Ex post evaluation – Nigeria

Sector: Infectious disease control (12250)
Project: Polio eradication (Phase II 2007 65 438, Phase III 2008 66 889*)
Programme executing agency: Federal Ministry of Health, National Primary Health Care Development Agency

Ex post evaluation report: 2014

		Phase II (Planned)	Phase II (Actual)	Phase III (Planned)	Phase III (Actual)
Investment costs (total)	EUR million	140.52**	345.79	125.05	156.25
Own contribution	EUR million	No info	135.31	33.00	70.69
Funding	EUR million	44.83**	210.48	92.05	85.56
of which BMZ budget funds	EUR million	10.00	10.00	15.00	15.00

*) Random sample 2014
**) Only comprises 2007 and 2008 as no cost estimate was available for 2009 at the time of the appraisal.

Description: The contribution by the German Financial Cooperation included the procurement of vaccines to support the Polio Eradication Initiative (PEI) in Nigeria from 2007 to 2011. It covered roughly one quarter of the spending for vaccines during the programme period. Additional programme measures financed by the Nigerian government and other donors included the implementation of national and local mass immunization campaigns, social mobilisation activities, education and training activities, the operation of a polio monitoring system and procurement activities.

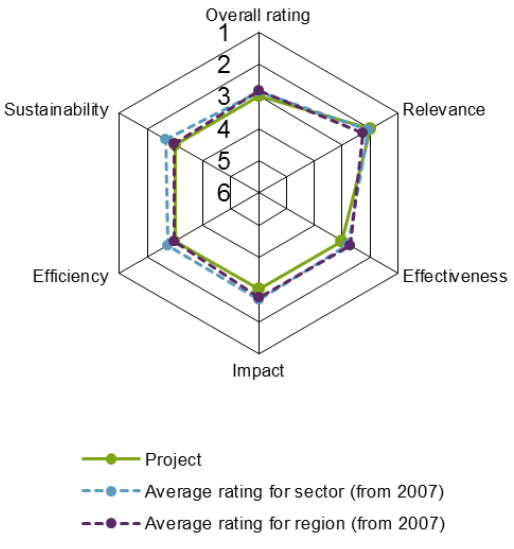
Objectives: The overall objective of the programme was to help eradicate polio in Nigeria. The programme objective was defined as using the procured vaccines to stop the spread and circulation of the poliovirus. According to the underlying results chain, the procurement and supply of the vaccines coupled with supporting measures (outputs) were designed to vaccinate the target group adequately (outcome) and therefore eliminate polio in Nigeria (impact).

Target group: The target group was all children in Nigeria under the age of five.

Overall rating: 3 (both phases)

Rationale: The evaluated programmes and the following phases are relevant at a global level. The Polio Eradication Initiative in Nigeria has led to a reduction in the biodiversity of the virus and the incidences of polio. The long-term trend for cases of polio is declining. But with the disease still being transmitted, the goal of eradication has yet to be achieved. This can be attributed to difficult conditions overall, especially the critical security situation in Nigeria.

Highlights: The global eradication of poliomyelitis depends largely on progress made in Nigeria, since in previous years the country has repeatedly been the source of outbreaks of the disease in other countries. The goal of eradicating polio is still relevant and makes good economic sense.



Rating according to DAC criteria

Overall rating: 3 (both phases)

Relevance

The projects are relevant given the global significance of polio eradication. Ultimate eradication requires a universal end to the spread and circulation of the disease. Until this has been achieved, the virus can spread from endemic countries back to countries that were previously considered polio-free. In past years, Nigeria has repeatedly been the source for outbreaks in other countries of Africa and Asia as well. Particularly against the backdrop of previous efforts and achievements, the eradication of polio remains relevant and economically beneficial. Global success is essentially dependent on progress in Nigeria. Accordingly, the project meets the targets of the German Federal Government, namely to eradicate poliomyelitis. The international fight against polio and contributions from donors were and are in accordance with Nigerian health policies that have also explicitly identified the eradication of polio as an objective. In national terms, the projects do not make a notable contribution to alleviating the burden of disease, which hinders the acceptance of polio campaigns among the target group.

The underlying results chain is primarily based on vaccinations and directly related activities, such as logistic support, case supervision and enhancing social acceptance of the campaign ("social mobilisation"). The provision and administration of vaccines is necessary for the immunity of the population. Less emphasis is placed on other elements that are also important for eradicating polio. This includes the transmission path (in this case the faecal-oral path). In other words, contaminated water, inadequate sanitary facilities and a lack of hygiene contribute to the dissemination of poliovirus. The health status of the target group (children under five years) is also an important factor in the effectiveness of the vaccine. Diarrhoeal diseases as well as under and malnutrition can affect the vaccine's efficacy. As a result of poor health among the population in Nigeria, mass immunization campaigns have to be conducted on a larger scale to compensate for the fast transmission of the virus. Instead of the recommended three vaccinations, sometimes twelve are necessary in order to achieve immunity. Accompanying measures could have improved the immune status of the target group, decreasing the risk of transmission and increasing the relevance of the project.

As in other countries, the programme was designed as vertically-oriented mass immunization campaigns with mobilisation and supervision activities. In these immunization campaigns, all children under five are vaccinated over a period of six days, either nationwide or in particularly hard-hit areas. This measure is adequate for supplying the relevant target group (children under five) with vaccines and preventing potential risks (e.g. vaccination refusal and undetected outbreaks of the disease). The choice of mass immunization campaigns in Nigeria was the right measure to reach the objective of vaccinating the target group, particularly given the extremely compromised routine immunization programme.

Relevance rating: 2 (both phases)

Effectiveness

The programme objective in both phases was determined as deploying vaccines to stop the spread and circulation of wild poliovirus. Since 2005, however, in addition to wild poliovirus, there has been a permanent epidemic of the circulating vaccine-derived poliovirus type 2 in Nigeria. Accordingly, the programme objective is generalised to deploying vaccines for the nationwide immunization of children under five and therefore disrupting the spread and circulation of the poliovirus.

The achievement of the programme objective was to be measured based on the orderly procurement, delivery, storage, distribution and utilisation of the obtained vaccines.[1] This indicator also needs to be amended as, it does not capture distributional effects of the provided services. Geographically imbalanced administration of vaccines can be detrimental to the programme objective, especially because polio is par-

[1] Phase III specified the "number of delivered vaccine doses and time of delivery" as a parameter. However, this measures the service provision on an output level and is therefore no longer taken into account when evaluating effectiveness.

ticularly concentrated in northern Nigerian states that are difficult to reach. To achieve a sustainable disruption of the virus transmission, comprehensive immunity of at least 80 % of all children is necessary, and even more in densely populated areas. It is important to note that in some cases, 12 injections of the vaccine are necessary to achieve immunity. As part of the ex-post evaluation, the target indicator of the programme was amended to reducing the proportion of local government areas (LGA) that reach less than 90 % of the target group in one vaccination round.

The national average of the target group coverage during the mass immunization campaigns was more than 93 % in 2011 and 2012. Nevertheless, the new indicator shows that parts of the target group were still systematically not reached (see table). Amongst other reasons, this is due to difficult general conditions in Nigeria. In 2013 some 8 million children were excluded from access to vaccines in northern Nigeria because of attacks on the vaccination teams. Additional factors interfering with the achievement of the objective are found in the sector organisation, the low effectiveness of the routine vaccination programme, acceptance by the target group and the geographical barriers to reaching the target group. However, there is a clearly positive trend regarding target group coverage in the last year: in August 2014 some 69 % of the high-risk LGAs achieved a coverage ratio of 90 %, and 98 % of the LGAs produced a figure of 80 %. We therefore rate the effectiveness of the projects as satisfactory. The attainment of the programme objectives can be summarised as follows:

Indicator	Status PA Phase II (2007)	Status PA Phase III (2009)	Final inspection (2011)	Ex post evaluation (2014)
Proportion of LGAs that reached less than 90 % of the target group per vaccination round.	No data.	Decline from 26 % (January 2009) to 16 % (August 2009) to 11 % (March 2010).	Nearly 30 % between January and September 2011.	In June 2013 only 58 % of the very high-risk LGAs and 74 % of the high-risk states reached a coverage ratio of 80 %. In April 2014 these values rose to 83 % and 86 % respectively. In August 2014 some 98 % of very high-risk LGAs reached a coverage ratio of 80 % and 69 % a coverage ratio of 90 %.*

* Nigeria has 36 federal states that are subdivided into 774 local government areas. In 2013 a total of 11 northern states were considered high-risk states and 107 LGAs as very high-risk LGAs (ERC 2013).

Effectiveness rating: 3 (both phases)

Efficiency

Despite occasionally explicit criticism from donors, the government and other programme participants about the implementation quality of the programmes, there was no evidence of any long-term threat to the vaccine supply during the implementation period based on the coordination and logistics work of UNICEF. The criticism was rather directed towards problems coordinating vaccinators, difficulties with implementation in the context of the presidential and parliamentary elections in 2011 as well as the refusal of vaccinations by individual households. These reports of implementation difficulties contrast with the largely positive experiences regarding vaccine logistics. Overall the implementation proceeded as planned. There is no reasonable alternative to UNICEF as the provider of vaccines (for instance, procuring and supplying vaccines through regular channels of the health care system). UNICEF procurement prices were about 50 % below the level of public tenders called by the Nigerian government, there were no interruptions with purchasing the vaccines and the vaccines were provided reliably and on time. Hence, in terms of production efficiency relative to effort and compared to the implementation under the routine vaccination programme, this contribution to achieving the objectives (i.e. vaccine supply and immunization coverage) can be rated positive.

From a microeconomic perspective, the operative costs per child and vaccination round are more than USD 0.25. As a result, the programme costs are relatively high compared to the three other endemic countries (Afghanistan, Nigeria and Pakistan), but average compared to all other countries (including countries where polio has been re-imported). The low population density and the difficult security situation are both factors pushing costs up. Additionally, the costs and benefits of the target group have to be taken into account. Vaccines are provided for the target group without any direct costs. Indirect costs that might arise from spending time on the vaccination and travelling to the immunization locations are negligible. Additional indirect costs for the target group include potential side effects in the form of an active poliovirus derived from the vaccine. Since 2005 about 400 children have fallen ill with this disease, which is about 10 % of all polio cases in Nigeria. According to rough estimates, children in Nigeria had between a 1:125,000 and 1:170,000 chance of suffering from these vaccination side effects from 2005 to 2013 (including transmission by others). These costs are countered by the benefits of the vaccination. This includes immunity against poliomyelitis and therefore protection against treatment and rehabilitation costs, loss of income, reduced quality of life and stigmatisation. The side effects are considered acceptable considering the benefits for the target group.

In a national context, other measures could be more appropriate to reduce infant mortality. The extent to which alternative measures would be more cost-effective cannot, however, ultimately be assessed with the data available. Since the project's relevance is primarily derived from the global polio eradication, the knowledge gained from national calculations is limited. Calculations from 2010 showed in this context that polio eradication on a global scale is cost-effective and will generate net economic profits of about USD 40-50 billion worldwide by 2035 (assuming that the disease will be eradicated between 2012 and 2015). Even with further short and medium-term delays in polio eradication, positive net values worldwide can be anticipated. Accordingly, preventing the remaining cases of polio is efficient from a global perspective.

Efficiency rating: 3 (both phases)

Impact

The overall objective of both programme phases was to contribute to eradicating polio nationwide. This is also adequate from today's perspective. According to the appraisal report for Phase II, the overall objective is considered achieved, if (a) 90 % of the target group has been reached with the immunization campaigns and (b) no new polio cases are registered in Nigeria after 2009 at the latest. Hence the overall objective indicators embrace programme results at the impact (polio eradication) as well as outcome level (vaccination coverage rate). This does not conform with the current state of the art for projects to combat infectious diseases. As part of amendments to the objectives, the vaccination coverage rate as an overall indicator was removed from the targets. The overall objective indicator remains the continuous decrease in the incidences of polio (to zero).

The Polio Eradication Initiative (PEI) has led to a reduction in the biodiversity of the virus and the incidence of polio. In 2007 (PA Phase II) 353 cases were registered, increasing to 861 in 2008. In the year of the project appraisal for Phase III (2009) 541 cases were registered, compared to 48 cases in 2010 and 95 cases in 2011. Subsequent to both phases (i.e. during the follow-up phases) 130 cases were registered in 2012, compared to 57 in 2013 and so far 32 in 2014. The long-term trend is therefore falling and the FC-funded supply of vaccines is making a convincing contribution to this trend. However, there have been new outbreaks, particularly in 2008, and wild as well as vaccine-derived polioviruses are still circulating in Nigeria. With the virus still being transmitted, neither the original objective to eradicate the virus by 2009 nor the revised target of the Global Polio Eradication Initiative by 2014 has been reached. Based on the considerable reduction in polio cases and the clear contribution of the project to this achievement, we still assess the overall developmental impacts as satisfactory.

The programme had positive as well as negative side effects. The polio eradication programme is aimed at supporting and strengthening the Nigerian routine immunization programme. Thus, combining mass immunization campaigns with efficient services in the routine immunization programme as part of "Immunization Plus Days" has been a positive move. Synergy effects between polio eradication and routine vaccinations are achieved particularly in terms of governance. However, there are some negative effects at the implementation level. Evaluations of other donors show that intensive and repeated vaccinations against polio have led to "vaccination fatigue" amongst the population in some of the northern areas, also

towards routine immunization. It is debatable how far the intended reinforcement of the routine immunization programme could thus actually be realised. Additional negative side effects of the programme include the above-mentioned circulation of the vaccine-derived poliovirus. Vaccine-derived polio is a negative side effect that is accepted in light of the benefits for the target group. However, it damages the target group's acceptance of the immunization campaigns.

Indicator	Status PA 2007	Status PA 2009	FI 2011	Ex post evaluation
Continuous decline in registered infections and no additional polio cases.	353 cases.	541 cases.	95 cases.	2013: 57 cases. 2014: 32 cases so far (as of November, including 26 vaccine-derived polio cases). Repeated outbreaks: 2008, 2011, 2012.

Impact rating: 3 (both phases)

Sustainability

The routine immunization programme in Nigeria is still not suitably functioning. That means that a sudden termination of the mass immunization campaigns would mean a fast return of extensive polio transmission, also to other countries. Even a successful eradication of the disease in Nigeria (with persistent circulation in other countries) would require a continuation of the mass immunization campaigns, as the immunity of the target group cannot otherwise be sustained. As a result, the sustainability of the measures mainly depends on the future development of the routine immunization programme. Previous attempts to promote synergies between polio eradication and routine immunization have brought little success. Furthermore, there are risks regarding developmental effectiveness in terms of national and donor financing, the mobilisation of the target group, epidemiological and programme databases, and political stability and the security situation. Own contributions and political support from the Nigerian government, however, are positive steps towards institutional sustainability. Despite these remaining risks, sustainability is considered satisfactory overall given the continuous improvements in strategy and implementation of the programme.

Sustainability rating: 3 (both phases)

Notes on the methods used to evaluate project success (project rating)

Projects (and programmes) are evaluated on a six-point scale, the criteria being **relevance, effectiveness, efficiency** and **overarching developmental impact**. The ratings are also used to arrive at a **final assessment** of a project's overall developmental efficacy. The scale is as follows:

Level 1	Very good result that clearly exceeds expectations
Level 2	Good result, fully in line with expectations and without any significant shortcomings
Level 3	Satisfactory result – project falls short of expectations but the positive results dominate
Level 4	Unsatisfactory result – significantly below expectations, with negative results dominating despite discernible positive results
Level 5	Clearly inadequate result – despite some positive partial results, the negative results clearly dominate
Level 6	The project has no impact or the situation has actually deteriorated

Ratings level 1-3 denote a positive assessment or successful project while ratings level 4-6 denote a negative assessment.

Sustainability is evaluated according to the following four-point scale:

Sustainability level 1 (very good sustainability): The developmental efficacy of the project (positive to date) is very likely to continue undiminished or even increase.

Sustainability level 2 (good sustainability): The developmental efficacy of the project (positive to date) is very likely to decline only minimally but remain positive overall. (This is what can normally be expected).

Sustainability level 3 (satisfactory sustainability): The developmental efficacy of the project (positive to date) is very likely to decline significantly but remain positive overall. This rating is also assigned if the sustainability of a project is considered inadequate up to the time of the ex post evaluation but is very likely to evolve positively so that the project will ultimately achieve positive developmental efficacy.

Sustainability level 4 (inadequate sustainability): The developmental efficacy of the project is inadequate up to the time of the ex post evaluation and is very unlikely to improve. This rating is also assigned if the sustainability that has been positively evaluated to date is very likely to deteriorate severely and no longer meet the level 3 criteria.

The **overall rating** on the six-point scale is compiled from a weighting of all five individual criteria as appropriate to the project in question. Ratings 1-3 of the overall rating denote a "successful" project while ratings 4-6 denote an "unsuccessful" project. It should be noted that a project can generally be considered developmentally "successful" only if the achievement of the project objective ("effectiveness"), the impact on the overall objective ("overarching developmental impact") and the sustainability are rated at least "satisfactory" (rating 3).