

**Study Report
on
The Project
for
Eradication of Poliomyelitis
in
The Republic of India**

April 1996

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PREFACE

In response to a request from the Government of the Republic of India, the Government of Japan decided to conduct a basic design study on the Project for Eradication of Poliomyelitis and entrusted the Japan International Cooperation Agency (JICA) to conduct the study with the assistance of the Japan International Cooperation System (JICS).

I hope that this report will contribute to the promotion of the project and to the enhancement of friendly relations between our two countries.

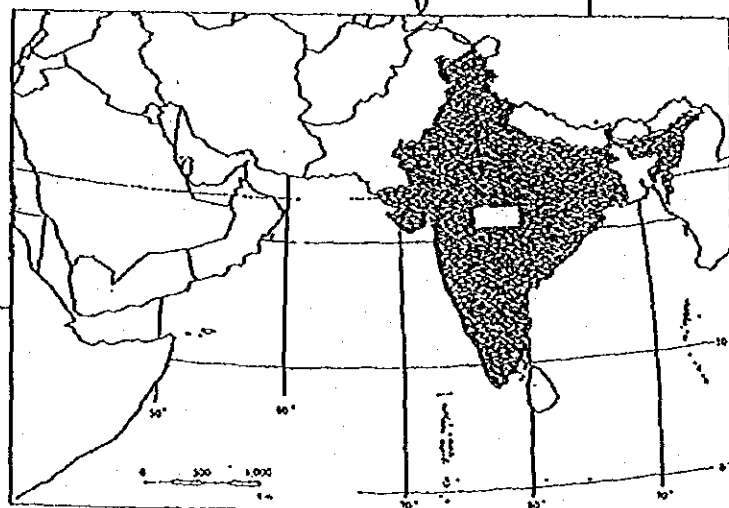
I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of India for their close cooperation extended to the team.

April 1996

Kimio Fujita

President

Japan International Cooperation Agency



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Chapter 1 Background of the Project

1-1 Background and Contents of the Request

1-1-1 Background of the Request

India was the first country among developing nations to implement a programme of government-supported family planning. After the rate of population growth reached 2.25% in 1971, a family planning programme led by the government of Indira Gandhi between 1975-77 resulted in a wave of forced sterilization operations, the number of which increased dramatically from 1,300,000 in the year 1974-75 to 8,100,000 in 1976-77. This aggressive policy led to the fall of the Indira Gandhi administration in the national elections of 1977, and the population control programme came to be renamed as the family welfare programme, based on the principle of respecting the free will of individual citizens. This new family planning programme incorporated family welfare, the Mother and Child Health, nutritional improvement, the raising of literacy among women, women's rights and education into population matters, etc. The National Health Policy of 1982 set the targets of reducing the NRR (net reproduction rate) (*) to 1 and the infant mortality rate to 60.

* Net reproduction rate: The average number of children borne by women in the case where it is assumed that the birth rate and death rate at a set age are the same. When $NRR = 1$, it means that the birth rate is at a level where the population is kept constant.

Health indicators in India are at extremely high levels, as evidenced by an infant mortality rate of 74/1000 (1993) and a child mortality rate of 26.5/1000. Moreover, four out of every 1,000 pregnant women are thought to die as a result of pregnancy-linked diseases. Occurrences of infectious diseases are also extremely widespread, with there being 28,257 cases of polio in 1987 and 11,849 cases of newborn tetanus in 1988. In order to improve the situation, the Government of India has conducted the UIP (Universal Immunization Programme) since 1985, the result of which has been

massive improvements in immunization rates over the past 10 years. Despite these efforts, outbreaks of polio (5,881 in 1994) and newborn tetanus (3,626 in 1994), although on the decrease, still remain at a high level. As a result, India has become the biggest target country within the Polio Eradication Plan being advanced mainly by the WHO.

As a result of the UIP, which has been implemented in India since 1985, infectious diseases such as polio, newborn tetanus, diphtheria, tuberculosis and whooping cough, etc. have been on the decline. This programme continues to be implemented by the Government of India as part of its CSSM Programme (Child Survival and Safe Motherhood Programme). The newest phase of the programme aims to carry out PPI (Puls Polio Immunization) for three or four years from 1995. PPI involves the implementation of national immunization days (NID) and, in addition to routine immunization, it intends to carry out vaccinations on a national scale twice in the winter season. Because this method of national immunization takes place together with routine immunization, it is effective in preventing polio and has come to be frequently implemented in developing countries of high polio incidence, where it has helped to reduce such outbreaks effectively. Following the expansion of the CSSM Programme to all districts between 1989-1990, great progress has been witnessed. Every year, 25 million newborn infants are vaccinated before they reach their first birthday and 27 million pregnant women vaccinated against tetanus.

Regarding the procurement of vaccinations, India is able to produce domestically and supply almost vaccines except for OPV (oral polio vaccine).

The CSSM is being implemented under a joint effort by the World Bank, UNICEF and the Government of India, however, because of the wide-ranging nature of the activities, support is required from international agencies and other donors. Moreover, as UNICEF has already provided widespread support in supplying BCG vaccines and developing the cold chain and now finds it difficult to increase its expenditure, the securing of the necessary budget for implementation of the CSSM Programme has become difficult.

Returning to the subject of polio vaccines, in addition to 150 million doses of routine polio vaccine, a further 200 million doses of OPV will become necessary for the PPI national immunization days. In this Project, 23.9 million and 26.3 million doses of polio vaccine are estimated to be required in 1996 and 1997 respectively in 10 states (not including Bihar).

In addition, much of the cold chain equipment that has been provided through support from UNICEF is already in need of renewal. However, because the difficult financial situation in India makes it impossible for the government to renew the equipment itself, support from Japan is hoped for.

A total of 10 states are targeted under the Project; they are Bihar, West Bengal, Sikkim, and seven other north-eastern states including Arunachal.

The main industry in these areas is agriculture and, approximately 70% of the total working population is involved in agriculture in one way or another. Table 1-1 shows the farming population in the target areas.

Table 1-1 Farming Population in the Target Areas

Area	Farming Population (1000)			Total Working Population (b)	Ratio (a/b)
	Farmers	Laborers	Laborers Total (a)		
< East >	27,104 (24.5)	18,879 (25.2)	45,983 (24.8)	67,106 (23.5)	68.5
Assam	3,662	911	4,533	7,068	64.1
Bihar	11,136	9,544	20,680	25,652	80.6
Orissa	4,557	2,974	7,531	10,307	73.1
West Bengal	5,835	5,037	10,872	20,530	53.0

Source: The Fertilizer Association of India, Fertilizer Statistics 1992-93

Both the rough mortality rate and infant mortality rate have been on the decline in recent years. However, great differences exist between states and the differential between urban areas and rural areas can still be observed. Refer to Table 1-2 for movements in the rough birth and rough death rate and Table 1-3 for movements in the infant mortality rate.

* Dose: The unit of polio vaccine administration. 1 dose = vaccine administered to one person per time.

Table 1-2 Movements and Regional Differentials in Rough Birth Rate and Rough Death Rate

Year	Rough Birth Rate (births per 1000 of population)				Rough Death Rate (deaths per 1000 of population)			
	Total	Rural Areas	Cities	Regional Differential	Total	Rural Areas	Cities	Regional Differential
1981	33.9	35.6	8.6	8.6	12.5	13.7	7.8	5.9
1985	32.9	34.3	6.2	6.2	11.8	10.3	7.8	5.2
1986	32.6	34.2	7.1	7.1	11.1	12.2	7.6	4.6
1990	30.2	31.7	7.0	7.0	9.7	10.5	6.8	3.7
1992	29.0	30.7	7.6	7.6	10.0	10.8	7.0	3.8

Source: 1981-1990, Office of Registrar-General, Planning Commission (The World Bank, 1993)

Table 1-3 Movements in Infant Mortality Rate

Year	Infant Mortality Rate (deaths per 1000 infants)		
	Total	Rural Areas	Cities
1971	129	138	82
1975	140	151	84
1981	110	119	62
1985	97	107	66
1991	80	87	53
1992	79	85	53

Source: Office of Registrar-General, SRS (Government of India, Department of Family Welfare, 1994)

The CSSM Programme is planned for implementation over five years from August 1992, and it is 100% financed by the Government of India. Mother and Child Health is the highest priority within India's health service system and, indeed, of the 17 items contained in the National Health Policy, nine are related to this sector. In order to achieve the desired level of Mother and Child Health, the CSSM Programme has set the targets of achieving an infant morbidity rate of 60/1,000 or less, an infant mortality rate of 10/1,000 or less and an expectant pregnant women mortality rate of 20/1,000 or less. Furthermore, the Universal Immunization Programme (UIP), which began in 1985, has been implemented with the aim of administering six vaccines (diphtheria, whooping cough, tetanus, tuberculosis, polio, measles) to all infants and tetanus vaccine to pregnant women. Compared to the first year of the programme in 1985-86, the rate of immunization greatly increased in 1992-93, and, by March 1993, the level of infant immunization in all vaccines stood at 85%.

As a result of the above-mentioned programmes, the reported cases of infectious diseases that can be vaccinated against are falling on the national scale. However, outbreaks of infectious diseases in the Project target areas and environs (Bihar, Uttar Pradesh, etc.) still remain at high levels, as is evidenced by the fact that 40% of all polio cases and 74% of all infant tetanus cases occur in these areas. Table 1-4 shows the reported cases of polio, infant tetanus and measles in major states.

Table 1-4 Reported Cases of Polio, Infant Tetanus and Measles in Major States (January-November, 1993)

state	Polio	Infant tetanus	Measles
Bihar	476	298	4,893
Gujarat	64	83	795
Haryana	102	107	62
Kerala	80	2	3,850
Madhya Pradesh	311	590	1,399
Maharashtra	243	57	8,192
Punjab	53	62	37
Rajasthan	124	624	739
Tamil Nadu	192	22	2,440
Uttar Pradesh	1,043	1,783	4,563
West Bengal	151	95	1,439

Source: CSSM Review, 1994

The family planning and mother and child health care service at the grass-roots level in rural villages, etc. is composed of the following areas:

1. Health workers at the village level,
2. Trained midwives at the grass-roots level,
3. Health facilities such as primary health centers (PHC) and community health centers (CHC) (health posts in urban areas),
4. Hospital network at the district and wider area level.

Currently, approximately 2,000 community health centers, 21,000 primary health centers and 131,000 sub-centers provide primary health care that includes family planning and mother and child health care services.

1-1-2 Contents of the Request

The items contained in the request include OPV required for the

PPI national immunization days, and refrigerators, deep freezers, vaccine carriers, a walk-in-freezer and other cold chain equipment required for the storage and carrying of vaccines. Table 1-5 shows the requested Polio vaccine and equipment list.

The 10 states targeted by the Project include Bihar, West Bengal and seven other states in the north-east of the country. Table 1-6 gives the state names and state capitals, etc. of the Project target areas.

Table 1-5 List of Requested Equipment

Vaccine and Equipment	1996	1997	Total
	Quantity	Quantity	
Polio Vaccine	39,118,000	39,110,000	78,228,000 doses
Deep Freezer (140L)	2,000	-	2,000
Refrigerator (300L)	225	-	225
Deep Freezer (300L)	200	-	200
Walk-in Freezer (32cub m)	1	-	1
Vaccine Carrier	43,548	41,622	85,170

Table 1-6 Project Target Areas

No.	State	Capital City	Population(*1,000)
1	Bihar	Patna	95,403.3
2	West Bengal	Calcutta	73,555.5
3	Sikkim	Gangtok	470.8
4	Arunachal Pradesh	Itanagal	968.4
5	Assam	Dispur	24,735.4
6	Meghalaya	Shillong	1,972.8
7	Nagaland	Kohima	1,398.0
8	Manipur	Inphal	2,043.7
9	Mizoram	Aizawl	795.6
10	Tripura	Agartala	3,062.4

Chapter 2 Contents of the Project

2-1 Objectives of the Project

The ultimate objective of the Project is to eradicate polio (infant poliomyelitis) from India by 2000. It aims to do this by providing polio vaccine that is in short supply for the PPI Programme together with cold chain equipment in the Project target areas (10 states including Bihar).

The PPI Programme is part of the CSSM Programme that commenced in 1992, and its achievement is classed as a state target. Other items raised within the overall CSSM Programme are as described below.

Reduction of the morbidity rate and mortality rate of infectious diseases among mothers and children in India.
Short-term Objectives

- a. Improvement of immunizations
- b. Reduction of infectious disease morbidity rates among children
- c. Improvement of the environment for mothers before and after birth
- d. Establishment of obstetrics and gynecology facilities on the district level

Medium-to-long-term Objectives

- a. Achievement of the nine national targets set for child survival and safe motherhood by 2000
- b. Eradication of polio and reduction of the child tetanus morbidity rate
- c. Provision of medical service to all expectant mothers and technical guidance relating to child-birth

2-2 Basic Concept of the Project

The objective of the Project is to reduce the incidence of and ultimately eradicate polio (infant poliomyelitis) from India by 2000. It aims to do this by supporting immunization activities in India through providing polio vaccine and cold chain equipment needed for the PPI Programme national immunization days of 1996 and 1997 in 10 states in the north-east of India.

The PPI Programme (national immunization of polio vaccine) is being conducted by the Government of India with support from international agencies such as WHO and UNICEF, etc. and donor nations including Japan. The PPI of fiscal 1996 is scheduled to be implemented on December 7, 1996 and January 18, 1997, and the Government of India has requested the Government of Japan to support this by providing OPV and cold chain equipment (refrigerators, deep freezers, vaccine carriers and walk-in-freezer, etc.) to the 10 states of Bihar, West Bengal, Sikkim and seven north-eastern states (Arunachal Pradesh, Assam, Meghalaya, Nagaland, Manipur, Mizoram and Tripura). With respect to OPV, however, this is to be provided to nine states only (not including Bihar).

In summing up the basic concept described above, the Project aims to provide vaccine and equipment to the target areas (10 states) in order to support implementation of two national immunization days of the PPI Programme at the end of 1996 and beginning of 1997. Table 2-1 shows the polio vaccine procurement plan with respect to the Project target areas.

Table 2-1 Polio Vaccine Procurement Plan

	State	Population (x 1,000)	Target Child Population Five Years and Under (x 1,000)	Required Vaccine (x10,000 doses)	Deficient Vaccine (x10,000 doses)
1996	Arunachal PR.	968.4	110.3	32.2	32.2
	Assam	24,735.4	3,053.2	903.2	903.2
	Manipur	2,043.7	232.6	68.0	68.0
	Meghalaya	1,972.8	224.5	66.6	66.6
	Mizoram	795.6	91.3	28.0	28.0
	Nagaland	1,398.0	160.4	47.5	47.5
	Sikkim	470.8	54.1	16.8	16.8
	West Bengal	73,555.5	9,040.5	2,645.5	2,645.5
	Tripura	3,062.4	348.7	104.0	104.0
	subtotal	109,004.4	13,315.6	3,911.8	3,911.8
1997	Arunachal PR.	987.8	113.3	32.5	32.5
	Assam	25,230.1	3,122.2	905.5	905.5
	Manipur	2,084.6	238.7	68.4	68.4
	Meghalaya	2,012.3	230.3	67.0	67.0
	Mizoram	811.5	94.5	28.4	28.4
	Nagaland	1,426.0	166.2	48.3	48.3
	Sikkim	480.3	56.0	17.1	17.1
	West Bengal	75,026.6	9,199.1	2,639.1	2,639.1
	Tripura	3,125.5	357.8	104.7	104.7
	subtotal	111,184.7	13,578.1	3911.0	3911.0
Total		-	-	7,822.8	7,822.8

2-3 Basic Design

2-3-1 Design Concept

The contents of the request were examined and the design concept was compiled in the following manner.

Regarding the purchase price of OPV, it costs 239 yen per dose if procured in Japan, however, if it is procured through UNICEF, the price is cheap at 0.75 US \$ per dose. Moreover, because the amount required is so large, it would be physically impossible to procure it all in Japan. Furthermore, in cases where private trading companies directly purchase vaccine from vaccine makers in Europe

and America (same makers used by UNICEF), the price balloons to 10 times the UNICEF price.

In view of price, procurement capacity and past Polio Eradication Programmes conducted in China and the three countries of Indochina, the equipment and OPV shall be purchased via UNICEF.

(1) OPV (Oral Polio Vaccine)

Usually, 150 million doses of OPV are required for routine vaccinations, but another 200 doses have become necessary for the newly started PPI national immunization days. The Project will provide the deficient polio vaccine (39 million doses) required in the target areas (excluding Bihar State) in both 1996 and 1997. The targets of the immunization days (not including Bihar State) are children aged five years and under.

(2) Cold Chain Equipment, etc.

The Project will provide the cold chain equipment that is deficient for PPI implementation and renew that equipment which is in need of replacement due to deterioration, and so on. Table 2-2 shows the contents of the requested polio vaccine and cold chain equipment.

Table 2-2 Contents of Requested Polio Vaccine and Cold Chain Equipment

	1996	1997	Total
OPV (x1000 doses)	39,118	39,110	7,8228
Deep Freezer (140L)	2,000	-	2,000
Refrigerator (300L)	225	-	225
Deep Freezer (300L)	200	-	200
Walk-in Freezer (32cub m)	1	-	1
Vaccine Carrier	45,548	41,622	85,170

2-3-2 Basic Design

(1) Overall Plan

The 1996 PPI Programme is scheduled for implementation in December 1996 and January 1997, and the OPV and equipment need to be imported into India one month before in advance of programme implementation. Regarding the OPV, because of the massive quantities involved and the fact that it must be stored through either freezing or refrigeration, consideration will need to be given to the storage

capacity on the Indian side, and close contacts will need to be maintained with the Indian side and procuring side when carrying it in. In past cases in China and Indochina, procurement has been conducted through a joint effort of the Japan side, UNICEF and the recipient, and this Project will be no different.

(2) Equipment Plan

Design considerations regarding the Project equipment are as described below.

1) Polio Vaccine

This liquid vaccine is taken orally. Compared to injected vaccine, OPV has the advantage that the antibody is maintained semi-permanently and, even if wild poliomyelitis should enter the intestines, its infection and reproduction will be prevented. This method of vaccination is adopted as normal in almost all countries. In the frozen state (-20 C or less) the vaccine can be preserved for approximately two years, while in the refrigerated state (4-12°C) it can be stored for approximately 30 days.

2) Deep Freezers (140 liters)

The smaller deep freezers are used in small facilities in cities and districts for the long-term storage of polio vaccine and other medicines that need to be freeze stored, and also the cooling of ice packs used in cold boxes and vaccine carriers.

3) Chest Refrigerators (300 liters)

Chest refrigerators are used in medium-size facilities in large cities and states for the refrigerated storage of vaccines and medicines, etc.

4) Deep Freezers (300 liters)

The larger deep freezers are used in medium-size facilities in large cities and states for the long-term storage of polio vaccine and other medicines that need to be freeze stored, and also the cooling of ice packs used in cold boxes and vaccine carriers.

5) Walk-in-Freezer

Walk-in-freezers are installed indoors in large facilities in the capital, etc. for the long-term storage of polio vaccines, etc. (to be distributed throughout the country) and other medicines that

need to be freeze stored. The freezer is wide enough to allow staff to enter and perform simple work, and its prefabricated panels mean that it can be easily assembled without having to know any special technology. The freezing unit is the plug-in type with integrated cooling and heat release, which means that it can be used through simply connecting it to the power supply.

6) Vaccine Carriers

Vaccine carriers shaped like shoulder bags can be used to carry vaccines to grass-roots sites like community halls and schools for the vaccination of small numbers of people.

The vaccine carriers function like fishermen's ice boxes, but are smaller in size. Ice packs are inserted in each of the carrier's four corners.

7) Equipment Specifications

The equipment specifications are shown below.

No	Equipment	Specification
1	Deep Freezer (140L)	Model:SB-140, Manufacturers gross volume 140 liters, Compression Type, Ice pack freezing with Vaccine, Power supply 220VAC/50Hz
2	Refrigerator (300L)	Model:MK-302, Manufacturers gross volume 282 liters, Compression Type, Ice lined refrigerator, Power supply 220VAC/50Hz
3	Deep Freezer (300L)	Model:SB-300, Manufacturers gross volume 296 liters, Compression Type, Ice pack freezing with Vaccine, Power supply 220VAC/50Hz
4	Walk-in Freezer (32cub m)	For bulk storage of Vaccine, 32cub m, Temperature:-18~-20°C, Pannel, Freezing Unit; Plug-in type,Power supply 220VAC/50Hz
5	Vaccine Carrier	Model:IVC-3, Vaccine capacity 1.6liters, External Dim.;25x25x26cm, 4 Ice pack type Weight 1.6kg

Chapter 3 Implementation Plan

3-1 Implementation Plan

3-1-1 Implementation Schedule

Implementation Schedule (execution phase)

proces	term	1996								1997
		May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	January
E/N (Exchange of Note)		▲								
Order	.7		■							
Start to Produce	95		■							
Transportation	30					■				
Distribution	20							■		
Preparation	10							■		
PPI										■

3-1-2 Obligations of the Recipient Country

- 1) To ensure the prompt unloading and passage through customs of the procured equipment in India, and to bear any expenses that arise from this work.
- 2) Following unloading of the equipment at the airport in India, to transport it over land and bear the costs that arise from this.
- 3) To ensure that the vaccine is stored in good condition at a suitable site.
- 4) To secure a sufficient budget and the staff necessary to properly utilize and maintain the equipment.

3-1-3 Special Note

Past Polio Eradication Programmes (in China and the three countries of Indochina) that have been conducted with grant aid have been implemented in close cooperation with UNICEF in consideration of the price advantage and procurement capacity offered by the said organization. In recent times, however, concern has come to be raised that UNICEF may suffer losses due to the rapid depreciation of the yen. Thus, with regard to this Project (1996 part), in order to avert this exchange rate risk, UNICEF and the Ministry of Foreign Affairs have agreed in discussions to bind a contract whereby an extra 25% is added on to the equipment price.

Thus, for the purposes of the Project, 25% has been added to all

rates (FOB).

3-2 Operation and Maintenance Plan

Regarding the polio vaccine, which is being provided to make up for the deficient portion needed for implementation of the PPI in December 1996 and January 1997, because storage and distribution equipment is being provided at the same time, it is considered that there should be no particular problems.

Of the equipment indicated in Table 2-1, items 1. through 4. require an electricity supply and the walk-in-freezer, especially, requires daily maintenance. The vaccine carriers, on the other hand, are maintenance-free and present no problem at all.

The walk-in-freezer is to be installed at the Central Medical Store Dept. in Calcutta. Because similar equipment already exists and is being properly maintained at this facility, it is thought that no problems should arise with regard to operation and maintenance following installation. With regard to the deep freezers and refrigerators, it is not clear where they will be installed or whether they will be installed as new equipment or replacements for old, however, daily maintenance is not required and no problems should arise under normal operating conditions.

Chapter 4 Project Evaluation and Recommendation

4-1 Project Effect

1) Validation of Appropriateness

In confirming the appropriateness of the Project, the following areas were validated.

Item	Results of Validation
Compatibility with Superior Programmes	As part of the CSSM Programme, the PPI Programme aims to eradicate polio (the incidence rate of which is particularly high in India) by 2000, and the Project here is in line with this objective
PPI Programme Implementation Conditions	Routine polio immunization has been going on for some time and, in order to raise the effects of this even more, the PPI Programme involving national immunization days has been implemented since 1995.
Appropriateness of Requested Equipment	<p>1) Polio vaccine</p> <p>The PPI Programme is a major undertaking involving the simultaneous administration of polio vaccines throughout the whole country, however, the fiscal circumstances of the Government of India do not allow it to secure all the vaccine that is required, and this is why it has requested international agencies and other donor nations to provide the lacking portion. Because the effectiveness of the PPI Programme would seriously decline if all the target population were not immunized at the same time, it is absolutely essential that all the necessary quantity of vaccine be secured.</p> <p>2) Cold Chain Equipment</p> <p>① The requested deep freezers, refrigerators, walk-in-freezer and vaccine carriers are indispensable equipment for the storage and carrying of vaccines.</p> <p>② The cold chain equipment provided through support from UNICEF is now in need of renewal.</p> <p>③ Because the equipment used in routine immunizations is not sufficient to conduct national immunization days, the necessary quantities have to be secured.</p> <p>④ Even after completion of the PPI Programme, the equipment can be used for continued polio and other disease vaccinations.</p>

2) Beneficial Effect

India started to conduct various immunization activities in 1985, and it first carried out the national immunization days of the PPI Programme in December 1995 and January 1996. On these occasions, vaccines were administered to 88 million and 93 million children (three years and under) respectively.

In response to the successful implementation of the PPI

Programme in fiscal 1995, the Government of India decided to expand the programme in fiscal 1996 to cover children of five years and under. As a result, it is forecast that the target population of the programme will increase to 125 million.

It is forecast that implementation of the PPI Programme will dramatically reduce the incidence of polio in India. Moreover, by continuing the programme in 1996 and 1997, achievement of the goals of the National Health Policy, including the eradication of polio, will become more of a reality. The effectiveness of a programme of national immunization days can be gauged from the case of China, which had previously had the highest incidence rate of polio in the Western Pacific region, but witnessed a rapid decline in polio cases following implementation of such a programme.

Furthermore, through the provision of cold chain equipment, it will be possible for such equipment to be utilized in immunization against diseases other than polio (BCG, tetanus, measles, etc.), and this will strengthen the overall immunization setup in India. It is certain that the equipment to be provided for the PIP Programme of 1996/1997 will be effectively utilized for a long time after the said programme. The direct beneficiaries of the Project will be the children who are in need of polio vaccinations, but, in consideration of the above points, it is considered that support of the PPI Programme by the Government of Japan will greatly contribute to improving public health and sanitation conditions in India in general.

4-2 Recommendation

As described above, implementation of the Project can reduce the incidence of polio in India and thus contribute to the eradication of polio by 2000. Having said that, the implementation of polio and other immunization programmes involves great cost and staff, and the sure implementation of surveillance after the implementation of immunization is an important factor for subsequent immunization measures. Furthermore, the proper investigation of the poliomyelitis virus needs to be carried out to monitor cases of false polio and in order to be able to proclaim the eradication of polio.

Unlike Japan, family registers are not recorded in India and it is difficult to keep track of the population. Thus, conducting surveillance by going into target areas and surveying the people who have received vaccinations is extremely important for preventing infections. In the past, the Government of Japan established a surveillance system through technical cooperation in Shantung Province in China, and this proved successful as model for all China by contributing to the reduction of polio cases in the said country.

In India, too, consideration should be given to providing technical cooperation for the establishment of a surveillance system like the one in China, in view of the fact that no such system currently exists and in order to raise the effect of the Project to a higher level. Moreover, the virus investigation setup is also very weak in India, and assistance from Japan is hoped for in this area, too. In order to raise the level of investigations and further contribute to the eradication of polio in India, thought needs to be given to the provision of technical cooperation and other support in this area.

JICA