality and effectiveness of vaccination campaigns and the polio surveillance system (see Effectiveness).

15. Contribution to overarching (unintended) developmental changes

Following the switch from oral trivalent live vaccines (tOPV)¹⁰ to oral bivalent live vaccines (bOPV), the transmission of circulating vaccine-derived polioviruses type 2 (cVDPV2) was detected in Nigeria since 2018. In 2021, the peak of cVDPV2 outbreaks was reached with 421 cases. By early 2021, approximately 180 million doses of the monovalent oral live vaccine type 2 (mOPV2) were administered in reactive supplementary immunisation campaigns. In March 2021, Nigeria became the first country to use the newly developed and genetically more stable live vaccine (nOPV2), with 450 million doses administered in 2021/22, accounting for 60% of the global consumption of nOPV2.

Already in 2015, in preparation for the switch from trivalent to bivalent oral live vaccines, the inactivated poliovirus (IPV), which contains all three virus components, was integrated into routine immunisation (RI). From 2017 to 2020, 35 million doses of IPV were also administered in Supplemental Immunisation Activities (SIAs) to complement the OPV2 vaccination campaigns and increase national coverage with IPV in RI¹¹. According to WHO and UNICEF, the nationwide IPV vaccination coverage in the RI programme improved from 42% in 2015 to 62% in 2022¹². Nevertheless, according to the GPEI analysis in the current IMB report from September 2024, Nigeria was primarily responsible for the spread of cVDPV in Africa, as the preparation for the switch in the vaccination regime was ultimately inadequate, insufficient immunity levels were achieved in the population due to patchy routine immunisations, and the reactive vaccination campaigns were of poor quality¹³.

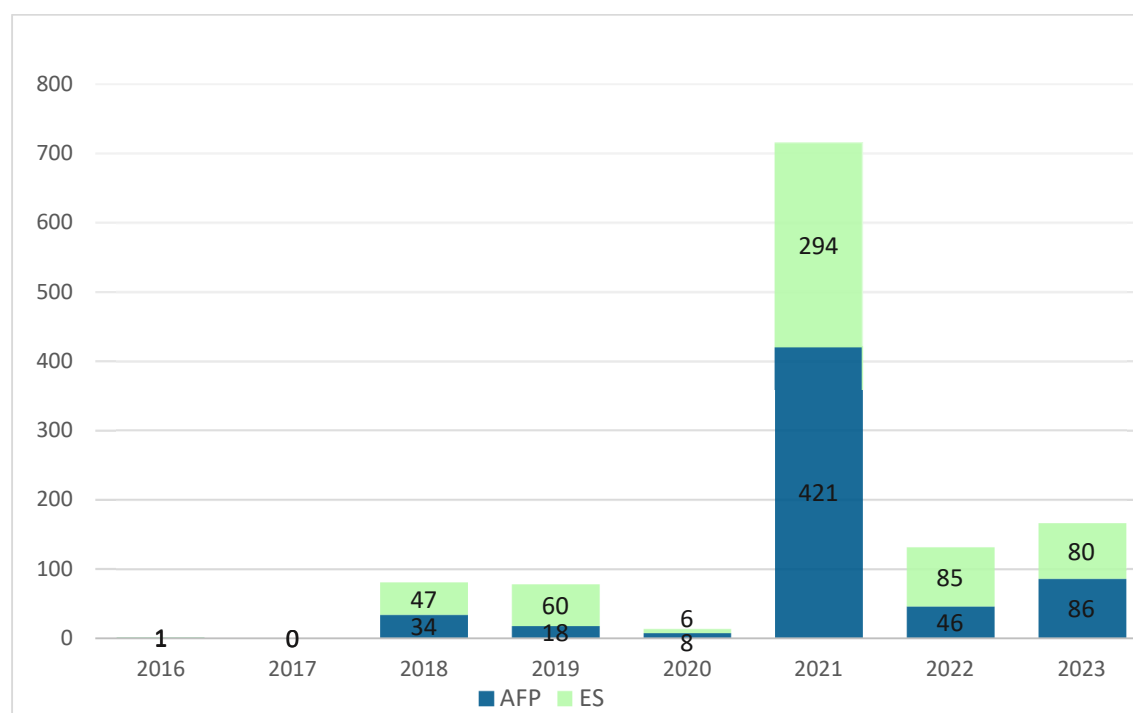
¹⁰ Against all 3 wild polioviruses

¹¹ Effectiveness of poliovirus vaccines against circulating vaccine-derived type 2 poliomyelitis in Nigeria between 2017 and 2022: a case-control study - The Lancet Infectious Diseases

¹² Nigeria: WHO and UNICEF estimates of immunization coverage: 2022 revision; <https://data.unicef.org/wp-content/uploads/cp/immunisation/nga.pdf>

¹³ 23rd Report of the Independent Monitoring Board of the GPEI

Fig. 8: Trend of Vaccine-Derived Polio Cases and Numbers of Positive cVDPV Environmental Samples (Environmental Surveillance, ES) 2016 – 2023



Source: Communication with WHO Country Office Nigeria; graph. Illustration provided for this EPE in October 2024

The polio eradication system in Nigeria has already been successfully used for the surveillance and control of other diseases, including COVID-19 and other outbreaks. This was not initially intended and has also posed the risk of temporarily neglecting polio eradication. However, the established system serves beyond polio eradication, contributing to pandemic prevention and the management of infectious diseases.

Rating summary:

The assessment of overarching developmental impacts presents a highly diverse picture. On one hand, Nigeria achieved the eradication of WPV1 during the evaluation period, marking a historic milestone for the global polio programme. Simultaneously, there were massive outbreaks of the vaccine-derived virus, which spread from Nigeria to large parts of Africa. While innovative strategies and technologies have significantly improved access to the target group in high-risk areas in northern Nigeria, the routine immunisation programme remains highly inadequate, and the structures of basic health care in Nigeria have not yet been strengthened comprehensively and sustainably. Positively, the number of vaccine-derived polio cases has been reduced by 95%, likely due to better availability and increased use of the new, genetically more stable live vaccine (nOPV2). Overall, the developmental impact is rated as only partially successful due to the vaccine-derived polio cases.

Impact: 3 (for all phases)

Sustainability

16. Capacities of the beneficiaries and stakeholders

The political and financial support (both national and international) in the fight against polio has declined since Nigeria was certified as a wild polio-free country, despite the simultaneous increase in cVDPV2 cases. This lack of support significantly affects both the effective implementation of vaccination campaigns and the urgently needed improvement of routine immunisation, particularly in high-risk areas. The impact of the resulting risk is severe; however, partial mitigation is conceivable, for example, through renewed external financial contributions and increased pressure from international partners on the Nigerian government.

17. Contribution to supporting sustainable capacities

The sustainable effectiveness of the NPEEP measures is only ensured if nationwide routine immunisations within the framework of preventive child health care are strengthened in parallel (to maintain the basic immunisation of the population). Since the quality and consistency of routine immunisations did not meet the requirements, the National Emergency Routine Immunization Coordination Centre (NERICC) was established in 2017 to provide financial and technical support for basic immunisations.

The Nigerian routine immunisation programme, coordinated by the NPHCDA, made progress from 2012 to 2016 and increased overall vaccination coverage, but it remains at a low level. Central problems of the routine immunisation programme lie in the distribution, cooling, and financing of vaccines and campaigns. Additionally, strikes by healthcare workers often lead to the cancellation of vaccination campaigns. The sustainable effectiveness of the NPEEP measures is only ensured if nationwide routine immunisation within the framework of child health care is strengthened in parallel. However, their quality and consistency still do not meet the requirements. The deficits point to structural deficiencies. The FC co-financing of the polio eradication programme did not directly address the strengthening of the NPHCDA and the routine immunisation programme. The significant challenges were also mentioned in the current IMB report from September 2024, where decreasing ownership and contributions, as well as the federal system with 36 states and 774 understaffed regional administrations, hinder a stringent and effective operation of the polio and routine immunisation programmes.

18. Durability of impacts over time

An unpredictable and uncontrollable risk for the continuation and effectiveness of the polio vaccination program is the conflict situation in the northeast. Overall, the program has developed a very good ability over the years to adapt to the difficult security situation with new measures, but access to areas under the control of Boko Haram remains difficult to impossible. Ultimately, the sustainability of the previous successes of the Nigerian polio program, i.e., the long-term eradication of all types of polio, will strongly depend on whether a political and societal solution to the security problem will be possible. Equally crucial for the sustainable success of the Nigerian polio program will be whether it succeeds in significantly improving and strengthening the routine immunization program and basic health care.

The impact of the immunization achieved for the children reached is fundamentally considered sustainable.

The sustainability aspects are considered and partially implemented in the strategic orientation, particularly the transition plan. Nevertheless, sustainability risks exist due to the conflict and structural weaknesses in the health sector. Additionally, decreasing funds also limit the sustainable financing of necessary measures. Overall, the program is assessed moderately successful regarding its sustainability.

Sustainability: 3 (for all phases)

Overall rating:

Considering the achievement of WPV eradication in Nigeria and its high relevance for global polio eradication, but also taking into account the programmatic deficits that favored vaccine-derived polio outbreaks and endangered the sustainability of the achieved successes, the FC project is overall rated as moderately successful.

Overall rating: 3 (for all phases)

Contributions to Agenda 2030

The national polio emergency plans (NPEEPs) relevant to the FC module aim to eradicate polio in Nigeria and thus contribute particularly to the national implementation of the third goal of Agenda 2030 ("Good Health and Well-being"). The GPEI actively strengthens the role of women in the program and reaches both girls and boys equally through vaccination campaigns. Therefore, the module also falls under Sustainable Development Goal 5 ("Gender Equality").

Project specific strengths/weaknesses

- The situation regarding polio in Nigeria has significantly improved in recent years. No wild polio cases have occurred since 2016, and the country was certified as polio-free in 2020. This status has been maintained to date.
- It is also an achievement of the polio program in Nigeria to achieve a remarkable reduction in vaccine-derived polio cases (by 95% since the peak of cases in 2021). The genetic diversity of polioviruses was reduced from seven different strains in 2019 to only one strain in 2023.
- There are still major challenges due to the tense security situation in the northwestern states, particularly in Zamfara, Sokoto, and Kebbi. There is ongoing infection activity with vaccine-derived polio, as the implementation of vaccination campaigns is difficult to impossible.
- Estimates suggest that approximately 4.9 million children in Nigeria are difficult to reach due to the fragile security situation and other factors in 48,000 settlements. A strength of the program is that innovative strategies have been developed and are being developed to reach these children.
- Nevertheless, there are about 2.3 million children in Nigeria who have not received vaccinations as part of routine immunizations (zero-dose children) – this is the second-highest number worldwide after India and corresponds to half of the zero-dose children in the entire African region. To minimize the risk of a new wild polio outbreak, it will be necessary to increase the vaccination rate and massively reduce the number of zero-dose children. This will only be possible in collaboration with international initiatives such as GPEI and especially Gavi.
- For a sustainable success of polio eradication, a comprehensive strengthening of basic health structures and primary health care is required to increase the effectiveness and acceptance of vaccination programs (routine immunizations as well as supplementary immunization campaigns).

General conclusions/lessons learned

- Due to the possibility of re-importation of polioviruses (wild polio (WPV) and vaccine-derived polio (cVDPV)), the pillars of polio eradication—high vaccination rates and surveillance—must be intensively continued even in polio-free regions until global polio eradication is achieved.
- Sustainable polio eradication in Nigeria requires the **collaboration** of two programs: (a) the vertical, specific **Polio Eradication Initiative (PEI)** and (b) the **Expanded Programme on Immunization (EPI) for routine immunization**. These two programs, PEI and EPI, are technically and financially supported by two global initiatives, GPEI and Gavi, and both are implemented through UNICEF and WHO. The formalized collaboration between GPEI and Gavi at the international level seems to be effective in terms of PEI/EPI cooperation at the national level. Germany can exert more effective influence on the now crucial GPEI and Gavi cooperation through direct financing of both initiatives.
- **The vertical implementation structure** of the polio program through WHO and UNICEF was indispensable for the effective and efficient achievement of polio eradication, given the significant deficiencies in the Nigerian health system. The COVID-19 pandemic has shown that even a vertically structured program can make **important contributions to health system strengthening**, particularly in the areas of surveillance and vaccine logistics.
- The FC provided significant co-financing over a long period and thus contributed substantially to achieving the eradication goal in Nigeria. However, during the implementation of the Nigerian polio eradication program through WHO and UNICEF, conceptual design possibilities for the German FC were limited to non-existent.

Evaluation approach and methods

Methodology of the ex-post evaluation

The ex-post evaluation follows the methodology of a rapid appraisal, i.e. a data-supported, qualitative contribution analysis and represents an expert judgement. This involves attributing impacts to the project through plausibility considerations based on the careful analysis of documents, data, facts and impressions. Where possible, this also includes the use of digital data sources and modern techniques (e.g. satellite data, online surveys, geocoding). Causes of any contradictory information are investigated, attempts are made to eliminate them and the assessment is based on statements that are - if possible - confirmed by several sources of information (triangulation).

Documents:

Internal project documents, strategies and reports of the Nigerian government, reports and data from UNICEF and WHO, secondary literature, strategy papers, context, country and sector analyses, impact evaluations, comparable evaluations, systematic reviews, media reports.

Data sources and tools for analysis:

Health data from WHO and UNICEF, GPEI;

Interview partners:

Project executing organisation, WHO and UNICEF HQ and country offices, KfW experts

The analysis of impacts is based on assumed interdependencies, documented in the impact matrix developed during the project appraisal and, if necessary, updated during the ex-post evaluation. The evaluation report presents arguments as to why which influencing factors were identified for the identified results and why the analysed project presumably made which contribution (contribution analysis). The context of the development project is taken into account with regard to its influence on the results. The conclusions are set in relation to the availability and quality of the data basis. An evaluation design is the reference framework for the evaluation.

For project evaluations, the method offers a - on average - balanced cost-benefit ratio, in which the knowledge gained and the evaluation effort are in equilibrium, and allows a systematic assessment of the effectiveness of FC projects across all project evaluations. The individual ex-post evaluation can therefore not fulfil the requirements of a scientific assessment in the sense of a clear causal analysis.

The following aspects limited the evaluation

- Lack of communication during the implementation of the two phases between KfW and the executing agency as well as the implementation partners at national level. This also meant that there was no starting point for the EPE.
- The data situation is partly inconsistent, incomplete and not stringent.
- Disaggregated data by gender or income was not available.

Methodology of the performance evaluation

A six-point scale is used to assess the programme according to the OECD DAC criteria. The scale values are assigned as follows:

- Level 1** Very successful: result significantly above expectations
- Level 2** Successful: result fully in line with expectations, without significant deficiencies
- Level 3** Moderately successful: below expectations, but positive results dominate
- Level 4** Moderately unsuccessful: is significantly below expectations and negative results dominate despite recognisable positive results
- Stage 5** Unsuccessful: despite some positive partial results, the negative results clearly dominate
- Level 6** Highly unsuccessful: the project is useless or the situation has worsened

The overall rating on the six-point scale is based on a project-specific weighting of the six individual criteria. Levels 1-3 of the overall rating indicate a "successful" project, while levels 4-6 indicate an "unsuccessful" project. It should be noted that a project can generally only be considered developmentally "successful" if the achievement of the project objective ("effectiveness") and the impact on the overall objective ("overarching developmental impact") as well as the sustainability are rated as at least "partially successful" (rating 3).

List of abbreviations:

AFK	Acute Flaccid Paralysis
AK	Abschlusskontrolle
ARCC	African Regional Certification Commission
AVADAR	Auto-Visual AFP Detection and Reporting
BIP	Bruttoinlandsprodukt
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung
bOPV	bivalent Oral Polio Vaccine
cJTF	Civilian Joint Task Force
COVID-19	Coronavirus disease 2019
cVDPV	circulating Vaccine Derived Poliovirus
DAC	Development Assistance Committee
EOC	Emergency Operation Center
EUR	Euro
FZ	Finanzielle Zusammenarbeit
FZ E	FZ Evaluierung
GAVI	Gavi, the Vaccine Alliance, früher: Global Alliance for Vaccines and Immunisation
GPEI	Global Polio Eradication Initiative
HDI	Human Development Index
IMB	Independent Monitoring Board
IPV	Inactivated Polio Vaccine
LGA	Local Government Area
LQAS	Lot Quality Assurance Sampling
mOPV2	monovalent Oral Polio Vaccine (type 2)
NERICC	National Emergency Routine Immunization Coordination Centre
nOPV2	novel Oral Polio Vaccine
NPEEP	Nigeria polio Eradication Emergency Plan
NPHCDA	National Primary Health Care Development Agency
OPV	Oral Polio Vaccine
PEI	Polio Eradication Initiative
PP	Projektprüfung
PPB	Projektprüfungsbericht
PTFoPE	President's Taskforce on Polio Eradication
PV	Projektvorschlag
RES	Reaching Every Settlement-Strategie
RI	Routine Immunization
RIC	Reaching Inaccessible Children -Strategie

SIA	Supplemental Immunisation Activities
SIPDs	Supplemental Immunisation Plus Days
tOPV	trivalent Oral Polio Vaccine
TZ	Technische Zusammenarbeit
UNICEF	United Nations Children Fund
USAID	United States Agency for International Development
USD	US Dollar
WHO	World Health Organisation
WPV	Wild Polio Virus
WPV1	Wild Polio Virus Type 1

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