

India

## Yamuna Action Plan Project

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Field Survey: September 2004

### 1 . Project Profile and Japan's ODA Loan



Region map of project site



Sewage treatment plant built by this project

#### 1.1 Background

The Yamuna River has its source in the Yamunotri Glacier (elevation 6,320 meters), which is located in the state of Uttar Anchal in northern India. The river runs through Delhi (elevation 220 meters) and completes its 1,400 km<sup>1</sup> course by flowing into the Ganges River at Allahabad (in Uttar Pradesh). The Yamuna River is a branch of the Ganges Rives, which has a catchment area of 34,600 km<sup>2</sup>. In India, many rivers including the Yamuna are used for bathing as sacred rivers and also provide water for drinking, etc., and so rivers are an intimate part of residents' daily lives. However, more sewage was being discharged into the rivers than could be naturally purified due to the population increase that accompanied rapid urbanization and industrialization. As a result, the contaminated rivers caused health and sanitation problems for the residents in the river valleys.

In view of this situation, the Indian Government prepared the National River Conservation Plan to promote the purification of major domestic rivers as part of a national project. From 1977 through 1978, the Indian Government's Central Water Pollution Control Board (CWPCB) conducted a fact-finding study on the pollutant inflow in all rivers in the Yamuna River Basin. Based on the study, the Yamuna Action Plan (YAP) was formed. YAP was initially positioned as a plan to follow the Ganga Action Plan (GAP) that was incorporated in the 7<sup>th</sup> 5-year plan (1985-1990), and YAP was scheduled for implementation after GAP. However, it was decided in August 1987 by the Ganges Central Planning Committee to prepare a separate independent plan for Yamuna River water conservation and hasten its implementation because purification of the Ganges River depended largely on improvement of the water quality of the Yamuna River,

<sup>1</sup>This is approximately 4 times longer than the longest river in Japan (Shinano River: 367 km).

which feeds into the Ganges. Thus, the Yamuna River purification plan became the second river purification plan at the nation level, following GAP.

### 1.2 Objective

The objective was to reduce pollutants that untreated sewage and human waste add to the Yamuna River by providing sewers and public toilets, etc., and implementing educational activities regarding environment and hygiene in 15 cities in the 3 states of Delhi, Haryana, and Uttar Pradesh (UP) situated in the Yamuna River Basin, and thereby to contribute to the improvement of water conservation in the river and to the hygiene environment in the cities in the river basin.

### 1.3 Borrower/Executing Agency

Borrower: President of the Republic of India

Executing Agency: National River Conservation Directorate (NRCD), Ministry of Environment and Forests

### 1.4 Outline of Loan Agreement

Loan Amount/Disbursed Amount	17,773 million yen/15,084 million yen
Exchange of Notes/Loan Agreement	October 1992/December 1992
Terms and Conditions -Interest Rate -Repayment Period (Grace Period) -Procurement	2.6% 30 years (10 years) General Untied (Consultant Agreement is partial untied)
Final Disbursement Date	February 2003
Main Agreement	Local Company
Consultant Agreement	Tokyo Engineering Consultants Co., Ltd. (Japan) Development Consultant Ltd. (India)
Feasibility Study(F/S), etc.	1988, Yamuna River Purification Plan, Government of India

## 2. Results and Evaluation

### 2.1 Relevance

#### 2.1.1 Relevance of Plan at the Time of Appraisal

In India's 8<sup>th</sup> 5-year plan (1992-1997), the Ganga Action Plan (GAP) was declared together with the Yamuna Action Plan (YAP). Reduction of pollutants in the Yamuna River was an urgent issue for improvement of the river environment and improvement of the health of residents in

the river basin. This project was a comprehensive environmental improvement project that included installation of sewers in 15 cities in the Yamuna River Basin, and so as a measure in response to the above issues, it was a project of high priority and pressing urgency.

### 2.1.2 Relevance of the Plan at the Time of Evaluation

In the 10<sup>th</sup> 5-year plan (2002-2007) as well, water conservation for the Yamuna River continues to be declared. Reduction of pollutants in the Yamuna River remains an important issue in Delhi, Haryana, and UP. Consequently, this project currently remains highly important because it promotes comprehensive water conservation for the river by installing sewage treatment plants, public toilets, and crematoriums and by conducting educational activities related to environment and hygiene.

## 2.2 Efficiency

### 2.2.1 Output

The beneficiary area of this project was 15 cities in 3 states, including 6 cities in the state of Haryana (Yamunagar, Kalanaur, Panipat, Sonapat, Gurgaon, Faridabad), Delhi which is directly governed by the federal government, and 8 cities in UP (Saharanpur, Muzaffarnagar, Ghaziabad, Noida, Vrindavan, Mathura, Agra, Etawah). The project had two main components, the sewer component and the non-sewer component. The planned output and the actual output of each component are shown on Table 1.

Table 1: Output of This Project (planned and actual)

	Item	Unit	Planned			Actual		
			Haryana	Delhi	UP	Haryana	Delhi	UP
Sewer Component	Sewer Pipes	km	82.7	-	39	135.9	-	43.2
	Pump Stations	locations	8	2	21	17	-	38
	Sewage Treatment Plants	locations/capacity	8/	1/	11/	11/	2/	16/
			303,000 m <sup>3</sup> /day	20,000 m <sup>3</sup> /day	402,790 m <sup>3</sup> /day	303,000 m <sup>3</sup> /day	20,000 m <sup>3</sup> /day	402,790 m <sup>3</sup> /day
Non-sewer Component	Public Toilets	locations/toilets	44/440	60/600	110/1,110	75/1,180	959/27,040	246/2,460
	Crematoriums	locations	-	2	2	31	4	70
	Bathing Facilities	locations	-	1	2	2	-	-
	Afforestation	km <sup>2</sup>	10.6	3.8	13	242	NA	NA
	Educational Activities	Number of activities	no plan	no plan	no plan	726	5,382	915
	Information Provision	Number of activities	no plan	no plan	no plan	7	4	7

Source: NRCD

Comparing the planned output and the actual output, the actual output of both the sewer and the non-sewer components generally exceeded the planned output. Looking at the output by state, the actual number of public toilets in Delhi far exceeded the planned level, even more so than in Haryana and UP. This was because output was increased particularly in Delhi, where pollutants in the Yamuna River were highest, as a result of increased domestic awareness concerning environmental improvement and also events such as the United Nations Conference on Environment and Development (also known as the Earth Summit) held in Brazil in June 1992.

### 2.2.2 Project Period

In the initial plan, the construction was scheduled for completion by December 1997. However, the loan implementation deadline was extended twice due to delays in sewage treatment plant construction, land acquisition, and information and educational activities, changes in the schedule for information and educational activities by local NGOs, and problems in payment processing for local NGOs. For those reasons, the entire process was ultimately completed in February 2003, approximately 5 years (62months) later than originally planned.

### 2.2.3 Project Cost

The project cost was 19,761 million yen, which was 87% of the originally planned amount (22,736 million yen). This was due to devaluation of the local currency that exceeded the rate of inflation. The actual total project cost in local currency was 6,699 million rupees, which is approximately 130% of the original plan (5,132 million rupees).

From the above, delays were evident in the project period, but as the output exceeded the planned level and the project cost was less than originally planned, it can be said that there was basically no problem in the efficiency of this project's implementation.

## 2.3 Effectiveness

### 2.3.1 Sewage Treatment Capacity of Sewage Treatment Plants

Table 2 shows the operating condition of sewage treatment plants built by this project<sup>2</sup>. The sewage treatment plants are generally operating in a satisfactory manner, since the rate of operation of sewage treatment plants in the beneficiary area is fairly high.

Table 2: Operating Condition of Sewage Treatment Plants (FY2003)

Beneficiary State	Treatment Capacity (m <sup>3</sup> /day)	Sewage Treatment Volume (m <sup>3</sup> /day)	Rate of Operation (%)
Haryana Average	303,000	275,000	91
Delhi	20,000	20,000	100
UP Average	402,790	347,500	86

Source: NRCD

### 2.3.2 Water Quality in the Sewage Treatment Plant

Table 3 displays the Biological Oxygen Demand (BOD) concentration (the amount of oxygen that is required biochemically) measured at 28 sewage treatment plants in beneficiary states. In the plan, BOD concentration was set at a maximum of 200 mg/l for untreated water and 30 mg/l for treated water. In comparison, the BOD concentration of treated water at the Haryana and Delhi sewage treatment plants was less than the set level, and in the UP, the treated water

<sup>2</sup> In Tables 2 and 3, the averages for Haryana and UP are the averages for the 6 cities and 8 cities, respectively, in those states that benefited from this project

exceeded the set level.

The BOD removal rate at UP sewage treatment plants exceeds 80% at all plants except for Mathura and Vridavan. The sewage treatment plants at Mathura and Vridavan are not functioning adequately and the BOD removal rate of both plants is stuck at 60%. This is the most likely reason why the average post-treatment BOD concentration at sewage treatment plants in UP exceeds the level set at the time of the plan.

Table 3: Quality of Treated Water at the Treatment Plants (FY2003)

Beneficiary State	BOD Concentration (mg/l)		BOD Removal Rate (%)
	Before Treatment	After Treatment	
Haryana Average	195	30	85
Delhi	261	4	98
UP Average	213	48	77

Source: NRCD

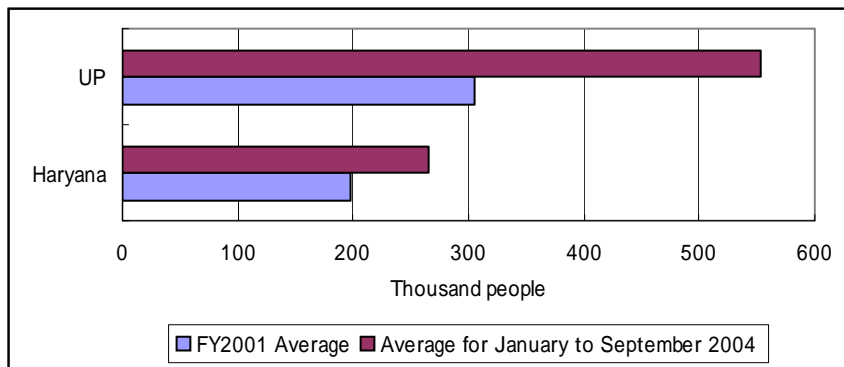
Figure 1: The change is visible in untreated water (right) and treated water (left)



### 2.3.3 Usage of Public Toilets

Figure 2 displays the changes in the monthly average number of users of public toilets provided by this project in each state of Haryana and UP. (No data available for Delhi.) According to this data, the monthly average number of users of public toilets rose by 34% in Haryana from FY2001 through September 2004. The increase was particularly large in UP, at 81%.

Figure 2: Changes in the Monthly Average Number of Users of Public Toilets (1,000 persons)



Source: NRCD

In this evaluation study, to understand the state of usage of facilities built by this project, a beneficiary survey was implemented with the participation of 60 persons who were selected with consideration for demographics such as gender, age, caste, occupation, and income, in the four areas of Faridabad in the state of Haryana, and Ghaziabad, Mathura, and Vridavan in the state of UP<sup>3</sup>. The following summarizes the results of the beneficiary survey concerning the

<sup>3</sup> The beneficiary survey in this evaluation study excluded Delhi because Delhi was selected as the subject of the “Expert Environment Impact Assessment in the Project Ex-Post Evaluation” of the Yamuna Action Plan Project which was implemented at the same time as this study.

usage of public toilets.

-Result of Beneficiary Survey-

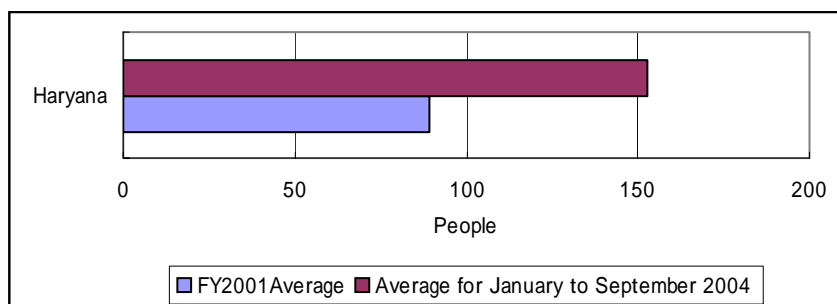
-State of Usage of Public Toilets-

When beneficiaries were questioned concerning usage of public toilets provided by this project, approximately 80% replied that they “use” them. Also, when respondents who “use” them were questioned concerning how many times a day they use them, approximately 56% replied one time and approximately 44% replied two times. When asked why they use public toilets, approximately 40% replied “because there is no toilet at home,” 30% “because they are hygienic,” 9% “because they are nearby,” and 7% “to prevent disease.” Furthermore, the average time required from the respondents’ residences to the public toilets was approximately 5 minutes. Concerning the usage fee for public toilets, approximately 88% replied that it is “basically appropriate.” Nearly all respondents said that “public toilets are easy to use,” and so it seems that the state of usage is satisfactory overall.

### 2.3.4 Usage of Improved Crematoriums

Figure 3 displays changes in the monthly average number of users of the improved wood- and coal-burning crematoriums<sup>4</sup> built by this project in the state of Haryana. (No data available for Delhi and UP.) According to the table, the monthly average number of users of improved crematoriums increased by 72% from FY2001 through September 2004.

Figure 3: Changes in the Monthly Average Number of Users of Improved Crematoriums (persons)



Source: NRCDD

Below are the results of the beneficiary survey implemented in the 3 areas of Ghaziabad, Mathura, and Vridavan in UP concerning the state of usage of improved crematoriums<sup>5</sup>.

<sup>4</sup>Improved wood- and coal-burning crematoriums: crematoriums with improved specifications and materials that also take into consideration the traditional religious views of Hinduism. The purpose is to allow poor people to use the crematoriums for a low fee and to avoid pollution of the Yamuna River by preventing the release of incompletely burned human remains into the river.

<sup>5</sup>This beneficiary survey was implemented, as stated above, with the participation of 60 persons, but only 11 persons had recently held a funeral. So, the number of valid responses concerning improved crematoriums, at 11, was low. Furthermore, another study was implemented concerning the improved crematoriums, the Research Study on Promotion of Environment Friendly Crematoria- Final Report. According to this study, a lesson learned was that the main factors hindering usage of the improved crematoriums are not factors resolvable by hardware modifications such as alterations in specifications, but rather tend to be social and religious factors which require long-term efforts

-Result of Beneficiary Survey-

-State of Usage of Improved Crematoriums-

When beneficiaries were questioned concerning usage of improved crematoriums provided by this project, approximately 30% replied that they “have used” them, and 70% replied that they “have not used” them. Of those who “have used” them, when asked about the reason, approximately 45% replied “because they were nearby,” and 55% replied “because the cost was inexpensive.” When questioned about whether or not they would like to use improved crematoriums in the future, approximately 30% replied that they “want to use” them and 70% replied that they “don’t want to use” them. Of those who replied they “don’t want to use” them, approximately 60% cited “religious reasons,” 22% replied “because they are too far away,” and 17% replied “other.”

### 2.3.5 Changes in Residents’ Awareness due to Educational Activities

In this project, educational activities concerning environment and hygiene were widely implemented through publicity means such as radio, television, events held at schools, etc., and assemblies led by religious leaders in order to promote residents’ participation. Below are the results of the beneficiary survey on the changes in residents’ awareness that resulted from the educational activities.

-Result of Beneficiary Survey-

-Changes in Residents’ Awareness as a Result of Educational Activities-

When beneficiaries were questioned concerning their participation in educational activities provided by this project, approximately 35% replied that they “had participated” and approximately 65% replied that they “had not participated.” Of those who “had participated” (20 persons), concerning the type of activity, 45% replied “training,” 30% replied “workshop,” and 10% replied “theatrical performance.” When questioned concerning the usefulness of the educational activities, 75% replied that they “were useful,” and only 5% replied that they were “not useful.” Moreover, 50% said that “I used the information that I learned at the educational activity to improve the hygiene in my everyday life” (recycling of kitchen wastewater, 33%; reduction of trash, 8%, etc.) Looking at these results of the beneficiary survey, it appears that there was a change in the awareness of those who participated in the educational activities. Furthermore, 10% of the respondents pointed out that the time period of the activities was too short. (Implementation period of educational activities: December 2001 to November 2002.)

Moreover, a delay occurred in the progress of this project’s educational activities due to the fact that, generally speaking, there is little history of cooperation between local municipalities

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to overcome.

and NGOs in India and the fact that the NGO selection process requires time. For these reasons, the Japan Bank for International Cooperation (JBIC) implemented a project implementation acceleration study in 1999 and 2000, and educational activities were implemented based on the recommendations of that study. However, the time period of the activities was one year. For this reason, persons involved with the executing agency pointed out that time was insufficient for raising the awareness of residents concerning public hygiene and for raising the degree of usage of project facilities. However, since 75% of the participants felt that the educational activities were useful and 50% used what they learned in their everyday lives, it can be said that the implementation of the educational activities had significance.

Figure 4: Improved crematorium (Mathura)



Figure 5: Cleaning staff in public toilet (Faridabad)



To summarize the above, the sewer component appears to have achieved its original objective in a generally satisfactory manner. On the other hand, it seems that the non-sewer component will require long-term efforts to achieve the original objective.

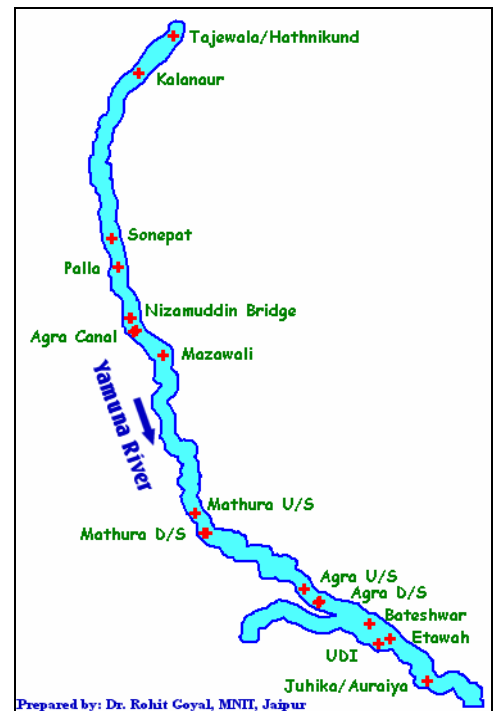
## 2.4 Impact

### 2.4.1 Water Conservation in the Yamuna River

The NRCDC implements a monthly monitoring study that includes BOD, DO (dissolved oxygen), and amount of colon bacillus colonies, etc. at 19 points from upper reaches to lower courses the Yamuna River. (See Figure 6 for the location of measurement stations.)

Figure 7, Figure 8, and Table 4 display the measured levels of BOD, DO, and the amount of colon bacillus colonies from FY1998 to FY2004<sup>6</sup>.

Figure 6: Water quality measurement stations on the Yamuna River



<sup>6</sup>The water quality standard is BOD concentration of 3 mg/l or less, DO of 5 mg/l or more, and colon bacillus colonies of 500 MPN/100 ml or less.

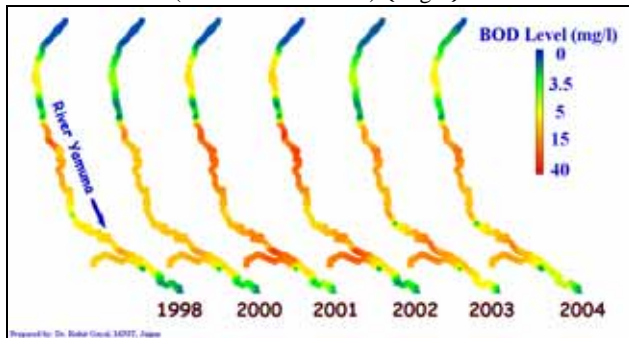


According to these, the BOD concentration has improved slightly in the upper reaches of the river. However, it has deteriorated in the middle and lower reaches and does not meet the water quality standard there. Moreover, DO has deteriorated along the entire river, in the upper, middle and lower reaches of the river.

The amount of colon bacillus colonies have also worsened in the upper, middles, and lower reaches of the river. In recent years, a standard was set for the amount of colon bacillus colonies for river water conservation, but no standard has been set for the amount of colon bacillus colonies released from sewage treatment plants. Due to this reason, disinfection facilities were not studied at the time of planning.

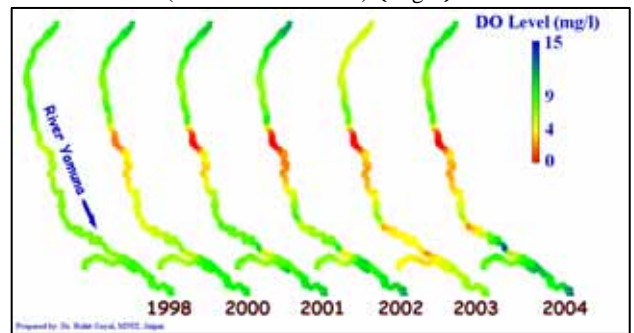
A real solution to the colon bacillus problem is impossible unless disinfection facilities are added to sewage treatment plants.

Figure 7: Changes in the BOD Concentration in the Yamuna River (FY1998 to FY2004) ( mg/l )



Source: NRCD

Figure 8: Changes in the DO in the Yamuna River (FY1998 to FY2004) ( mg/l )



Source: NRCD

Table 4: Changes in the Amount of Bacillus Colonies in the Yamuna River ( FY1998 to FY2004 ) ( MPN/1,000 ml )

	Average for Upper Reaches	Average of Middle Reaches	Average for Lower Reaches
FY1998	3,189.43	97,970.18	38,366.63
FY2000	169,404.20	5,521,573.00	900,207.70
FY2001	939,540.60	12,340,600.00	3,272,528.00
FY2002	24,625.00	14,450,000.00	747,930.00
FY2003	2,657.50	32,533,333.30	12,849,912.50
FY2004	8,532.50	539,667.00	2,388,113.00

Source: NRCD

It is possible that the load of pollutants exceeds the amount planned due to a variety of factors that hinder water conservation of the Yamuna River, including 1) an increase in pollutants (volume and concentration) due to sudden population increase, industrialization, and commercialization, (2) an increase in wastes from livestock, and 3) the effect of less river flow volume due to diversion of water upstream, etc. To achieve the top objective of this project, which is “to contribute to water conservation of the Yamuna River,” this evaluation study suggests that it is necessary, as the first step, to study what measures would work for dealing with the current pollution load.

The estimated number of beneficiaries in the 15 cities in the 3 states that benefited from this project is 5.6 million persons<sup>7</sup> (cf. population of Hokkaido, approximately 5.64 million persons).

#### 2.4.2 Effects of Improvement of Hygiene and Environment (results of Impact Evaluation Study)

No study has been conducted on this project's effects on residents' health and public hygiene, and so it is difficult to express the effects quantitatively. However, according to the "Expert Environment Impact Assessment in the Project Ex-Post Evaluation" carried out by the Graduate School of Environmental Management at Hosei University, in the evaluation's results for Delhi, the incidence of water-borne diseases such as cholera are in a downtrend. Although it is difficult to prove a direct relationship, the evaluation concludes that this project appears to have played a role in the downtrend. On the other hand, the evaluation states that water-borne diseases are caused by improper disposal of general wastes such as household garbage. In order to improve residents' health, the evaluation recommends that, in addition to public toilets, water, and sewage, appropriate disposal for general wastes is also necessary. (For details, see the impact evaluation study report.)

#### 2.4.3 Effect of Resident Relocation Accompanying Land Acquisition

There was no resident relocation accompanying land acquisition in the area that benefited from this project.

### 2.5 Sustainability

#### 2.5.1 Sewer Project

##### 2.5.1.1 Operation and Maintenance System

This project's executing agency is the National River Conservation Directorate (NRCDC) of the Ministry of Environment and Forests. Under the supervision of NRCDC, operation and maintenance of the sewage project are the responsibility of the Public Health Engineering Department of Haryana, UP Jal Nigam, Delhi Jal Board, and Municipal Cooperation of Delhi. Maintenance, operation, and management of sewage treatment plant are handled on a contract basis by private contractors under the administration of each state and city, and no problems have been reported. Furthermore, to promote the strengthening of the operation and maintenance system by the sewer project's executing agency, JBIC is implementing studies and is endeavoring to make improvements<sup>8</sup>.

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<sup>7</sup> Based on response to a questionnaire sent to the National River Conservation Directorate (NRCDC), Ministry of Environment and Forests.

<sup>8</sup> As examples, there are the Study on Financial and Administrative Capabilities of Municipal government (May 2002) and the Study for Improvement of Agra City's Administrative Capabilities and Finances, etc. The study conclusion became significant bases for the Yamuna Action Plan Project( ).

#### 2.5.1.2 Technical Capacity

According to the executing agency, operation and maintenance of the project is being implemented according to the quality control manual, and no problems have occurred.

#### 2.5.1.3 Financial Status

According to the executing agency, it appears that no problems have arisen with the operation and maintenance costs, including the operating expenses and administration expense. Up has been in the process of transferring the operation and maintenance to the cities as stated at 2.5.1.1 and helps Agra city improve financial and administrative capabilities (note 8).

#### 2.5.1.4 Operation and Maintenance Status

The evaluation team inspected sewage treatment plants in UP, Haryana, and Delhi during the field survey, and their operation and maintenance status was satisfactory. Also, no problems were reported concerning acquisition of spare parts.

### 2.5.2 Non-Sewer Project

#### 2.5.2.1 Operation and Maintenance System

Public Health Engineering Department in Haryana, Up Jal Nigam in UP and Municipal Component of Delhi are responsible for operation and maintenance management under NRCD's supervision. Actual operations and managements are subcontracted to local NGO or religious group on contract basis. There are not enough users to make a profit, and some of the public toilets are not being appropriately managed. India sides are currently considering a review of the operation and management system. Concerning the improved crematoriums, recommendations were provided by JBIC studies, and study is currently underway concerning measures that would improve the usage rate of the crematoriums and ways to strengthen NGOs capacities.

#### 2.5.2.2 Technical Capacity

No problems have occurred in the capacity for operation and maintenance of public toilets and improved crematoriums.

#### 2.5.2.3 Financial Status

For the public toilets, a user-pays system has been introduced. According to this project's beneficiary survey (which had 60 participants), 88% of respondents responded that the usage fee was appropriate. Furthermore, concerning the crematoriums, improvement of the financial status is currently being studied.

#### 2.5.2.4 Operation and Maintenance Status

For details concerning the operation and maintenance status of public toilets, refer to the above-mentioned impact study report (under Repair, Operation, and Maintenance Condition of Facilities). Furthermore, a study was implemented concerning creation of an environment for community participation in operation and maintenance of public toilets, and efforts for improvement are being made. Concerning the improved crematoriums, measures for improvement are being studied as damage, etc., is visible at some facilities.

### 3. Feedback

#### 3.1 Lessons Learned

None

#### 3.2 Recommendations

None

### Comparison of Original and Actual Scope

Item	Planned	Actual Performance
<b>1. Output</b>		
<b>1) Sewer Project</b>		
(a) Sewer Pipes (km)	(a) 82.7 km (Haryana), 39 km (UP)	(a) 135.9 km (Haryana), 43.2 km (UP)
(b) Sewer Pump Stations (locations)	(b) 8(Haryana),2(Delhi), 21(UP)	(b) 17 (Haryana), 38 (UP)
(c) Sewage Treatment Plants (locations/treatment capacity)	(c) 8/303,000 m <sup>3</sup> /day (Haryana), 1/20,000 m <sup>3</sup> /day (Delhi), 11/402,790 m <sup>3</sup> /day (UP)	(c) 11/303,000 m <sup>3</sup> /day (Haryana), 2/20,000 m <sup>3</sup> /day (Delhi), 16/402,790 m <sup>3</sup> /day (UP)
<b>2) Non-Sewer Project</b>		
(a) Public Toilets (locations/toilets)	(a) 44/440 (Haryana), 60/600 (Delhi), 110/1,110 (UP)	(a) 75/1,180 (Haryana), 959/27,040 (Delhi), 246/2,460 (UP)
(b) Crematoriums (locations)	(b) 2 (Delhi), 2 (UP)	(b) 31 (Haryana), 4 (Delhi), 70 (UP)
(c) Bathing Facilities (locations)	(c) 1 (Delhi), 2 (UP)	(c) 2 (Haryana)
(d) Afforestation (km <sup>2</sup> )	(d) 10.6 km <sup>2</sup> (Haryana), 3.8 km <sup>2</sup> (Delhi), 13 km <sup>2</sup> (UP)	(d) 242 ha (Haryana)
(e) Educational Activities (number of activities)	(e) No Plan	(e) 726 (Haryana), 5,382 (Delhi), 915 (UP)
(f) Information Provision (number of computers)	(f) No Plan	(f) 7 (Haryana), 4 (Delhi), 7 (UP)
<b>2. Project Period</b>		
Land Acquisition	December 1992-September 1993	December 1992-October 1998
Detailed Plan	December 1992-December 1992	December 1992-October 1998
Sewer Project	July 1993-December 1997	January 1995-February 2003
Non-Sewer Project	July 1993-December 1997	January 1994-July 2002
<b>3. Project Cost</b>		
Total	22,736 million yen	19,761 million yen
ODA Loan Portion	17,773 million yen	15,084 million yen
Exchange Rate	1 rupees = 4.43 yen	1 rupee = 2.95 yen