

# Ex post evaluation – India

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**Sector:** Infectious disease control (1225000)  
**Project:** Polio vaccination programme in India, Phase VIII (2005 66 653)\*, IX (2006 66 149)\*, X (2007 66 287)\*, XI (2008 65 055), XIV (2009 66 051), XV (2009 66 044)\*, XVI (2009 67 166), CM (2008 70 048)  
**Implementing agency:** Ministry of Health and Family Welfare (MoHFW) in the Republic of India



## Ex post evaluation report: 2018

All figures in EUR million	Phase VIII	Phase VIII	Phase XIV	Phase XIV	Complementary measure
	- XI (Planned)	- XI (Actual)	- XVI (Planned)	- XVI (Actual)	
Investment costs (total)	1040.00	862.64	654.00	756.00	0.50
Counterpart contribution**	440.73	528.82	202.00	512.00	0.00
Financing**	474.67	335.82	452.00	192.00	0.50
of which budget funds (BMZ)	124.60	120.23	52.00	52.00	0.50

\*) Random sample 2018

\*\*) Reliable information on the final amounts could not be obtained by the end of the project

**Summary:** As part of the Global Polio Eradication Initiative (GPEI) in India, the FC supported the Pulse Polio Immunization Programme. The ongoing programme lines VIII–XI (2006–2009) were complemented by the programme lines XIV–XVI (2009–2015). The FC contribution was co-financed with Indian budget funds and contributions from other international donors to finance oral vaccines and operational costs, and to procure laboratory equipment (cold chains). The amount of EUR 176.6 million committed for the phases evaluated here, represented a substantial share of the total requirement of around EUR 1.6 billion. The programme was financed either by non-repayable FC grants as well as FC budget loans and subsidised-interest development loans. The FC contribution was co-financed with Indian budget funds and contributions from other donors such as Rotary International, the Bill & Melinda Gates Foundation and the United Kingdom. The vaccines were procured through UNICEF, and laboratory equipment via the WHO. Indian structures were used for the procurements in phases XIV–XVI. The planned complementary measure to further support the surveillance and monitoring component was not implemented because the need was already met by the main components.

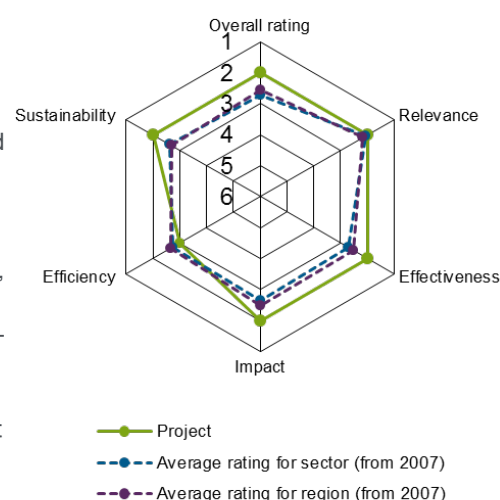
**Objectives:** The overarching development objective (impact) was to contribute to the nationwide – and thus global – eradication of polio. The programme’s objective (outcome) was the nationwide vaccination of all children below the age of five and the successful implementation of a surveillance and monitoring system.

**Target group:** Children below the age of five in high-risk districts (Uttar Pradesh and Bihar) and risk groups (newborns, migrants, non-resident population).

## Overall rating: 2 (all phases)

**Rationale:** The development objective was achieved; India is officially polio-free.

**Highlights:** Due to numerous delays in the complex and difficult developmental and administrative environment, the eradication objective could only be achieved after several programme extensions. The FC contribution can be assessed as sustainable and has (minor) positive effects on strengthening the health system, as cold chains for basic vaccination programmes were also strengthened. Overall, however, it was a vertical program, initially driven strongly by the international community, with few spill-over effects. In addition to the positive impact on the country, the eradication of the poliomyelitis virus also has a significant impact on other countries in the sense of a “global public good”. This leads to a positive economic evaluation in the mid-term, even if the effects on other vaccination activities in the country are not clear. Strengthening epidemiological surveillance will be central to long-term stabilisation and the prevention of the virus’ re-emergence. During the course of the programme, India significantly increased both ownership and its own committed resources.



## Rating according to DAC criteria

### Overall rating: 2 (all phases)

Phases VIII–XI and XIV–XVI were designed and approved together, but divided into different phases with separate BMZ numbers due to the various forms of financing (FC grants, FC loans and development loans). Since the objectives are identical, the phases cannot be differentiated from one another in terms of their impacts. Therefore, the phases have been evaluated together and, where possible, rated separately according to DAC criteria.

#### Ratings:

Relevance	2 (all phases)
Effectiveness	2 (all phases)
Efficiency	3 (all phases)
Impact	2 (all phases)
Sustainability	2 (all phases)

#### General conditions and classification of the project

Until recently, India numbered amongst the countries in which polio was still a regular occurrence. The country was the main source of the global spread of the virus for many years, accounting for half of all polio cases worldwide up to 2009. Due to its high population size and density, as well as the country's extremely low levels of development in certain regions (poor hygiene, high birth rates, inaccessible areas), India was considered one of the most difficult countries in the fight against polio. Despite these challenges, the country has succeeded in stopping the transmission of the virus. No new infections have been registered since January 2011, so the World Health Organization (WHO) certified the country polio-free in 2014, following a period of three years without any new polio cases. This is considered a milestone in the global fight against the disease.

Between 1998 and 2013, FC supported the Indian government's polio vaccination programme with a total of EUR 254 million. The phases of the polio vaccine programme evaluated here are directly related to the 2010 ex post evaluation of phases I to VII, which were implemented between 2000 (phase I) and 2008 (phase VII). These phases were rated as satisfactory (rating 3) with a narrow failure to meet eradication targets, but good efficiency and sustainability. This is because, even in the early stages of the programme, the Indian government clearly expressed real political willingness and thus strong ownership.

The follow-up phases evaluated here supported the Indian government's vaccination programme of 2006–2013. The financing was provided through various financing instruments:

Phase	Financing instrument	Amount (in EUR million)
VIII	FC grant	10.00
	FC budget loan	20.00
IX	FC grant	8.00
	FC budget loan	42.00
X	FC development loan	31.00
XI	FC budget loan	13.60
XIV	FC budget loan	10.00
XV	FC development loan	40.00
XVI	FC grant	2.00

The FC contribution in phases VIII–XI evaluated here was primarily intended to finance oral vaccines and procure laboratory equipment; at a total of around EUR 120 million, this represents a substantial share of the overall requirement of EUR 1.7 billion. The vaccines for these phases were procured through UNICEF, while laboratory equipment was procured via the WHO. The second evaluated phase, XIV–XVI, the operational costs of vaccination campaigns and the procurement of cold chain devices were financed; at a total of EUR 52 million, this also represents a substantial share of the overall requirement of more than EUR 700 million. At the explicit request of the Indian partners, procurements in the subsequent phases were made via Indian administrative structures.

The provision of FC funds as grants and loans to finance running costs is justified because (i) combating polio is a high development priority and adequately financing the running costs of vaccination campaigns is essential to achieving the aim of polio eradication; (ii) it is a one-off and temporary measure (until the country is certified as polio-free by the WHO) and therefore the measure does not have to be continued by the partner country alone; (iii) FC funds are offered primarily as loans, and as such the Indian government is essentially self-financing the running costs, underlining the government's strong commitment to the achievement of the objectives. (Re)financing takes place through the reimbursement of a fixed international flat rate per vaccinated child.

### Relevance

The relevance of the programme should be considered on several levels. At the time of developing the programme there was significant demand for treatment at the national level, as India was still amongst the countries with the highest polio prevalence in the mid-1990s. At international level, there were approximately 350,000 polio cases worldwide in the late 1980s. As with the eradication of smallpox, the elimination of polio was also a declared aim of the World Health Organization (WHO). The Global Polio Eradication Initiative (GPEI) was the outcome of a 1988 World Health Summit decision to eradicate polio by the year 2000. By 2013, the number of polio cases reported worldwide had fallen to 407.

The relevance is qualified somewhat by the health priorities of the target group, however. Given the prevalence and disease burden of other childhood diseases (e.g. measles, whooping cough) and the fundamental health problems in India, the goal of eradicating the poliovirus is a secondary priority for the immediate target group. However, the fact that polio accounted for only around 10% of the disease burden of children in India at the time of the project appraisal does not weaken the relevance of the programme's global approach.

In 1994, the Indian government started the "Pulse Polio" campaign, aimed at vaccinating every child under the age of five once a year. In this context, German FC supported the Indian government in procuring vaccines and developing the necessary cold chains. At the same time, FC contributed to the GPEI consortium orchestrated by the WHO and UNICEF. Given the serious shortcomings of India's healthcare system, the chosen design as a vertical programme for the efficient provision of polio vaccines was appropriate for the purpose of targeting all children under the age of five. There is no alternative to polio vaccination.

The results chain, according to which the support of the nationwide vaccination of all children under the age of five and the successful implementation of a surveillance and monitoring system (outcomes) should contribute to the nationwide eradication of polio (impact), is also considered plausible from today's perspective and appropriate with regard to the core problem.

Through its commitment, FC was closely involved in national and international strategy. The cooperation with other donors was appropriate. It remains to be unclear whether the FC should have contributed more to the coordination processes in terms of content and administration. Due to the nature of the measure, which was very technical and highly vertical, there was no particular need for coordination. However, the impact of the FC on overall strategy and operative management in relation to eradication is considered limited. The overall programme was in line with the Federal Government's health goals and, from a health policy point of view, it made sense to make a significant contribution to the financing of such a large pro-

ject, not least because of Germany’s responsibility and obligation to try and ensure the “global public good” of polio eradication.

The relevance can be assessed as high.

**Relevance rating: 2 (all phases)**

### Effectiveness

The programme’s objective were firstly the vaccination of all children under the age of five, and secondly the establishment of a surveillance and monitoring system.

Since India was declared polio-free, the vaccination of all children is no longer carried out; today there is a combination of surveillance, active case finding and immediate vaccination of those in the vicinity of each case of polio. As a result, the programme objective indicators are no longer appropriate from today’s perspective. Therefore, an additional indicator (“Non-polio AFP (acute flaccid paralysis) rate of children under 15 years is greater than 1/100,000”) is included in the EPE to assess the quality of the surveillance system. This indicator shows that any form of flaccid paralysis is reported; flaccid paralysis also occurs in children not infected with polio for various reasons, and a good surveillance system should report more than one such case of paralysis per 100,000 children per year.

The achievement of objectives at the outcome level can be summarised as follows:

Indicator	Status PA, Target value PA	Ex post evaluation
(1) Phase I: vaccination rate >90%, phases II–VII: >95% in all districts and high-risk areas.	48% (2006), 90% / 95%	98%
(2) Non-polio AFP rate* of children under 15 is greater than 1/100,000	7.4 / 100,000 (2006), >1 / 100,000	12.5 / 100,000 (2014)

\*) Acute flaccid paralysis, i.e. the classic clinical presentation of poliomyelitis

The surveillance and monitoring system has been installed, but needs to be continually adapted and further developed (e.g. in line with the new indicators).

Over the course of the programme, India has increasingly used innovative methods to reach practically all segments of the population. The implementation can be assessed overall as positive. The use of GPS-based methods has enabled the greatest possible coverage of regions that are difficult to access geographically, as well as disadvantaged groups (migrants and non-resident population). However, this also led to a lack of flexibility in responding to regional outbreaks of polio cases, and some children were vaccinated very frequently because they were often in the vicinity of a reported case or were included in regular vaccination campaigns. This increased the risk of vaccine-derived polio, where diluted vaccine viruses transform back into the pathogenic viruses which cause poliomyelitis.

The strong emphasis on polio also meant, that the extensive routine vaccination programme (routine EPI) was likely neglected at least to some extent – not least because of staff shortages. This can be described as a kind of crowding out, which came about as an unintended negative consequence of intensifying the polio campaigns. One notable positive aspect, however, is the significant expansion of logistics, especially in relation to cold chains.

In the course of the eradication efforts, India has taken on a high level of ownership, provided significant resources, and been particularly effective in addressing any misunderstandings or misperceptions about vaccinations which have come to light. Innovative marketing such as vaccination campaigns on public transport and at central meeting places have led to a high degree of penetration of the topic and its positive perception among the population. This distinguishes India from countries such as Pakistan and Afghanistan where polio is still endemic.

These continuous improvements in a difficult environment – as well as the use of innovative methods to integrate population groups into the programme as far as possible that are geographically and culturally difficult to reach – results in a consistently good implementation efficiency, which has improved over the course of the phases and contributed effectively to the achievement of objectives in all phases.

**Effectiveness rating: 2 (all phases)**

### Efficiency

The production efficiency (i.e. the minimum cost for achieving the results) is difficult to assess, as only data from other countries qualifies for comparison. It can be assumed, however, that the cooperation with UNICEF (responsible for distributing approximately 60% of the vaccine supply worldwide) ensured a highly experienced and cost-effective partner. The connection to local and national structures cannot be analysed within the context of this evaluation, as no data or information is available from the Indian partners in this regard. The FC mainly financed procurements and, to a lesser extent, consulting services (EUR 360,000 across all programme phases), but a “handling fee” was agreed with both UNICEF (4.5% and 2.25% respectively, depending on the phase) and the WHO (7%). No statements can be made about the appropriateness of these percentages. The costs of the programme were nevertheless high, with the number of vaccine doses administered, the high transfer costs at the interfaces between the international and Indian partners, and the high costs for distribution and local management representing areas with savings potential which could have been better exploited over the programme phases.

The schedule planning had to be adjusted several times, as the size of the country and the difficult logistics associated with this, the complex administrative structures and a degree of religiously motivated resistance to vaccination led to several extensions. This was especially pronounced in the final phases (XIV–XVI) of the programme, which were extended from 37 to 73 months (additional three years). An ex post evaluation of these operational difficulties remains tricky, but some of the challenges (for example, the outflow of funds through Indian structures) could certainly have been taken into account, at least to some extent, at the time of the project appraisal and in the design stage. Hard-to-reach segments of the population should have been given special attention right from the beginning and should have been the focus of the campaigns.

The costs per reduced burden of disease (measured in DALYs: disability-adjusted life years) and the medium to long-term consequences of successful polio eradication can be used for a macroeconomic perspective. Looking first at the cost per polio case avoided and the corresponding reduction in DALYs, the programme can be considered cost-effective. Assuming around 30,000–50,000 polio cases per year (India in the mid-1990s – the numbers vary widely for different sources), intensifying the campaign between 2006 and 2015 prevented a total of 300,000–500,000 cases based on a purely static analysis. Assuming that this intensification cost around EUR 2.2 billion, the costs amount to around EUR 4,400–7,300 per case of polio avoided. The costs saved in relation to the polio vaccinations which will no longer be necessary and the polio cases which will be avoided in the coming years and decades should also be considered here. This calculation alone indicates a favourable cost-benefit ratio and a high allocation efficiency even before the consideration of intangible and economic costs. No figures are available on the total number of children vaccinated or the number of vaccine doses administered, therefore no corresponding efficiency indicators can be calculated.

Since the framework structures were set by the GPEI and no detailed cost data is available at provincial or local level, it is not possible to consider alternatives. Likewise, no reliable statements can be made regarding potential differences in efficiency between the programme phases.

If we view the presumed inefficiencies in relation to the size and complexity of the task and the number of participants, the overall efficiency can be assessed as satisfactory. The use of local structures (as in the last phase) certainly makes sense from a development policy perspective, but no statements can be made about the resulting changes in efficiency.

**Efficiency rating: 3 (all phases)**

## Impact

The overall developmental goal was to contribute to the nationwide – and thus worldwide – eradication of polio.

The achievement of the objective at the impact level can be summarised as follows:

Indicator	Status PA, Target value PA	Ex post evaluation
(1) Continuous decline in registered infections and no additional polio cases transmitted by the wild poliovirus.	676 (2006), 0	0

The precise contribution of the FC to the achievement of this objective cannot be quantified due to the scale of the eradication measures and the various donors. However, given that the FC contributed a significant portion of the overall costs (see above), it can plausibly be assumed that the FC made an essential contribution to the achievement of the overall development policy objective. The connection between the intervention (Pulse Polio Campaign and GPEI Polio Eradication) and the eradication of the virus is undisputed.

Although the polio eradication programme did produce some undesirable side effects for the healthcare system, improvements in logistics (distribution, cold chains) have helped to make other immunisation programmes more effective, and it can thus be assumed that improving the monitoring system will help to ensure the better detection, reporting and epidemiological management of other infectious diseases (such as tuberculosis, for example). The significant burden on health professionals should be criticised in particular. A detailed study in the states of Uttar Pradesh and Bihar showed positive and negative effects of the eradication campaign on routine immunization. It is possible that effects will also be observable in the routine care of children, as well as in other public health programmes.<sup>1</sup>

Good health is generally positive overall for the economy, whether due to an improved ability to work or a reduction in the burden on those caring for relatives infected with the disease. Intangible effects can also be assumed due to the decline in severe physical deformity. It is positive that the programme also reached disadvantaged groups (children in geographically remote areas, migrants, non-resident population), making a significant contribution to improvements in health and possibly also improving levels of inclusion – albeit to a lesser extent.

The experience of India in logistics, social marketing, monitoring and in the cooperation between different institutions can be used in various degrees both for eradicating the virus in states where it is still endemic and for limiting recurrence in “at-risk” states; replicating specific interventions directly is conceivable on a technical level (e.g. for monitoring). The programme was nevertheless highly technical and vertical, strongly promoted by the donor community, where “spill-over” effects within the healthcare system and for the overall economy are not expected, or can be expected to a limited extent only. Yet taking into consideration the target achievement – India is now polio-free – the programme can be assessed as good.

**Impact rating: 2 (all phases)**

## Sustainability

There are two aspects to consider here: on the one hand, the long-term eradication of poliomyelitis (i.e. the prevention of new infections caused by the introduction of a virus from outside) and, on the other hand, the long-term impact of effects in the health system and in the further development environment. A well-functioning monitoring system is crucial for sustainable eradication. Such a system already exists in India. The next objective is to develop the “Surveillance and Containment” approach, in particular to be able to recognize unexpected external events as quickly as possible and to react accordingly. From to-

<sup>1</sup> Haenssger, M.J. (2017): Impact of high-intensity polio eradication activities on children’s routine immunization status in Northern India. Health Policy and Planning, 32, 2017, 800–808.



day's point of view, it is important that the established and effective Indian monitoring system be subject to continual improvement in order to keep the country permanently polio-free.

The improvements in cold chains to ensure effective vaccines are perhaps the most visible expression of investment in comprehensive immunisation, and these will continue to be of benefit even beyond the polio vaccination campaign. The FC financing (reduction in the share of FC grants as loan volumes increase, and shift from budget loans to subsidised-interest development loans) in the last phase of the programme can be seen as a gradual transfer of responsibility to Indian institutions in the sense of strong ownership and high sustainability.

In broader terms, the highly symbolic nature of eradication in India should be emphasised in particular. This has a positive effect worldwide, as it shows that polio can be eradicated even in very difficult and complex situations; the experience gained here can be passed on to other countries and can serve as motivation. Although there is a lack of valid data, there is evidence that Indian authorities and technical experts have developed considerable expertise in (polio) surveillance and there are indications that such knowledge is also in demand outside of the country, for example in cooperation with the neighbouring country Pakistan.

**Sustainability rating: 2 (all 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:

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

Rating levels 1-3 denote a positive assessment or successful project while rating levels 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. Rating levels 1-3 of the overall rating denote a "successful" project while rating levels 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" (level 3).