

Islamic Republic of Pakistan

FY2016 Ex-post Evaluation of Japanese ODA Loan

“Polio Eradication Project”

External Evaluator: Mimi Sheikh, International Development Center of Japan

0. Summary

The objective of this project has been to achieve both the early eradication of polio in Pakistan through the procurement of oral polio vaccines and the smooth operation of polio immunization by strengthening the administration of a nationwide polio eradication campaign. The project’s activities have been based on the Global Polio Eradication Initiative Strategic Plan 2010–2012¹ prepared by the Global Polio Eradication Initiative (GPEI)².

The early eradication of polio has been implemented according to Pakistan’s National Emergency Action Plan (NEAP) for the Polio Eradication 2011 and continuous government efforts to eradicate poliovirus remained necessary at the time of this ex-post evaluation. The project is therefore deemed highly consistent with Pakistan’s development policies and needs. Furthermore, supporting Pakistan’s public health sector including NEAP for the Polio Eradication 2011 aligns with Japan’s policies for assisting Pakistan and thus makes the project highly relevant. Regarding the project’s efficiency, all targeted outputs have been realized according to plan, with the exception of increasing blanket operations—that is, Sub-National Immunization Days (SNIDs)—from six to fifteen in response to increased polio outbreaks in areas considered to be at high risk of polio infection.³ In terms of inputs, the project cost was within the planned amount, while the project period exceeded the planned period due to the time required to complete the various administrative procedures at the project’s outset. The project’s efficiency is therefore fair. Operational indicators regarding the procurement of oral polio vaccines and strengthening the implementation of polio eradication campaigns have mostly been achieved, although the number of polio cases in the target year was greater than at the time of appraisal. This increase was largely due to external factors such as decreased political stability in high-risk areas and natural disasters; however, there was a room for improvement in the strategy and operational structure of the campaign. Therefore, the effectiveness and impact of the project are deemed fair. The operation and management of polio vaccine procurement and the polio eradication campaign have been strengthened since the time of appraisal, namely with the establishment of the National Emergency Operation Center (NEOC). The financial sustainability of polio eradication efforts remains very high. Many donors have shown particular interest in continuing to support polio eradication in Pakistan, and the polio eradication

¹ Global Polio Eradication Initiative Strategic Plan 2010–2012 (World Health Organization Press, 2010).

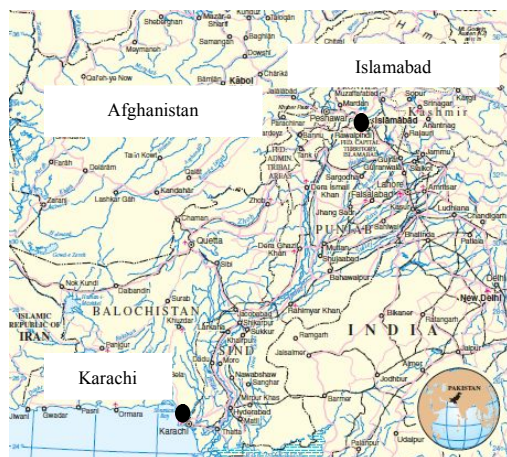
² GPEI aimed to cease all wild polioviruses (WPVs) transmission by the end of 2012 and, by 2013, officially announce the initial validation of global eradication of polio.

³ After providing polio immunization for children younger than 5 years old on National Immunization Days (NIDs), polio immunization became supplemental at SNIDs before their following NIDs in areas where several children were not vaccinated and where the risk of polio virus infection is considered to be high.

campaigns continued to be active at the time of this ex-post evaluation. The sustainability of results achieved by the project is therefore high.

In light of the above, this project is evaluated to be satisfactory.

1. Project Description



Project site⁴



Children receiving oral polio vaccines

1.1 Background

Poliomyelitis, commonly known as polio, is an acute infection caused by the poliovirus, which destroys motor neurons in the spinal cord and thus rapidly causes muscle weakness and acute flaccid paralysis.⁵ Polio is considered to be eradicable disease similar to smallpox, which was eradicated in 1980. The global framework to eliminate polio was enhanced when the GPEI was launched in 1988 at the 41st World Health Assembly with the goal of ceasing the transmission of wild polioviruses (WPVs) by 2000. The Western Pacific Region was certified to be polio free in 2000, followed by the European Region in 2002. Since the number of individuals infected with polio dropped by 99% from 1998 to 2000, polio eradication has been deemed an achievable goal. In 2010, the number of individuals infected with polio peaked at 1,290, all clustered in 20 countries. As of October 2011, polio remained endemic (i.e., in countries where WPVs exist) in four countries: Afghanistan, India, Nigeria, and Pakistan.⁶

In Pakistan, the number of polio cases dramatically decreased in the 1990s, but the number has

⁴ Map based on a map of the United Nation and modified by JICA. The depiction of boundaries, place names, and data shown on the map does not necessarily imply official endorsement or acceptance by JICA.

⁵ A highly infectious virus-borne disease, polio invades the nervous system and can cause total paralysis in a matter of hours. The virus is transmitted interpersonally, primarily via the fecal–oral route, and multiplies in the intestine. Initial symptoms include fever, fatigue, headache, vomiting, stiffness of the neck, and pain in the limbs. One in 200 infections results in irreversible paralysis, usually in the legs. Among individuals paralyzed, 5–10% die when their muscles required for breathing become immobilized (<http://www.who.int/mediacentre/factsheets/fs114/en/>).

⁶ To receive certification of polio-free status, a country has to have no case of wild polio for 3 consecutive years in the presence of high-quality surveillance systems, have appropriate measures and reporting systems in place to detect and respond to any importation of the virus, and have mechanisms for reviewing and verifying documentation on the containment of laboratory stocks and inactivated polio vaccine production.

plateaued since 2000. Countries where polio remains endemic are required to carry out polio eradication campaigns six to eight times per year, in addition to providing routine immunizations under the framework of the Expanded Program on Immunization (EPI).⁷ Pakistan’s government, with the support of the World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF), had organized and implemented polio eradication campaigns. However, clusters of polio cases identified in Pakistan’s Khyber Pakhtunkhwa (KP), Balochistan, and the Federally Administered Tribal Areas (FATA) ; where the polio eradication campaigns could not be implemented due to security issues, have indicated the need for further anti-polio measures in areas along the Pakistan–Afghanistan border. The low salaries of vaccinators working for polio eradication campaigns in Pakistan due to budget shortages had also been identified as problematic. As a result of both issues, the project had supported polio eradication campaigns in Pakistan that particularly involved the procurement of oral polio vaccines (OPVs) and the provision of vaccination services. Further, a loan conversion mechanism was applied to this project, in which Bill and Melinda Gates Foundation will subrogate the principal payment of the yen loan if the government of Pakistan achieves agreed indicators. It was expected that this financial scheme would encourage the polio eradication efforts of the government of Pakistan and contribute to reduced financial burden of the government in its anti-polio measures.

1.2 Project Outline

The project’s objective is to optimize the OPV-based immunization mainly by procuring OPVs and providing services necessary for polio eradication campaigns; all were to contribute to the eradication of polio in Pakistan.

Loan Approved Amount/ Disbursed Amount	4,993 million yen / 4,980 million yen	
Exchange of Notes Date/ Loan Agreement Signing Date	August 2011 / August 2011	
Terms and Conditions	Interest rate	0.01% ⁸
	Repayment period	40 years
	Grace period	10 years
	Conditions for procurement	General untied

⁷ In response to diseases that were major causes of death among the population younger than 5 years old in developing countries (i.e., diphtheria, whooping cough, tetanus, measles, poliomyelitis, and tuberculosis), the EPI, a WHO program initiated in 1974 in cooperation with UNICEF, has sought to ensure that infants, children, and mothers have access to routinely recommended infant and childhood vaccines (*Glossary for International Cooperation*, 3rd ed., International Development Journal, 2007.).

⁸ Minimal rate was applied to the project due to disaster recovery for the purposes of managing the diffusion of polio infection as a result of flood damage.

Borrower / Executing Agency	President of Pakistan / Ministry of National Health Services, Regulations and Coordination (MoNHSRC)
Project Completion	October 2013
Main Contractors (Over 1 billion yen)	World Health Organization (WHO) United Nations Children's Fund (UNICEF)
Main Consultant (Over 100 million yen)	-
Feasibility Studies, etc.	-
Related Projects	<p><i>ODA Loan</i></p> <ul style="list-style-type: none"> • Polio Eradication Project(Phase 2) (May 2016) <p><i>Technical cooperation</i></p> <ul style="list-style-type: none"> • Expanded Program on Immunization, Polio Control Project (September 2006 – September 2011) • Project for the Strengthening of Routine Immunization (October 2014–October 2017) <p><i>Grant aid</i></p> <ul style="list-style-type: none"> • Project for the Eradication of Poliomyelitis (UNICEF) (every year from 1996 to 2010) • Project for the Control and Eradication of Poliomyelitis (UNICEF) (every year from 2011 to 2014) • Project for the Control and Eradication of Poliomyelitis (2015 and 2016) <p><i>Other donors</i></p> <ul style="list-style-type: none"> • The World Bank Group (Third Partnership for Polio Eradication Project (2009-2014)) • UNICEF (i.e., procured oral polio vaccines, organized social mobilization, trained vaccination workers) • WHO (i.e., provided services for polio eradication campaigns) • The Bill and Melinda Gates Foundation (i.e., provided financial support)

2. Outline of the Evaluation Study

2.1 External Evaluator

Mimi Sheikh, International Development Center of Japan Inc.

2.2 Duration of Evaluation Study

The ex-post evaluation study was conducted according to the following schedule:

Duration of the Study: October 2016 – October 2017

Duration of the Field Study: March 6, 2017 – March 16, 2017

2.3 Constraints during the Evaluation Study

Two constraints affected the evaluation study. First, the field study was limited to Islamabad due to security reasons and the period and scope of beneficiary study conducted in Islamabad were restricted as well. Consequently, information was obtained by interviewing members of implementation agencies and of project-related organizations, and existing data were used to evaluate the project. Second, detailed information regarding the monetary contributions, expenses, and budget of organizations supporting the project in order to review total project cost could also not be obtained. Therefore financial statements of JICA were used to analyze the project inputs of efficiency. Consequently, information from Planning Commission Form 1 (PC-1) for “Emergency Plan for Polio Eradication (July 2012 - December 2015)” and 2nd Planning Commission Form 2 (2nd PC-1) for “Emergency Plan for Polio Eradication (2016 - 2018)” were used to analyze the financial aspects of operation and the maintenance of sustainability.

Due to the above, for analyzing in this ex-post evaluation, the main resources were as follows: information from JICA’s ex-ante evaluation report, other related JICA documents, reports produced by GPEI and other donors, policy reports and existing data produced by the government of Pakistan, information obtained by interviewing and questionnaire survey to the government of Pakistan and other donor agencies and information obtained from observing the project site in Islamabad.. In addition, although sample size was limited, group interviews were held with zonal supervisors, polio health workers, volunteers; and door to door interviews with families and beneficiaries (i.e., guardians whose children younger than 5 years old received polio vaccination during polio eradication campaigns) in Islamabad. Information obtained from these studies was taken into account for the evaluation analysis.

3. Results of the Evaluation (Overall Rating: B⁹)

3.1 Relevance (Rating: ③¹⁰)

3.1.1 Consistency with the Development Plan of Pakistan

At the time of appraisal, the GPEI had aimed to cease the transmission of WPVs by the end of 2012 and in 2013 officially announce the initial validation of global polio eradication – that needs to have no case of WPVs for three consecutive years according to the schedule of the initiative’s strategic plan. In accordance with that plan, the government of Pakistan had situated

⁹ A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

¹⁰ ③: High, ②: Fair, ①: Low

the EPI and polio eradication as top priorities on the agendas of the National Health Policy 2001 and the final draft of the National Health Policy 2009. Under the initiative of former President Asif Ali Zardari, the NEAP for the Polio Eradication 2011 was launched on January 24, 2011, with the objective of eradicating polio by reinforcing anti-polio measures in high-risk districts of the country.

At the time of the ex-post evaluation, the GPEI, in accordance with its Polio Eradication and Endgame Strategic Plan 2013–2018, has aimed to entirely eradicate poliovirus from the world by 2018. In line with that plan, the government of Pakistan reported outcomes of past and future strategies for polio eradication in the NEAPs for the Polio Eradication of 2012, 2013, 2014, 2015–2016, and 2016–2017, the most recent of which had set the goal of interrupting the transmission of WPVs in Pakistan by the end of 2016 and of sustaining its condition in 2017. Accordingly, five major strategies were 1) to interrupt the transmission of poliovirus in all reservoirs of Pakistan;¹¹ 2) to detect, contain, and eliminate polioviruses from newly infected areas in the country; 3) to maintain and increase population immunity against polio throughout Pakistan; 4) to halt the international spread of WPVs by decreasing risk across common transnational reservoirs; and 5) to interrupt polio by increasing routine immunization coverage in core reservoirs.

At the time of appraisal and the ex-post evaluation, polio eradication was an emergency response measure of the government of Pakistan, and the GPEI's policy to eradicate polio at the global level had not changed. Therefore, the project has been highly consistent with Pakistan's development plan.

3.1.2 Consistency with the Development Needs of Pakistan

At the time of appraisal, Pakistan was one of four countries where polio was endemic. In 2011, there were 80 cases of polio in Afghanistan, one in India, 62 in Nigeria, and 198 in Pakistan. In Pakistan, obstacles to interrupting the spread of WPVs included the prevalence of internally displaced and nomadic peoples due to recurring conflicts along the Pakistan–Afghanistan border and natural disasters and the cross-border transmission of the viruses due to migration from Afghanistan to Pakistan.

At the time of the ex-post evaluation, poliovirus had not been eradicated in Pakistan, although the number of polio cases had been greatly reduced since the time of appraisal. During the ex-post evaluation, three countries where polio is endemic remained: Pakistan, Afghanistan, and Nigeria.¹² In 2016, there were 20 cases of polio in Pakistan, 13 in Afghanistan, and 4 in Nigeria. In Pakistan, although the percentage of children who did or could not receive polio vaccination during polio eradication campaigns, so called “missed children” was 0.7% in 2016, down from

¹¹ Eleven districts with WPVs.

¹² India became polio free in 2014.

2.0% at the time of appraisal, which indicates that continuous government efforts to eradicate poliovirus remain necessary.

Eradicating poliovirus requires the implementation of polio eradication campaigns smoothly and as scheduled. The estimated cost of polio eradication for 2016–2018 is US \$311.7 million: \$121.52 million for the procurement of polio vaccines, \$110.4 million for operational costs related to polio eradication campaigns, and \$75.6 million for the costs of social mobilization activities.¹³ Those costs cannot be covered without financial support from international partners.

From the time of appraisal to the ex-post evaluation, polio eradication efforts remained necessary. Therefore, the project has been consistent with Pakistan’s development needs.

3.1.3 Consistency with Japan’s ODA Policy

The government of Japan has provided support for eradicating polio in Pakistan since before the project commenced, including grant assistance for the Project for the Control and Eradication of Poliomyelitis (1996–2010)¹⁴ and for the technical cooperation project of the EPI/Polio Control Project (2006–2011).

At the United Nations Summit on the Millennium Development Goals in September 2010, Japan’s government announced the so-called Kan Commitment to provide comprehensive assistance amounting to US \$5 billion during the next 5 years as part of the UN Health and Development Initiative. Furthermore, Japan’s government expressed its readiness to provide Pakistan with assistance in the field of public health, including support for Pakistan’s National Emergency Action Plan (NEAP) for the Polio Eradication 2011 under the initiative of former President Asif Ali Zardari and it was stated in the Joint Statement on Japan–Pakistan Comprehensive Partnership announced during the visit of President Zardari to Japan in February 2011. The policy to ensure human security and the improvement of social infrastructure was a priority in the report “Japan’s ODA Data by Country 2012” published by the Japanese Ministry of Foreign Affairs. The report described that assistance would be provided to improve poor conditions of water and sanitation infrastructure, especially in Pakistan’s urban areas; improve health services in communities, including with programmes for the eradication of polio; and strengthen Pakistan’s capability to respond to natural disasters. Therefore, the project has been in line with Japan’s ODA policy.

This project has been highly relevant to the country’s development plan and development needs, as well as Japan’s ODA policy. Therefore its relevance is high.

¹³ Estimates in 2nd PC-1 of the “Emergency Plan for Polio Eradication (2016–2018)”.

¹⁴ Financial support in partnership with UNICEF to purchase polio vaccines needed to implement polio eradication campaigns in order to prevent the spread of infection.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

The planned outputs for the project were twofold: the procurement of OPVs and the provision of services for polio eradication campaigns. The planned and actual outputs with indicators for each output appear in Table 1.

Table 1. Planned and Actual Project Outputs

Outputs		Planned	Actual
1) Procurement of the oral polio vaccines (OPVs)			
a	OPVs procured	165,521,145 doses	205,946,200 doses
2) Service provision for polio eradication campaign			
i	National Immunization Days	8	8
ii	Sub-National Immunization Days	6	15
iii	Per diem pay for immunization workers	PKR 100/day	PKR 100/day
iv	Petroleum, oil, and lubricants		Procured
v	Finger markers		Procured
vi	Tally sheets		Procured
vii	Independent evaluator		Hired

Source: Planned output data are from JICA and actual output data are from NEOC.

Regarding Output 1 concerning the procurement of OPVs, 205,946,200 doses were procured compared to the planned 165,521,145 doses. As for Output 2 concerning the provision of services for polio eradication campaigns, i) the number of National Immunization Days (NIDs), ii) the number of Sub-National Immunization Days, iii) the per diem pay for immunization workers, iv) the purchase of petroleum, oil, and lubricants, v) the purchase of finger markers,¹⁵ vi) the purchase of tally sheets, and vii) the hiring of an independent evaluator were all executed as planned. By contrast, the number of SNIDs increased to 15 from 6 planned due to the increased number of polio cases in high-risk areas.¹⁶ Although the number of polio cases in high-risk districts totaled 32 out of 58 nationwide (55%) in 2012, the figure jumped to 79 out of 93 (85%) in 2013. The dramatic increase stemmed from the presence of armed groups in the agencies of South and North Waziristan in mid-2012 and the fatal attacks on polio eradication campaign workers that followed in December 2012, which significantly

¹⁵ A pen used to track children's vaccination status by coloring their left pinky fingers following vaccination. On average, the pen's color lingers for 1 month.

¹⁶ *High-risk areas* refer to areas where risk of polio infection is high. Although high-risk areas were categorized as either high-priority districts or priority districts at the time of appraisal, at the time of ex-post evaluation they were categorized in groups depending on the risk of polio infection—namely, Tier 1: core reservoir districts (i.e., area contaminated with polio virus), Tier 2: high-risk districts, Tier 3: vulnerable districts, and Tier 4: low-risk districts. The EOC provincial offices and GPEI categorize districts per the system of the Institute for Disease Modeling.

compromised the capacity of polio eradication campaigns. Furthermore, in August 2013, a large-scale flood occurred in and around high-risk districts, thereby restricting entry to those areas and, in turn, increasing the number of children who could not receive polio vaccination. In response, it was deemed appropriate to raise the coverage rate for OPVs by increasing the number of SNIDs. Nevertheless, the number of polio cases in 2014 totaled 306, meaning that the measure did not contribute to early polio eradication in Pakistan.



Belongings of health worker (i.e., oral polio vaccines, a finger marker, and chalk)



Cooler box contents, including oral polio vaccines and cold insulation

3.2.2 Project Inputs

3.2.2.1 Project Cost

Pakistan’s Ministry of National Health Services, Regulations and Coordination (MoNHSRC) verbally confirmed the actual project cost of 9,495 million yen, as planned. Regarding JICA’s loan, the actual project cost was 4,980 million yen, which was about 100% of the planned cost of 4,993 million yen.

3.2.2.2 Project Period

The planned project period was 23 months: from the signing of the loan agreement in August 2011 to the completion of the polio eradication campaign in June 2013. The actual project period was slightly longer; 27 months from August 2011 to October 2013 (117% of the planned period). Three reasons for the delay were pointed out by MoNHSRC, the NEOC¹⁷ and UNICEF.

1. The procurement agreement between Pakistan’s Ministry of Inter-Provincial Coordination and UNICEF took longer to finalize than planned, largely due to transfers of authority and structural changes amid the devolution in Pakistan in 2011.
2. At the beginning of the project, it took than planned to exchange a memorandum of

¹⁷ NEOC is the executing agency of the “Emergency Plan for Polio Eradication (2016 - 2018)”. Details on the NEOC appear in Section 3.5.1 Institutional Aspects of Operation and Maintenance of 3.5. Sustainability.

understanding (MOU) between UNICEF and JICA¹⁸.

3. A balance of US \$347,049.99 remained at UNICEF as of June 2013. JICA received a request from UNICEF to reallocate the balance for use during polio eradication campaigns, which were planned in response for September and October 2013 and accepted it.

Because the above was processed with consensus among JICA, the government of Pakistan, and UNICEF, those three reasons were considered appropriate.

3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

Since neither the financial nor economic internal rate of return was calculated for the project at the time of appraisal. Due to the nature of the project, a financial benefit is not existed and economical benefit is difficult to be calculated, therefore, internal rates of return were not calculated at the time of the ex-post evaluation, either.

Although the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

3.3 Effectiveness (Rating: ②)¹⁹

3.3.1 Quantitative Effects (Operation and Effect Indicators)

Seven operation and effect indicators were established, and a target value was set for each: 1) the number of polio immunizations given at supplemental immunization activities (SIAs), 2) OPV coverage of at least 90%, verified by finger marking, in the targeted accessible population of children younger than 5 years old in all high-risk districts during the project period at SIAs, 3) the number of children immunized against polio during the project period at NIDs and SNIDs, 4) the timely arrival of OPVs at all district stores of Pakistan's Department of Health at least 3 days before each SIA, 5) the procurement and delivery of UNICEF-certified OPVs in Islamabad 3 weeks prior to each round, 6) the rate of training attendance by teams deployed to Pakistan–Afghanistan border areas, and 7) the rate of teams with at least one woman in Pakistan–Afghanistan border areas. Indicators 1–5 were common indicators stipulated by JICA and the World Bank-JICA's co-financing partner. Indicators 6 and 7, targeting KP, Balochistan, and FATA, were supplementary indicators set by JICA to monitor the progress of the area along the Pakistan–Afghanistan border, where the refusal rate of polio vaccination has been high due to cultural reasons. Table 2 shows the baseline, target, and actual values of each indicator.

¹⁸ After the exchange of MOU, all other processes proceeded well. Due to this experience, a memorandum was exchanged quickly and smoothly in JICA's Polio Eradication Project, Phase 2 implemented since May 2016.

¹⁹ Sub-rating for Effectiveness is to be put with consideration of Impact.

Table 2. Project Indicators: Planned versus Actual Values

	Baseline	Target	Actual		
	2010	2013	2014	2015	2016
	Appraisal (2011)	6 months after Completion	6 months after Completion	1 Year After Completion	2 Years After Completion
Indicator 1: Number of polio immunizations given at supplemental immunization activities (SIAs) ²⁰	No data	78,376,647	156,254,099	307,156,401	283,954,050
Indicator 2: OPV coverage of at least 90%, verified by finger marking, in the targeted accessible population of children younger than 5 years old in all high-risk districts during the project period at SIAs ²¹	90%	90%	90%	93%	95%
Indicator 3: Total number of children immunized for polio during the project period at NIDs and SNIDs ²²	29,495,200	28,800,000	28,800,000	29,760,000	30,400,000
Indicator 4: Timely arrival of OPVs at all district stores of Pakistan's Department of Health at least 3 days before each SIA	92%	100%	No data ²³	96%	97%
Indicator 5: Procurement and delivery of UNICEF-certified OPVs in Islamabad 3 weeks prior to each round	18 days	3 weeks	No data	No data	No data
Indicator 6: Rate of training attendance by teams deployed to Pakistan-Afghanistan border areas	KP: 96% Balochistan: 95% FATA:95%	KP: 95% Balochistan: 95% FATA:95%	KP: 97% Balochistan: 75% FATA: 93%	KP: 98% Balochistan: 73% FATA: 95%	KP: 99% Balochistan: 97% FATA: 99%

²⁰ Obtained from the following formula; (total amount of vaccine procured (2013 is a planned value) – 10% wastage)* 90% (expected coverage in 2013)

²¹ Annual average.

²² It is the same as the number of children younger than 5 years old who had immunized at least one time during the given period at NIDs and SNIDs. The total number of children is calculated by using the estimated size of one immunization cohort (32,000,000) at OPV coverage.

²³ Unknown because data from Sindh were unavailable. Data from Karachi in Sindh were the only available data showing that OPVs were delivered 2 days prior to the polio eradication campaigns.

Indicator 7: Teams with at least one woman in Pakistan–Afghanistan border areas	KP: 65% Balochistan: 53% FATA: 8%	KP: 86% Balochistan: 70% FATA: 27%	KP: 54% Balochistan: 37% FATA: 10%	KP: 67% Balochistan: 32% FATA: 9%	KP: 84% Balochistan: 75% FATA: 9%
---	--	---	---	--	--

Source: NEOC

The summaries of each indicator shown in Table 2 are as follows.

Indicator 1: The actual number of polio immunizations administered at SIAs in 2014 was 156,254,099, which was more than twice the target value of 78,376,647. Factors affecting the difference were the achievement level of previous SIAs, polio cases at the time of SIAs, children’s state of nutrition, and the number of newborns at the time of SIAs. The actual values in 2015 and 2016 after the project’s completion also exceeded the target value. Altogether, the project has achieved Indicator 1.

Indicator 2: The actual value of the goal of OPV coverage of at least 90%, verified by finger marking, in the targeted accessible population of children younger than 5 years old in all high-risk districts during the project period at SIAs in 2014 was 90%, which met the target value. OPV coverage after the project’s completion further increased to 93% in 2015 and 95% in 2016. Therefore, the project has achieved Indicator 2.

Indicator 3: The actual number of children immunized for polio during the project period at NIDs and SNIDs of 28,800,000 in 2014 which met the target value. Since actual values in 2015 and 2016 after the project’s completion further exceeded the target value, the project has achieved Indicator 3.

Indicator 4: The actual value of the timely arrival of OPVs at all district stores of Pakistan’s Department of Health at least 3 days prior to each SIA remains unknown because data from Sindh were unavailable. Nevertheless, Indicator 4 is considered to have been mostly achieved for three reasons. First, the NEOC confirmed that OPVs were delivered to Karachi in Sindh 2 days prior to SIAs during the target year. Second, UNICEF confirmed that SIAs were never delayed due to the late arrival of OPVs. Third, based on provincial data from 2014 to 2016, Balochistan was the only area where OPVs occasionally were not delivered within 3 days prior to SIAs due to security reasons.

Indicator 5: The procurement and delivery of UNICEF-certified OPVs in Islamabad 3 weeks prior to each round were not monitored according to UNICEF and the NEOC. It is judged that the project has mostly achieved Indicator 5 considering that it achieved Indicator 4, as well as for three reasons. One, the project had to achieve Indicator 5 in order to achieve Indicator 4. Second, all OPVs used in SIAs were purchased from Europe through complex procedures based on the well-studied demand forecast and risk analysis by UNICEF, which considered that delays should not occur provided the functioning of the supply chain. Third, delays could have occurred due to natural disasters, none of which occurred during the project period.

Indicator 6: The rate of training attendance by teams deployed to Pakistan–Afghanistan border areas during the target year was achieved in KP, but not in Balochistan or FATA. There were frequent terrorist bombing attacks by religious extremist and nationalist groups in Balochistan from 2013 to 2014 targeted polio eradication campaign workers.²⁴ Interference with polio eradication campaigns by Tehrik-i-Taliban Pakistan also occurred in FATA, which hosts a base for Taliban supporters and armed groups. Consequently, attendance at training programs was limited, and the project partially achieved Indicator 6. Nevertheless, the launch of the Zarb-e-Azb military operation on June 15, 2014, in FATA has improved the program’s prospects. The project achieved the target value of Indicator 6 in all three regions 2 years after from the project’s completion.

Indicator 7: The project could not achieve Indicator 7 concerning teams with at least one woman in Pakistan–Afghanistan border areas in KP, Balochistan, or FATA because women were barred from joining polio vaccination teams due to security reasons. This indicator was established in response to results from research showing that the participation of Lady health workers (LHWs) increases vaccination coverage. Since percentage of LHWs’ participation has gradually been increasing, the target value for Indicator 7 in KP and Balochistan are considered to have been mostly achieved in 2016.

3.3.2 Qualitative Effects (Other Effects)

The idea that children’s health in Pakistan would improve with the eradication of polio informed an indicator representing a qualitative effect of the project at the time of appraisal. However, since the indicator is not logically appropriate in relation to the inputs, outputs, and outcome of the project, it will be analyzed in qualitative effects of impacts in Section 3.4

3.4 Impacts

3.4.1 Intended Impacts

3.4.1.1 Quantitative Effects

The goals of this project had been to cease all the transmission of WPVs worldwide by the end of 2012 and officially announce the initial validation of global polio eradication which requires at least three consecutive years of zero polio cases from 2013. Thus, the project expected to have no cases of polio 6 months after its completion at the time of appraisal. As Table 3 shows, 306 cases of polio were detected in 2014, meaning that the project did not achieve its goals and, worse still, the number of cases of polio increased dramatically compared to baseline data from 2010.

²⁴ The team of the polio eradication campaign was attacked by an armed group near Queta in Balochistan on November 26, 2014, that murdered four campaign workers.

Table 3. Polio cases by area in Pakistan

	Baseline	Target	Actual		
	2010	2013	2014	2015	2016
	Appraisal (2011)	6 months after Completion	6 months after Completion Year	1 Year After Completion	2 Years After Completion
Panjab	7	0	5	2	0
Sindh	27	0	30	12	8
KP	24	0	68	17	8
FATA	74	0	179	16	2
Balochistan	12	0	25	7	2
Gilgit–Baltistan	0	0	0	0	0
Azad Jammu and Kashmir	0	0	0	0	0
Total	144	0	306	54	20

Note: The value for 2014 is the annual total; KP = Khyber Pakhtunkhwa, FATA = Federally Administered Tribal Areas

Source: <http://www.endpolio.com.pk/polioin-pakistan/polio-cases-in-provinces>

The following reasons explain why the project did not achieve its goals and why the number of cases of polio dramatically increased in 2014.

1. Significant natural disasters—namely, major flooding in 2010 and 2013—in large parts of Pakistan prompted the exodus of roughly 6 million people in 2010 and roughly 1.5 million in 2013. Consequently, the locations of the migrants and their children younger than 5 years old could not be tracked, which increased the overall number of children with no vaccination status.
2. When Al-Qaeda leader Osama Bin Laden was killed by US commandos in May 2011, negative media reports linking polio eradication campaigns to the US government worsened security and prompted fatal attacks on frontline polio eradication campaign workers in 2012. The polio eradication campaigns were further disturbed when Tehrik-i-Taliban Pakistan declared a ban on polio vaccinations in June 2012. The murders caused fear and anxiety among frontline workers that, in turn, created major operational constraints for the program. Consequently, the proportion of children not vaccinated during SIAs in FATA and KP steadily increased until 2014 and the situation worsened when polio virus entered South and North Waziristan in FATA, where polio eradication campaigns were banned since 2011 (see Figure 1). The re-entry of the virus triggered a massive poliovirus outbreak during 2013–2014.

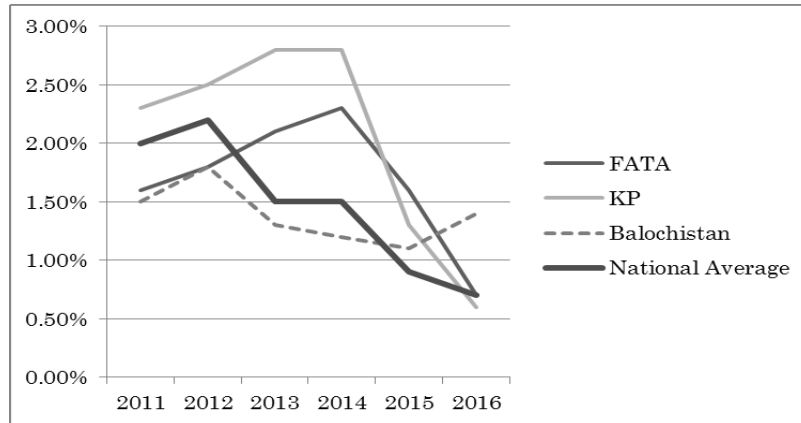


Figure 1. Children not vaccinated during polio eradication campaigns (%)

Source: NEOC

3. The project has shown room for improvement in terms of systems for its operation and management that considerably delay information sharing between union councils and districts,²⁵ between districts and provinces, and between provinces and the central government. Monitoring causes of polio outbreak in real time and rapid responses at the time of outbreak continue to be necessary. Improving the Prime Minister's Monitoring and Coordination Cell for Polio Eradication was also underscored as a necessity by a report prepared by the Independent Monitoring Board of the GPEI²⁶.

The government of Pakistan took every possible measure to mitigate the above mentioned security risks, including:

1. Introducing new emergency operational guidelines that integrated operations, security, and communication activities;
2. Ensuring the safety and security of all polio eradication campaign workers in the field with the assistance of provincial governments;
3. Liaising with all relevant stakeholders and district police officers to ensure the safety and security of polio eradication campaign workers;
4. Including a police inspector from the union council on the Union Council Polio Eradication Committee and ensuring their participation at all meetings on finalizing and implementing security plans at union councils as part of union council micro plans;
5. Ensuring that all the police stations and checkpoints are actively engaged in ensuring

²⁵ Pakistan is a federation that comprises four provinces, as well as territories. Provincial governments consist of a three-tier system of districts, tehsils, and union councils.

²⁶ The Independent Monitoring Board was established in November, 2010 to provide monitoring and guidance on the progress of GPEI Strategic Plan.

- the protection of polio eradication campaign workers;
6. Providing the support of rangers and additional checkpoints and pickets in security-sensitive areas (e.g., Karachi);
 7. Proactively engaging with tribal elders and influential members of communities by way of Civil Military Coordination Committees in FATA to gain support for polio eradication campaigns, as well as post-meeting reports from the governor of KP to tribal elders regarding polio eradication activities; and
 8. Requesting local leaders and persons of influence to raise awareness among the public and policymakers about the importance of polio vaccination.
 9. Among measures in Pakistan–Afghanistan border areas, the government of Pakistan formed a strong relationship with the Afghan Public Health Ministry that helped to develop cross-border coordination in conducting synchronized polio eradication campaigns to cover children in both countries. Pakistan and Afghanistan organized joint meetings at the national and regional levels, as well as shared information on major polio eradication campaign-related activities.

The number of polio cases peaked in 2014 and gradually decreased in the years that have followed. At the time of the ex-post evaluation in March 2017, the number of cases remained at two. The decreased number of polio cases since 2015 were due to the following new measures undertaken by the government of Pakistan and these measures achieved desired results.

1. The accessibility of the Pakistan–Afghanistan border area tremendously improved since 2015 after the launch of Zarb Azabi military operation on June 15th 2014 in FATA by the government of Pakistan and polio eradication campaigns started to receive military support. As a result, polio eradication campaigns could be implemented in areas where campaign workers were previously unable to enter due to security reasons.
2. Since 2015, polio eradication campaigns have shifted focus from improving polio vaccination coverage by increasing the number of vaccinations given to decreasing the number of children not vaccinated.
3. A new vaccination modality called community-based vaccination became one of core vaccination strategies in which a polio vaccination worker from his or her community was appointed as a permanent community vaccinator. The community vaccinator could gain trust from his or her community by way of daily communication with locals, which decreased the number of vaccination refusals and steadily reduced the number of missed children.
4. A report by the Independent Monitoring Board of the GPEI indicated that the

function of the Prime Minister’s Monitoring and Coordination Cell for Polio Eradication needed to be improved and recommended establishing a new NEOC for polio following the example in Nigeria. Based on that advice, an NEOC was established in January 2015 for a limited period. The entire process of planning, implementation, and monitoring of polio eradication campaigns in the ongoing “Emergency Plan for Polio Eradication (2016-2018)” has been operated and managed by the NEOC.

3.4.1.2 Qualitative Effects

(1) Project’s contribution to improving children’s health in Pakistan

At the time of appraisal, it was expected that the project would contribute to the improvement of children’s health in Pakistan. According to an interview representative of UNICEF, children’s health in Pakistan generally faces serious challenges, especially regarding nutrition and accessibility to safe drinking water. The project increased the number of OPV doses according to the children’s health situation because the effectiveness of OPV depends on their health. During campaigns, polio eradication campaign workers examine the health situation of all children before providing OPVs and increase the number of OPV doses for children if necessary (e.g., if a child has diarrheal symptoms). According to interviews with polio eradication campaign workers and families in Islamabad, the health workers often receive questions about children’s health at the time of visits during campaigns and provide detailed information on the date, time, and place of routine immunization, if necessary. In addition, vitamin A has been provided as a nutritional supplement along with each OPV in the “Emergency Plan for Polio Eradication (2016-2018)” to further improve children’s nutrition.

From such qualitative evidence, it is assumed that the project has improved children’s health to some extent; however, the indicators to measure the effect have not been established at the time of appraisal. Therefore, the impact of the project on children’s health in Pakistan remains uncertain.

(2) Project’s contribution to reducing poverty in Pakistan

At the time of appraisal it was expected that the project would contribute to reducing poverty in Pakistan. When zonal supervisors, health workers, and volunteers of polio eradication campaigns were questioned at a group discussion regarding whether the project had contributed to reducing poverty, several participants answered that though the lives of the poor are difficult enough, they would become far more difficult if their children became paralyzed due to polio. Therefore, the project might have reduced the potential risks to the poor caused by polio. Similarly to the project’s potential contributions to improving

children's health in Pakistan, it is assumed that the project has somewhat reduced poverty; however, there was not sufficient evidence to show the causal relationship between polio eradication campaign and poverty reduction. Therefore, the project's impact on reducing poverty in Pakistan remains uncertain as well.

3.4.2 Other Positive and Negative Impacts

(1) Impacts on the Natural Environment

No negative impact on the natural environment has been reported in the project.

(2) Land Acquisition and Resettlement

No land acquisition or resettlement has been involved in the project.

(3) Project's contribution to improving the understanding of routine immunization

The government of Pakistan introduced EPI in 1978 to improve maternal and children's health and has promoted a vaccination program targeting nine diseases, including measles, tetanus, tuberculosis, and poliomyelitis, which have been deemed priority diseases to minimize. Vaccination activities have been undertaken by routine immunization; however, only polio vaccination has been provided with the support of global initiatives in the form of polio eradication campaigns under the framework of GPEI to eradicate polio. Despite such efforts, the rate of routine vaccination in Pakistan has remained low due to a lack of people's understanding of vaccination as a result of social and cultural customs and a lack of management capacity and skills among health workers.

In response, the project evaluator set a hypothesis that polio eradication campaigns might improve people's understanding of vaccinations in general such that people opt to receive other vaccinations as well. Hence, the evaluator analyzed that the polio eradication campaigns may help people to gain a deeper understanding of immunization in general and thereby increase the coverage of routine immunization in Pakistan in this evaluation, along with expected impacts considered at the time of appraisal.

As discussed earlier, at group interviews held with polio health workers and families and beneficiaries (i.e., guardians whose children younger than 5 years old received polio vaccination during polio eradication campaigns) in Islamabad, health workers often received questions about children's health at the time of visits during campaigns and they provided detailed information on the date, time, and place of routine immunization. Interview surveys of four families in Islamabad also show that all four families who posed such questions accepted polio vaccination for their children because they had received explanations from health workers or information from media regarding the importance of receiving polio vaccinations for children. Furthermore, two out of the four families asked questions their

health to polio health workers and received some advice and information about routine immunization and children's health. A UNICEF study undertaken with the support of Harvard University in 2016 also shows that guardians who opt to receive polio vaccination for their children are likely to accept vaccination in general compared to guardians who refuse polio vaccination.²⁷

Due to the constraints discussed in Section 2.3, sufficient number of samples could not be collected for analysis; however, it is assumed that the project might have improved the understanding for routine immunization to some extent.

Because operational indicators for measuring the effectiveness were mostly achieved, the procurement of OPVs was further assured and the provision of services for the polio eradication campaigns were strengthened by the project. As for measuring the project's impact, the number of polio cases in the target year ended up exceeding the number at the time of appraisal. Although that outcome is largely due to external factors, including worsening political stability in high-risk areas and natural disasters, there is room for improvement in the strategic and operational aspects of the campaign. Above all, the project has not succeeded in achieving the eradication of polio in Pakistan. Looking at the outcome indicators of the ongoing "Emergency Plan for Polio Eradication (2016-2018)", the number of polio cases was 20 in 2016, which had dropped to two at the end of March 2017. Factors of improvement are largely due to military support that allowed the "Emergency Plan for Polio Eradication (2016-2018)" to implement polio eradication campaigns in areas previously inaccessible during the project. Furthermore, lessons learned from this project such as a newly establishment of the NEOC and the monitoring missed children were applied in the ongoing plan. In all, the project has contributed to ongoing polio eradication efforts of the government of Pakistan.

This project has achieved its objectives to some extent. Therefore effectiveness and impact of the project are fair.

3.5 Sustainability (Rating: ③)

3.5.1 Institutional Aspects of Operation and Maintenance

At the time of appraisal, coordinated with the Ministry of the Internal Provincial Coordination as an executing agency, the Prime Minister's Monitoring and Coordination Cell for Polio Eradication became responsible for devising a national policy, preparing budget, and raising funds from in and outside the country. Meanwhile, provincial health offices were responsible for making provincial-level plans and providing technical support

²⁷ A Poll Supporting Polio Vaccination: Knowledge, Attitudes and Practices in Research-Accessible High-Risk Districts of Pakistan in 2016: Strategic Summary Report, Harvard T. H. Chan School of Public Health, Harvard Opinion Research Program, and UNICEF.

and vaccinations to districts, whereas district health offices were responsible for making district-level plans and estimating the target population, the necessary amount of OPVs, and ensuring cold chains, as well as monitoring and implementing polio eradication campaign activities in the field, including OPV distribution and vaccination.

As discussed in Section 3.4 Impact, the situation regarding institutional arrangement differed at the time of the ex-post evaluation, since the NEOC was established in January 2015 and undertook the operation and monitoring of the “Emergency Plan for Polio Eradication (2016–2018)”. The NEOC is composed of a national EOC and five provincial EOCs managed by EOC coordinators. The prime minister’s focal person and the six EOC coordinators form the National Polio Management Team, and together, they are primarily responsible for delivering the objectives and targets stated in the NEAP for the Polio Eradication. The NEOC, overseen by the Prime Minister’s National Task Force,²⁸ the Prime Minister’s Focus Group,²⁹ the National Steering Committee³⁰ and the MoNHSRC,³¹ is responsible for the planning, implementation, and monitoring of polio eradication activities in coordination with different stakeholders.

Under the principle of having one team under one roof, all project-related tenant offices of project-related organizations were established in the NEOC building. The updated statuses of polio cases, including environmental samples that tested positive³², are collected from union councils, districts, and provinces by the NEOC every morning. Aggregated results are reviewed by senior engineering staff and program leaders of partner agencies directed by the EOC national coordinator at the morning meeting and countermeasures and the preparation for forthcoming campaigns discussed. Therefore, the major differences at the time of ex-post evaluation compared to the time of appraisal are the establishment of the NEOC and the fact that the project can now collect information from union councils in real time. Furthermore, data separately managed by UNICEF and WHO have been integrated since the establishment of the NEOC and uniformly managed in the NEOC data room.

According to interviews and responses to a questionnaire distributed to UNICEF and WHO, the operation system managed by the NEOC functions very well and currently needs no improvement. In addition, international donors have noted that the autonomy of the government of Pakistan has improved during the “Emergency Plan for Polio Eradication (2016–2018)”.

²⁸ Responsible for fast-tracking the implementation of the NEAP for the Polio Eradication and meets on a quarterly basis.

²⁹ Headed by the prime minister and meets monthly to review progress and strategize remedial measures.

³⁰ Reviews the program’s performance and implementation of the NEAP for the Polio Eradication and meets every other week.

³¹ Executive agency of the PC-1 for the NEAP for the Polio Eradication and the routine immunization program at the federal level that ensure resources for those programs, as well as coordinates with provincial health departments to manage vaccine supplies at SIAs.

³² Cases where poliovirus was detected from sewage or environmental sample tests.

Altogether, the operation system of the project at the time of the ex-post evaluation has improved since the time of appraisal.

3.5.2 Technical Aspects of Operation and Maintenance

At the time of the ex-post evaluation, all project activities have been succeeded under the “Emergency Plan for Polio Eradication (2016–2018)”. There have been no delays in the provision of vaccines, and no campaigns have been delayed due to the shortage of vaccines. The current rate of vaccine wastage is 10%, which is equivalent to the global standard rate. Although the Islamabad International Airport does not house a cold storage facility, vaccines are delivered smoothly, not only because the full support of the government of Pakistan ensures that vaccines are procured in the shortest possible time at the airport, but also because the vaccine warehouse is near the airport.

The campaign methods and procedure in the “Emergency Plan for Polio Eradication (2016–2018)” have mostly been maintained. It puts more effort toward increasing vaccination coverage by reducing the number of missed children by diversifying vaccination methods via programs involving community-based vaccination and mobile team vaccination, which targets migrating people. Furthermore, the communication and service techniques of health workers active in polio eradication campaigns have improved since the time of appraisal according to donors and the NEOC. In particular, LHWs have shown remarkable performance during campaigns (Box 1).

Box 1. Contribution of Lady Health Workers in Polio Eradication Campaigns

Lady health workers (LHWs) contribute significantly to polio eradication campaigns in Pakistan. Benazir Bhutto, the former prime minister of Pakistan, launched the LHW program, also known as the National Program for Family Planning and Primary Healthcare, in 1994 to train women to serve as community health providers in health promotion, disease prevention, and family planning in rural areas across Pakistan. To apply to become an LHW, a woman needs to receive a recommendation from her community and complete more than 15 months of training courses. Pakistan’s healthcare system currently boasts roughly 100,000 certified LHWs (National Health Vision Pakistan, 2016–2015).

LHWs play a vital role in polio eradication campaigns. In rural areas in Pakistan, cases in which a child’s mother or other woman guardian refuses to meet with a man healthcare worker are common, and LHWs can mitigate that setback. Their other strengths have been noted at a group discussion held with healthcare workers in Islamabad who work for polio eradication campaigns. For example, whereas a man healthcare worker needs to check whether children are



Social mobilization activities by a lady health worker (Source: UNICEF)

at home from the outside the house, LHWs can enter those houses. Some areas of Pakistan observe the custom that guardians may not show an infant less than 40 days old in public, LHWs can enter private houses to provide polio vaccinations, as well as ascertain whether there are other unvaccinated children in the household. Shaji, who has been working as a LHW for about 20 years, said in an interview that she has access to all households in her community and can their members at any time. She is well trusted by her community and discusses general health issues with people therein, not only during polio eradication campaigns, but also on a daily basis.

The goal of the “Emergency Plan for Polio Eradication (2016–2018)” is to stop polio virus transmission by 2018 and officially announce the validation of polio eradication in 2020. UNICEF and WHO according to their interviews are determined to continue their support until polio eradication is achieved. When polio eradication is achieved, the role of NEOC will end and the polio vaccination activities will be integrated with routine immunization activities. Looking ahead to after eradication, some donors such as the World Bank have already shifted its funding to the EPI. In parallel with supporting polio eradication campaigns, JICA undertook “Expanded Program on Immunization, Polio Control Project” from 2006 to 2011 and “Project for the Strengthening of Routine Immunization” from 2014 to 2017 through technical assistance in order to improve skills of health workers who provide routine immunization service and hence to strengthen Pakistan’s routine immunization activities as a whole.

Altogether, sustainability of technical Aspects of operation and maintenance of the project is ensured by NEOC through implementation of the “Emergency Plan for Polio Eradication (2016–2018)”.

3.5.3 Financial Aspects of Operation and Maintenance

As discussed in Section 2.3 Constraints during the Evaluation Study, information from PC-1 for “Emergency Plan for Polio Eradication (July 2012 - December 2015)” and second PC-1) for “Emergency Plan for Polio Eradication (2016 - 2018)” were used to evaluate the financial aspects of operation and the maintenance. PC-1, produced for every project in Pakistan, states a detailed description and financial plan for the project. For this project, PC-1, produced in October 2012, shows the project plan from July 2012 to December 2015.³³ It was revised in October 2015 and added the extended project plan from 2016 to 2018. According to second PC-1, the project fund confirmed by the end of December 2015 was US \$316.37 million, whereas the project expenditure by the same period was \$290.17 million. With a balance of \$26.2 million, it can be concluded that the project has presented no financial problems.

Table 4 presents the estimated project cost from 2016 to 2018, whereas Table 5 presents the expected funding sources. As the tables reveal, the project will not face financial issues

³³ The project period in PC-1 differs from the planned period of this project (August 2011–June 2013).

until at least the end of 2018 since project costs are within the expected project funds. In addition, the project evaluator interviewed the World Bank, UNICEF, WHO, and Pakistan’s MoNHSRC about the project’s financial situation and confirmed no problems at present. The World Bank shifted its funding from the Project to the EPI in the “Emergency Plan for Polio Eradication (2016 - 2018)” since there were sufficient funds to support the project.

As described, many donors, partner organizations, and countries have continuously funded the project and shown particular interest in supporting the project since the eradication of polio is close at hand. Therefore, the project’s financial sustainability is expected to be high until at least 2018.

Table 4. Estimated Project Cost (in million USD)

	2016	2017	2018	Total
Estimated project cost	143.48	105.01	89.43	337.70
Funds carried over from 2015	-	-	-	▲26.00
Total estimated project cost				311.70

Source: Emergency Plan for Polio Eradication (2016 - 2018) (second PC-1)

Table 5. Funding Sources, 2016–2018 (in million USD)

Sources	Expected amount
Islamic Development Bank	100.00
Japan International Cooperation Agency	50.00
Others (e.g., Canada, United Arab Emirates, Germany, Saudi Arabia, Kuwait)	167.10
Total estimated funds	317.10

Source: Emergency Plan for Polio Eradication (2016 - 2018) (second PC-1)

3.5.4 Current Status of the Project’s Operation and Maintenance

The project evaluator visited a health center in Islamabad and confirmed that tally sheets have been properly stored in its database and that finger makers have been properly distributed and safely stored. Because polio vaccines, finger markers, and tally sheets supplied by the project are expendable, the operation and maintenance of such supplies are unnecessary.

No major problems have been observed in the institutional, technical, or financial aspects of the project, and current status of the operation and maintenance system. Moreover, the polio eradication campaigns continued to be active at the time of the ex-post evaluation. Therefore sustainability of the project effects is high.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

The objective of this project has been to achieve both the early eradication of polio in Pakistan through the procurement of oral polio vaccines and the smooth operation of polio immunization by strengthening the administration of a nationwide polio eradication campaign. The project's activities have been based on the Global Polio Eradication Initiative Strategic Plan 2010–2012 prepared by GPEI.

The early eradication of polio has been implemented according to NEAP for the Polio Eradication 2011 and continuous government efforts to eradicate poliovirus remained necessary at the time of this ex-post evaluation. The project is therefore deemed highly consistent with Pakistan's development policies and needs. Furthermore, supporting Pakistan's public health sector including NEAP for the Polio Eradication 2011 aligns with Japan's policies for assisting Pakistan and thus makes the project highly relevant. Regarding the project's efficiency, all targeted outputs have been realized according to plan, with the exception of increasing blanket operations—that is SNIDs—from six to fifteen in response to increased polio outbreaks in areas considered to be at high risk of polio infection. In terms of inputs, the project cost was within the planned amount, while the project period exceeded the planned period due to the time required to complete the various administrative procedures at the project's outset. The project's efficiency is therefore fair. Operational indicators regarding the procurement of oral polio vaccines and strengthening the implementation of polio eradication campaigns have mostly been achieved, although the number of polio cases in the target year was greater than at the time of appraisal. This increase was largely due to external factors such as decreased political stability in high-risk areas and natural disasters; however, there was a room for improvement in the strategy and operational structure of the campaign. Therefore, the effectiveness and impact of the project are deemed fair. The operation and management of polio vaccine procurement and the polio eradication campaign have been strengthened since the time of appraisal, namely with the establishment of NEOC. The financial sustainability of polio eradication efforts remains very high. Many donors have shown particular interest in continuing to support polio eradication in Pakistan, and the polio eradication campaigns continued to be active at the time of this ex-post evaluation. The sustainability of results achieved by the project is therefore high.

In light of the above, this project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 Recommendations to the Executing Agency

It is expected that polio virus transmission will be ceased in Pakistan in the near future, and then polio vaccination activities are being seamlessly integrated with routine immunization efforts. Strengthening the practice of routine immunizations, however, will require ongoing

initiatives. The experiences and know-how gained in the course of polio eradication campaigns as well as the human resources trained during the project (such as health workers and volunteers) will likely play a major role in the strengthening of routine immunization practices going forward. For this reason, the NEOC needs to put together documents summarizing the insights and expertise accumulated so far, the potential to utilize human resources for the strengthening of routine immunization practices, and similar information before the “Emergency Plan for Polio Eradication (2016 - 2018)” is completed. These documents then need to be shared with donors who are supporting routine immunizations coordinated by MoNHSRC.

4.2.2 Recommendations to JICA

As the NEOC creates the proposal documents described above, the JICA Pakistan Office should advise the NEOC as needed based on the insights it gained during past polio eradication campaigns as well as on its experiences with a technical cooperation project, the Strengthening of Routine Immunization, currently in progress.

4.3 Lessons Learned

1. Take appropriate measures based on the characteristics of high-risk regions in order to rapidly stop the spread of diseases in infectious disease control projects

The aim of this project was to rapidly cease polio virus by launching polio eradication campaigns. The project planned a certain number of NIDs and SNIDs to be carried out at the time of appraisal. However, while campaigns implemented more times than planned, they still did not successfully stop polio virus, and if anything, the number of polio cases increased due to the external factors such as worsening political stability and natural disasters. Given this situation, it would have been impossible to stop polio virus using the same methods that were used in this project, and project strategy was therefore revised in order to place the focus on missed children who are common in areas at high risk for the spread of the disease.

There were several reasons that some children were not vaccinated or could not be vaccinated during the campaigns. One was that health workers were unable to clearly determine the children’s whereabouts—either because they were out of the house, taking a nap, or traveling with seasonal migrants or nomadic families. Another was that their parents or guardians would not allow them to get the vaccine due to religious, spiritual, or superstitious reasons. Given this situation, strategies implemented during the “Emergency Plan for Polio Eradication (2016 - 2018)” include the short-term administration of vaccinations during a “community vaccination campaign” and a “mobile vaccination campaign” targeting Pakistan’s floating population. Influential community members and religious leaders are also being called upon to help explain to parents and guardians the importance of getting the vaccinations, while proactive measures

are being taken to build trust with parents and guardians through the utilization of community health workers, for example. These and similar approaches are successfully reducing the percentage of missed children. When implementing infectious disease control projects that aim to rapidly stop the spread of diseases like polio, it is critical that characteristics of regions at high risk for infection be analyzed early on in the project and measures tailored to these specific features of those regions be intensively implemented in addition to uniform implementation of polio campaigns.

2. Rapid response to emergency conditions with the establishment of a temporary organization (National Emergency Operation Center)

As mentioned earlier, the number of polio cases spiked in 2014, and project strategy was revised as it was determined that employing the same methods used in this project would not stop the virus from spreading. In terms of systems and operations, an issue of particular concern (as described in the section on impact) was the amount of time it took for information at the union council level to reach the central government. This meant that once a polio outbreak was discovered, it took time for countermeasures to be implemented. Furthermore, each donor was separately managing polio-related data from the project. The World Health Organization, for example, was managing data on surveillance and polio eradication campaign activities, while UNICEF was managing data on the amount and location in which procured polio vaccines were being used. Despite the fact that countermeasures based on a factor analysis of the outbreak must be taken quickly when a polio outbreak is identified; inter-agency communication of the government of Pakistan, communication between donor agencies and the government of Pakistan, and project management were not functioning well during project implementation.

Taking after the polio eradication project in Nigeria, a National Emergency Operation Center was set up in 2012 based on a proposal from the American consulting firm McKinsey & Company, with the result that polio virus was quickly contained in Nigeria thereafter. Referring to this successful case study, an NEOC was established in Pakistan in 2014 as well. In further reference to the Nigerian example, WHO, UNICEF, the Bill & Melinda Gates Foundation, and other key project implementation donors set up satellite offices within the NEOC (One team under one roof). UNICEF and WHO which had previously implemented separately managed polio eradication campaigns, combined their data on the number of polio cases, environmental surveillance, and so on to conduct centralized data collection, monitoring, and analysis operations from a data management department within the NEOC. A polio-related database then linked up with nearly every province online, so that provinces could send information to the NEOC each morning to be shared with EOC staff in their regular 9:30 AM meeting the following day. The meeting is led by a NEOC coordinator appointed by MoNHSRC who formulates with a daily strategy based on data collected in real time. When a polio outbreak is

detected, an emergency call is sent out in order to track down the cause and promptly contain the infection while working in collaboration with the local area. In the case of Pakistan, severe political instability in the areas deemed to be at high risk for polio outbreaks resulted in the establishment of several systems designed to ensure safe project operations, such as placing security officers in the NEOC and assigning armed forces to accompany polio workers on polio eradication campaigns in high-risk areas. Since introducing these frameworks, the implementation of polio eradication campaigns has gone very smoothly, and the number of polio cases is being significantly reduced. When getting involved in projects of high urgency situation such as Zika virus disease and Ebola fever in public health and a disaster recovery assistance with multiple donors, JICA should ideally take the lead in physically placing its representatives in the same office from the planning stage, sharing information in real time, and setting up a system to ensure that issues are addressed promptly, while also advocating to the host country government and donors the importance of these efforts.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	1. Procurement of the oral polio vaccines ➤ 165,521,145 doses 2. Service provision for polio eradication campaign ➤ National Immunization Days: 8 ➤ Sub-National Immunization Days: 6 ➤ Per diem pay for immunization workers: PKR 100/day ➤ Petroleum, oil, and lubricants ➤ Finger Markers, Tally Sheets ➤ Cost for Independent Monitoring	1. Procurement of the oral polio vaccines ➤ 205,946,200 doses 2. Service provision for polio eradication campaign ➤ Executed as planned ➤ Sub-National Immunization Days: 15 ➤ Executed as planned ➤ Executed as planned ➤ Executed as planned ➤ Executed as planned
2. Project Period	August 2011 – June 2013 (23 months)	August 2011 – October 2013 (27 months)
3. Project Cost		
Amount Paid in Foreign Currency	9,296 million yen	–
Amount Paid in Local Currency	199 million yen	–
	(207 million Pakistan rupee)	–
Total	9,495 million yen	–
ODA Loan Portion	4,993 million yen	4,980 million yen
Exchange Rate	1US dollar = 82.5 yen 1 Pakistan rupee = 0.96 yen (As of April 2011)	– –
4. Final Disbursement	April 2014	