

## **Section I Project Background and Design of Evaluation Study**

### **A. The Project**

#### **1. Background**

1. The Government of Bangladesh (GOB) with assistance from the Danish International Development Agency (DANIDA) designed and implemented the Water Supply and Sanitation in Coastal Belt Project between January 2006 and June 2009. The main objectives of the project were to improve the standard of public health and ensure improved environment through facilitating access to basic level of services in water supply and sanitation. The Department of Public Health Engineering (DPHE) implemented the project as Executing Agency. The original cost of the project was Tk.102.47 crores and actual cost was Tk.98.36 crores.

#### **2. Project Area**

2. The project area covered selected twenty tight upazilas of eight coastal districts comprising Noakhali, Lakshmipur, Feni, Barisal, Jhalakati, Pirojpur, Patuakhali, and Barguna. In addition, completion of remaining water supply and sanitation facilities of Water Supply and Sanitation Project - I in Feni, Patharghata, Noakhali and Ramganj pourashavas and support institutional development under Urban Sub-Project were part of the Water Supply and Sanitation in Coastal Belt Project. It may be mentioned that the remaining coastal area were covered by another water supply and sanitation project funded by the Islamic Development Bank (IDB) simultaneously. Project area along with survey sample upazilas are shown in a map at next page. Details of project area are at following table 1.1.

Table 1.1: Location of Project Components Coastal Belt project

<b>Component(s)</b>	<b>District(s)</b>	<b>No. of Upazilas</b>
1 Test Tube wells, Re-sinking/ Replacement	Noakhali, Feni, Lakshmipur, Barisal, Jhalokati, Pirojpur Barguna, and Patuakhali	28
2 Installation of Deep HTWs	Noakhali, Feni, Lakshmipur, Barisal, Jhalokati, Pirojpur Barguna, and Patuakhali	28
3 Installation of Community Latrines	Noakhali, Feni, Lakshmipur, Barisal, Jhalokati, Pirojpur Barguna, and Patuakhali	28
4 Mini Pipe Water Supply System	Noakhali, Feni, Lakshmipur, Barisal, Pirojpur, and Patuakhali	7
5 Construction of RWHS	Noakhali, Lakshmipur, Jhalokati, Pirojpur, Barguna, and Patuakhali	11
6 Construction of PSFs	Noakhali, Feni, Barisal, Jhalokati, Barguna, and Patuakhali	11
7 Iron/Arsenic Removal Plant	Noakhali, Feni, Lakshmipur,	7
8 Construction of Overhead tank/Over Ground Reservoir (OGR)	Feni Pourashava, Lakshmipur (Ramganj), Barguna (Pathargata)	3
9 Construction of Distribution Line (Km)	Feni Pourashava, Noakhali, and Raipur Pourashava	-
10 Construction of Reticulation Line (Km)	Feni Pourashava, Noakhali Pourashava	-
11 Construction of Distribution Pipe Line (Unfinished Phase I) Km	Raipur Pourashava	-



### **3. Objectives of the Project**

3. The overall objective of the project was to contribute to improvement of health condition of the beneficiaries. The main thrust of the project was on improving hygiene practices through provision of safe water supply and sanitation facilities. The project was designed to contribute to achieving 100% sanitation coverage by 2010 as targeted by the government and to increase coverage of safe water supply to the population in un-served, underserved areas and in urban areas. The specific objectives of the project were to improve hygiene behaviors/practices; promote community-led total sanitation; increase the coverage of safe water supply services; and complete the water supply and sanitation work in selected towns and build capacity of pourashavas to operate and maintain the water supply and sanitation facilities effectively.

### **4. Project Components**

4. The project components were: (i) installation of deep hand tube wells, (ii) establishing mini pipe water supply system, (iii) construction of rain water harvesting system, (iv) construction of pond sand filter, (v) installation of community latrines, (vi) construction of iron and arsenic removal plants, (vii) construction of overhead tanks and ground water reservoirs, and (viii) construction of distribution and reticulation pipe lines.

## **B. Design of Impact Evaluation Study**

### **1. Introduction**

5. The Implementation Monitoring and Evaluation Division (IMED), Ministry of Planning, Government of Bangladesh selected the "Water Supply and Sanitation in Coastal Belt Project (GOB-Danida)" for impact evaluation during 2011-2012. The evaluation study was outsourced to Eusuf and Associates.

### **2. Objectives and Scope of the Evaluation Study**

6. The objectives of the evaluation study are to: (i) review implementation status of major components, (ii) assess whether access to safe water has been ensured through subsidized community water supply after implementation of the project, (iii) assess whether the project was able to ensure access to sanitation among the poorer section of the population with emphasis on the hard core poor through low-cost sanitation facilities, (iv) assess the impact of the project interventions on hygiene behavior/practices of the target population, (v) identify the strengths and weaknesses of the project and suggest appropriate recommendation to overcome the weakness in future similar projects.

### **3. Methodologies and Tools**

7. The approach and activities of the impact evaluation study included assessment of: (i) project implementation performance, (ii) project operating performance and quality of implementation of different components and facilities, (iii) benefits and impacts, (iv) strengths and weaknesses of the project design and implementation, and (v) findings and recommendations for future similar projects.

8. The consultants reviewed progress of implementation of all activities of the project in terms of physical and financial achievements and compared with project targets and milestones. The physical progress included an account of implementation of all components and a comparison with the scope of the project to assess the achievement of targets. Assessment of the financial progress of implementation included project actual cost compared with budget by different heads. This included cost of

implementation of project by components, operating costs of project and justifications for excess expenses (if any) under different heads, etc.

9. The consultants used different approaches and methodologies and tools for collecting data such as: review of secondary documents, key informant interview, visits to project area by experts and discuss with stakeholders, survey and data collection from sample beneficiary households, conducting physical verification, administration of focus group discussion, holding a field level stakeholder workshop, getting approval of technical committee and steering committee on study design and study findings, and sharing draft final report in a national workshop. The methodologies and tools were developed following the objectives of impact evaluation and key output and outcome indicators as needed.

10. In all, fifteen sets of data collection tools were prepared (**Appendix 1**) for collecting necessary quantitative and qualitative information. Considering the nature of the components and activities, the impact evaluation placed higher importance to qualitative information as needed. Qualitative information was gathered primarily from key informant interviews, physical verification, and discussions with beneficiaries. The questionnaires sets were used to interview users of tube wells, pond sand filter, rain water harvesting units, community latrines, mini pipe water supply system, water supply system of municipality, interview of key informants, physical verification of deep hand tube wells, pond sand filter, rain water harvesting units, community latrines, mini pipe water supply system, water supply system of municipality, and focus group discussion.

#### 4. Sampling Technique

11. In sample size for survey of beneficiary household was estimated using prevalence rate of beneficiaries and several other relevant sub-indicators. Confidence level of 95%, precision level of 5%, and design effect of 1.5 (multi-stage sampling) were used. Given the prevalence rate, population size, confidence level, and design effect, the sample size was estimated using the general formula (Cochran):

$$n = \frac{n_0}{1+n_0/N} = \frac{n_0}{C} \quad \text{Where } C = 1 + \frac{n_0}{N}$$

$$n_0 = \frac{(Z_{0.95}^2 \cdot PQ) \cdot (\text{deff})}{e^2} = 576.24 \text{ say } 576$$

Where,

N= Population size = 8300 pieces

n= Sample size

n<sub>0</sub>= Initial sample size

P= Prevalence rate (50% for maximum sample size)

Q= 1-P

deff=design effect = 1.5 for multi-stage sampling,

Z<sub>0.95</sub> =1.96

e= precision rate=0.05

$$C = \text{Correction factor} = 1 + \frac{n_0}{N} = 1.07$$

$$n = \frac{n_0}{1+n_0/N} = \frac{576}{1.07} = 538.32, \text{ Say } 560$$

## 5. Sample Frame

12. In order to increase precision level the consultants used final sample size 1,120 (560x2). The consultants distributed the samples among the selected 16 upazilas at the rate of two upazilas from each project district (except Feni and Jhalakati district). One upazila was nearest and another was farthest from the district headquarters. Other project components were selected using the same formulae for survey and respondents as mentioned above for each sample. A sample frame as under was used for conducting the evaluation study. Sample size by component is in the following table 1.2. The detailed distribution of samples by type is at **Appendix 2**.

Table 1.2: Summary of Sample Frame

	Project Component(s)	Actual Progress	Rural		Urban	
			Project	Control	Project	Control
1	Installation of Tube Wells	8,300	1120	560	0	0
2	Installation of Community Latrines	100	160	80	0	0
3	Mini Pipe Water Supply System	4	20	10	0	0
4	Rain Water Harvesting	16	40	20	0	0
5	Pond Sand Filter	19	50	25	0	0
6	Water supply system in Pourashavas	4	0	0	20	10
7	Distribution Pipe Line (Unfinished Phase I) Km	1	0	0	6	3
	<b>Total Respondents</b>		<b>1,390</b>	<b>695</b>	<b>26</b>	<b>13</b>

## 6. Key Informant Interview

13. The impact evaluation study carried out key informant interviews of field level officials of the Public Health Engineering Department (DPHE) and sample beneficiaries using key informant interview checklist as at **Appendix 1**. The key informant interview gathered information of beneficiary selection, role played by beneficiaries and DPHE, supports from project, strengths and weaknesses of project, maintenance of water supply and sanitation facilities, suggestions for improvement of the maintenance of facilities, etc. Details of the finding of key informant interviews are at Feedback of Key Informant Interviews.

## 7. Focus Group Discussion

14. Further, the impact evaluation team carried out 16 focus group discussions (FGD) one in each sampled upazila. In an FGD session, a small number of key informants of homogeneous groups of people such as project beneficiaries, NGO workers, local elite, public representatives, school teachers and other stakeholders in the area were invited to participate. The trained supervisors and field investigators conducted the focus group discussions using a checklist as at **Appendix 1** and collected useful qualitative informants and feedback of beneficiary and site selection, participation of the beneficiaries, roles and responsibilities of beneficiaries and DPHE, strengths and weaknesses of the project, maintenance of facilities, and suggestions for improving operation and utilization and maintenance of the facilities.

## 8. Case Study

15. In addition, the study carried out eight selected case studies of deep tube well, mini pipe water supply system, pond sand filter, rain water harvesting, site selection and installation, water points and water sharing and maintenance, sharing of community water points, water quality and water treatment in major water supply system in pourashava, and maintenance of community latrines. Details of the case studies are at feedback of case studies.