In-depth Monitoring Report

40 Pourashava and Growth Centre Water Supply and Environmental Sanitation Project (Phase-II) (1st Revised)

Monitoring and Evaluation Sector-3
Implementation Monitoring and Evaluation Division
Ministry of Planning
Government of the People's Republic of Bangladesh

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Acronyms

BRTC	Bangladesh Road Transport Corporation
DIP	Detailed Implementation Plan
DPHE	Department of Public Health Engineering
DPP	Development Project Proposal
ECNEC	Executive Committee of the National Economic Council
EMP	Environmental Management Plan
EOI	Expression of Interest
FGD	Focus Group Discussion
KII	Key Informant Interview
LGD	Local Government Division
LGED	Local Government Engineering Department
OECD	Organisation for Economic Co-operation and Development
PPA	Public Procurement Act
PPR	Public Procurement Rules
PWD	Public Works Department
SDG	Sustainable Development Goal
WASH	Water Sanitation and Hygiene

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Executive Summary

Water supply and sanitation facili are two essentialdemands of the people of our country. Owing to its being a densely populated country, different parts of Bangladesh are in need of acute water and sanitation. Ensuring improved environment by facilitating public health, water supply and sanitation services is one of the objectives of Bangladesh government. With a view to reducing various water-borne diseases, increasing the capacity of municipalities' on management and maintenance, and contributing to achieving relevant goals of the sustainable development goal 2030 and Vision 2021 by assuring safe drinking water availability, improving human's standard of living, and provisioning environmental sanitation facility, the Government of Bangladesh undertook a project called "40 Pourashava and Growth Center Water Supply and Environmental Sanitation Project (Phase-II)) ". The project is fully funded by the Government of Bangladesh. Meanwhile, time and budget of the project were amended and increased.

In order to fulfill the objectives of the project, the DPP was prepared with a total of 30 components in the revenue and capital sector of the project.
The main components of the projects included water treatment plan, constructon of overhead tanks, installing production tube wells, installing pipe lines, house connections, water points, and public toilets. To sustain the water supply management of the municipality, the project provisioned the modernization of the billing system. The original implementation period of the project was January / 2014 to June / 2017, a total duration of 3 years and 6 months, whereas the estimated cost was set at 18418.74 lakh taka. In the 1st Amendment, the project cost was increased by 4406.55 lakh tala and a total of 22825.29 lakh taka was fixed. Through the first amendment, the budget of the project was increased from 4406.55 lakh taka to 22825.29 lakh taka, and the time was increased by 1 year and 6 months up to June / 2019. Processing of the amended project took 1 year.

Disaster Management Watch (DM WATCH) conducted the survey. The purpose of this survey was to review the overall progress and relevant issues through in-depth monitoring of the ongoing project. The survey selected 1120 beneficiaries from 16 sample municipalities. Among 40 Pourashavas, a total of 16 were selected using Purposive Sampling, whereas, the beneficiaries were selected using Simple Random Sampling. To complete the responsibilities set by IMED, DM WATCH team employed various tools such as questionnaire survey (both household and growth centers), focus group discussion (FGD), key informant interview (KII), physical observation, review of project documents and organization of local workshops. To understand the overall progress of the components, impact on peoples' lives, procurement activities and physical condition of the components, 1120 questionnaire survey, 16 focus group

discussions, 84 key informant interviews, physical observation of components from each pourashava and a local level workshop were conducted.

Overall, the physical and financial progress of the components were not satisfactory. During the extended period, the project spent 94% of the time, but the actual progress of the project up to April-2019 was 70% and the financial progress was 57.90%. Among various components, none of the water treatment plant and overhead tank has been completed. A total of 545 km (out of 620 km) of pipelines have been installed in the municipalities, but 38% of the households have not yet received water connections. Provision of the modernization of the billing system, which aimed at sustaining the water supply management of the municipality, has not been started yet. Review of the overall progress of the project indicates an improbability of completing the remaining work within the stipulated time.

To implement the components, the concerned authorities (DPHE and Paurashava) collected goods, works and services according to PPA-2006 and PPR-2008. There is no package in procurement plans which was prepared in conjunction with the water supply related activities. 3 types of products (goods, services and works) are available in a development project. A large amount of money was allocated in the project for the development of infrastructure and construction. The concerned authority should have considered the challenges regarding the implementation of the project and plan packages accordingly while preparing the DPP of the project, but they deviated or failed to comply with. Because of these problems in the procurement plan, the implementation got delayed and beneficiaries didn't receive the facilities in due time.

The project contributed to the improvement of the living standards of project beneficiaries by ensuring availability of water. The project director said that, about 60% of the total population of 40 municipalities will be benefited from this project. Earlier, people had to collect water from a distance and spent a lot of time for this purpose. As a result of this project, the time of water harvesting and distance could be reduced by establishing a water point in the households and Growth Centers. Prior to the start of the project activities, people of the sampled areas used the water contaminated by the arsenic and the iron. They are getting safe water due to the implementation of this project. The public toilets have been constructed in the place of public gatherings such as the markets, mosques, temples, bus stands. As a result, open defecation has reduced. Because people are using safe water, the prevalence of water-borne diseases has also reduced. Besides, local people are getting employment opportunities from this project.

After the implementation of the project, implementing agencies will hand over the project to the municipalities. However, the existing financial and physical resources of the municipalities are not enough to ensure sustainability and proper monitoring of the components. Besides,

labor force is also limited. Lack of training, labor force, financial deficit are the main constraints for the municipalities to ensure a proper operation and maintenance. The implementation phase also faced some challenges such as complicated site selection and land acquisition process, and lack of feasibility study. To determine the number and distribution of the components, public needs and characteristics of the municipalities were not considered. Coordination among different departments also remained weak, which caused difficulty in the implementation of the project. After completion of the construction of the pipeline in Phulbari Municipality, the pipe line had to be cut again to establish drainage system. As a result, the pipeline got damaged. Had the project been implemented with a feasibility study and proper planning, this limitation could have been solved.

Various measures could be taken to make the project more effective. for example, conducting a proper feasibility study to understand the context of the project areas, increasing the coordination among internal departments of pourashava and DPHE . Also, to ensure the proper implementation, monitoring the effective implementation of the project by the concerned authority from the beginning of the project and following up regularly are necessary. In addition to ensuring the sustainability of the project, training should be arranged to increase the O&M capacity of the municipality and also to aware people about the proper usage of sanitation and water.

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Chapter 1: Introduction

1.1 Background of the Project

To achieve the target of sustainable development, Bangladesh government is moving forward by ensuring the availability of safe water and sanitation by 2030. With a view to fulfilling this objective, Local Government Division (LGD) has undertaken an environmental project named "40 Pourashava and Growth Center Water Supply and Environmental Sanitation Project (Phase-II)" with the help of Department of Public Health Engineering. The first phase of the project aimed at providing environmental sanitation and water supply using pipe lines to 60 pourashava and growth centers without any sanitation and water supply facilities. But because of the budget constraint, the project was implemented only in 38 pourshava and growth centers. As a result, the government could not achieve its goal in the first phase. The lack surface water was one of the reasons behind the partial fulfillment of the project . Therefore, at the end of the first phase, 38 out of 60 pourashavas recieved water supply and environmental sanitation facilities through pipeline. The remaining 22 pourashavas remained without the facilities. In that circumstance, DPHE, ECNEC and the minister of Local Government for Rural Development and Co-operation decided to implement the project "40 Pourashava and Growth Center Water Supply and Environmental Sanitation Project (Phase-II)" by adding 2 more municipalities to the previous 38 municipalities. About 60 percent people of the 40 municipalities will enjoy the facility of water supply out of this project .

Table 1Brief description of the project

Name of the Project	:	40 Pourashava and Growth Center Water Supply and Environmental Sanitation Project (Phase-II) (1st revised)			
Sponsoring Ministry/Division	:	Local Government Division			
Impementing Agency	:	Department of Public Health Engineering			
Estimated Cost (in lakh taka)	:		Original	1st revised	Change
		Total	18418.74	22825.29	4406.59 23.92%
		GOB	18418.74	22825.29	
		Project help	-	-	
Implementation period			January 2014- June 2017	January 2014- June 2019	2 years 57%

Project area		40 pourashava from the following districts Barisal, Bhola, Pirojpur, Chandpur, Cumilla, Faridpur, Cox's Bazar, Laxmipur, Noakhali, Dhaka, Kishoreganj, Munsiganj, Mymensingh, Narshingdi, Shariatpur, Sherpur, Jessore, Narail, Natore, Pabna, Sirajganj, Chapainababganj, Dinajpur, Bogura, Habiganj and Sylhet.

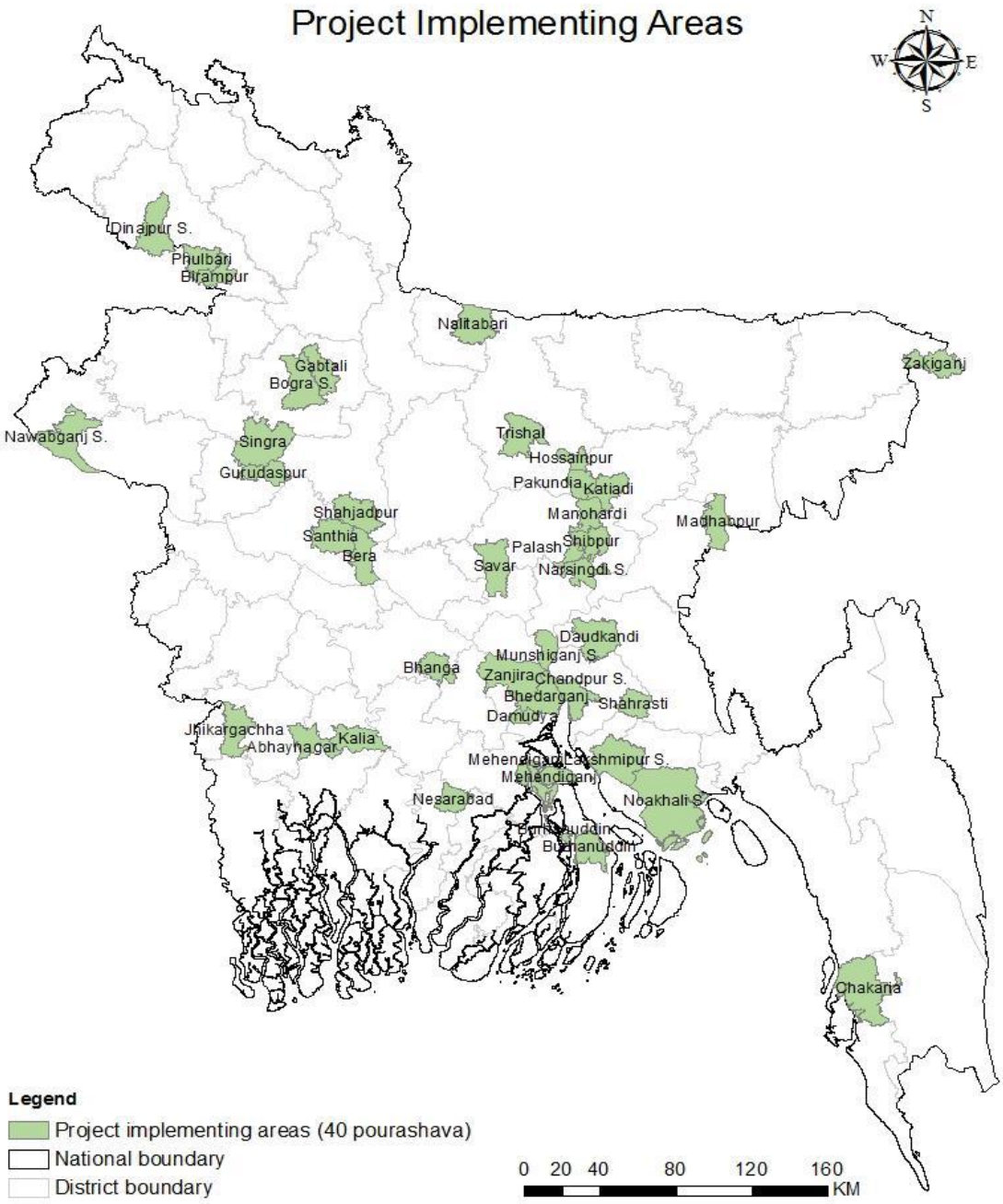

Figure 1 Project Implementing Areas

1.2 Objectives of the Project

The purpose of the project was to reduce the water supply, sanitation and health problems of elected municipalities of the country. The objectives of the project are given below

- To improve the living standard of the people through ensuring availability of safe piped water.
- Reduction of diarrhea & other water borne diseases with provision of safe water supply & environmental sanitation
- Improvement of operation & maintenance by Pourashava to have sustainable water supply & sanitation; and
- Keeping the role of achieving the target of the current government declared Vision 2021 and SDG target

1.3 Main Components of the Project

The main components of the project are as follows

- Groundwater Treatment plant construction (nos. 8)
- Overhead tank construction (nos. 6)
- Installation of Tube wells (nos. 74)
- Pump house construction with boundary wall (nos. 74)
- Installation of pipeline (various diameters) of 620 km
- House connection (nos. 17230)
- Water Points (nos. 2165)
- Construction of public toilets (nos. 111)
- Land development (sand filling) - 100,000 cubic meters
- Modernization of the billing system

Distriburion of the components in different pourashava and physical and financial planning of each of the components are attached at table 2 and table 3 in the annexure.

1.4 Project approval, Revision and Financing

The honorable Prime Minister of Bangladesh instructed on the preparation of DPP of the project in an ECNEC meeting held on 01/06/2010 . The processing of the project was completed by the Department of Public Health Engineering, Local Government Division and Physical Infrastructure Department of the Planning Commission on 25/02/2014. Initially the project was approved for a duration of 3 years and 6 months, spanning from January/2014 to June/2017 (). Around 3 years and 8 months were spent in the various stages of project processing. The timeline of project process and approval is given below

Table 2 Significant time frame of the project processing

Date	Name of the concerned committee	Comment
24/11/2010	Project Verification Committee (LGD)	After the approval at the ECNEC meeting, the decision of reconstructing the DPP according to the report of the inquiry committee was made.
05/06/2013		The ministry requested for reconstructing the DPP by including two pourashavas.
11/06/2012		Submission of inquiry report by the ministry
19/07/2012		Based on the inquiry report, The ministry ordered to send the DPP of the project on water supply through pipelines and environmental sanitation in 38 Pourashava and the Growth Center on 19/3/2012.
07/11/2013	Project Evaluation Committee (Physical Infrastructure Department)	In a meeting of the project evaluation committee, the ministry recommended to approve the project.
25/02/2014	ECNEC	The project was approved in the ECNEC meeting

Table 3 Time frame of project revision

Date	Name of the concerned committee	Comment
17/08/2016	Project Implementation committee (PIC)	Proposal for revisioning of the project was taken
26/12/2016	Project steering committee	The project for revisioning of the project was accepted
18/05/2017	Project Evaluation Committee	Recommendation to approve revision of the proposal with increased time and estimated cost

The planning minister approved the first revision of the project on 7/8/2017. The project was revised because of the following reasons:

- Though the project was scheduled to start from January, 2014, it got approved by the administration in April, 2014. Owing to this delay, no physical work could be started in the 2013-2014 fiscal year.
- It took a long time to complete the work of some components of the project such as appointment of the consultant, site selection for the water treatment plant, design of the pipeline network in the GIS map of respective pourashava, design of the overhead tank and treatment plant, specification and calculating the estimated cost.
- No feasibility study was conducted in the municipalities before finalizing the main DPP. As a result, feasibility study was conducted after commencing the project,according to the project's resources. The workload increased in the revised DPP as per the study.
- Although the project included the lifting of ground water and relevant physical structure in the municipalities, the probability of correct source of water was estimated by analysing various data and information. Besides, to reduce the dependency on ground water, DPP included the provisioning of surface water treatment plant instead of groundwater treatment plant in 2 municipalities (Bera and Shahrasti) having the availability of surface water all year round. Therefore, all the activities of the project needed revision for its proper implementation.
- Money was not disbursed according to the yearly financial targets included in the DPP of the project. A total of 6688.07 lakhs taka had been allocated till June / 2017, which covered only 63.31% of the total estimated cost of the project. As a result, the project remained unfinished until its scheduled time of June, 2017.
- The DPP was designed according to the rate schedule of PWD of 2008. However, the analysis of the rate schedule of PWD (2008) and the cost of some ongoing projects of DPHE determined that some components under this project needed to be revised. The consulting firm prepared the estimations by designing various components of the project, such as water treatment plant, overhead tank, pipeline, pump house,. where the amount of components / unit expenditure increased in comparison to the main DPP. In view of this, the DPP needed to be amended with an extension of the validity till June 2019. (revised DPP p:11,12)

Chapter 2: Methodology of In depth Monitoring

2.1 Scope of the In-depth Monitoring

The objective of in depth monitoring is to evaluate the progress of project objectives. Besides, providing recommendation regarding increased sustainability of the project's components along with analyzing the strength weakness and efficiency of the project were also some major scopes of the study. With a view to fulfilling the objectives DM WATCH conducted the in depth monitoring to evaluate the accuracy and quality of the on going work.

Table 4 Responsibilities assigned by IMED

Scope of Work	Relevant Chapter
1. Description of the Project (Background of the Project, Objectives, Status of project, Approval/Revision, Project Implementation Period, Year wise Cost Estimation, Source of Finance etc related all information analysis	Chapter 1
2. Collection and analysis of overall and detailed component wise progress of the project (physical and financial) using table, graph, chart etc	Section 3.2
3. Examination whether PPA-2006 and PPR-2008, and guidelines of development partners for procured goods, works and services was followed in the procurement process (In this case it is mandatory to evaluate tender process and evaluation; whether the packages mentioned in DPP are split or not. If package are split, then identify the causes, and examine whether it is done with approval from proper authority).	Section 4.1

Scope of Work	Relevant Chapter
4. Analysis and review of relevant matters including manpower for managing and maintaining of the goods, works and services under the project	Section 4.2
5. Analyzing and making observation whether quantity of goods, works and services are procured as per BoQ/ToR, quality is ensured as per specification (in this case, samples are to be collected from field level and need to be tested from reputed laboratory).	Section 3.5, 4.1
6. Analyzing the benefits after partial work implementation of the project or reviewing the project progress according to the planed schedule (in this regard, data are to be collected with field inspection through Individual Interview, Key Informant Interview (KII), and Focus Group Discussion (FGD) & Local workshop).	Section 3.3
7. To monitor whether implementation of the project or any of the components was delayed in terms of financing, procuring goods, managerial inefficiency, which caused increase of project cost or delay in implementation period and identify /analyze the reasons responsible for the delay;	Section 6.1
8. Analyzing and making observation on project approval, revision, allocation, fund release, bill payment etc.	Chapter 4
9. To make comments on sustainability (Exit Plan) of project's benefits after completion of the project;	Section 7.2
10. Assess whether the project is implementing/implemented in respect to/along with year wise work plan from the beginning of the project. If there is any lapses in progress in comparison to project planning, then identify the causes and suggest remedial measures	Section 3.2
11. SWOT analysis of the Project	Chapter 5
12. Overall Analysis on observations find from the study	Chapter 6
13. Making recommendations in the light of findings	Chapter 7
14. Other tasks assigned by the procuring entity (IMED	-

2.2 Conceptualization and Methodological Workflow

The purpose of this survey is to coordinate the intensive monitoring of the project "40 Pourashava and Growth Center Water Supply and Environmental Sanitation Project (Phase-II) (1st revised)" in collaboration with project officials and all possible partners.The results of the survey will show the relevance of the project, as well as the impact and effectiveness of the project on the basis of the country's current safe water and sanitation conditions. It will also analyze the benefits of of the project in the livves of beneficiaries. Similarly, attempts have been made to identify the project's contribution in improving water availability and sanitation facilities in the project area. Recommendations suggested by the survey team can guide the project on the right path and help in the implementation of similar projects in the future.

Table 5Overview of OECD framework

Criteria	Focus
Relevance	Evaluate importance or rationale of the project considering local and national requirements/priorities
Effectiveness	Compare the progress against set target
Efficiency	Economic efficiency relevant to procurement acitivities of the project
Impact	Identifying major changes brought through project intervention those are consistent with overall goal of the project
Sustainability	Identifying the capacity of the target group to ensure continuation of the positive changes

The following sections illustrate data collection method to conduct in-depth monitoring of the project. However, the study will use a wide range of data from various sources to in-depth monitor the project. The following table provides an overview of all the data sources been utilized during analysis of the study-

Table 6 Data sources for OECD Framework Matrix

Indicator	Data source to be used							
	National level		Project level	local level				
	National policy	National researche	Document review	Physical Observation	Questionnaire survey	Key Informant Interview	Focus Group Discussion	Workshop
Relevance	✓	✓	✓	✓	✓	✓		✓
Efectiveness		✓	✓	✓	✓	✓		
Efficiency		✓	✓	✓	✓			

Impact		✓	✓	✓	✓		
Sustainability		✓	✓	✓	✓	✓	✓	✓

A systematic methodological approach has been followed conducting the study. After selecting all the relevant stakeholders a list of indicators in line with the objectives was prepared to assess the overall project goal. After determining the indicators different tools e.g. individual survey questions, focus group discussion checklist, key informants interview checklist, agenda of local level workshop and physical observation checklist were prepared. Besides, project documents were identified and reviewed comprehensively. At the final stage the information collected from the participants / respondents were analyzed and findings were shared with steering committee and the final report has incorporated feedback from the committee. Following flowchart depicts the methodological workflow of the in-depth monitoring of the project each of the activities of the project.

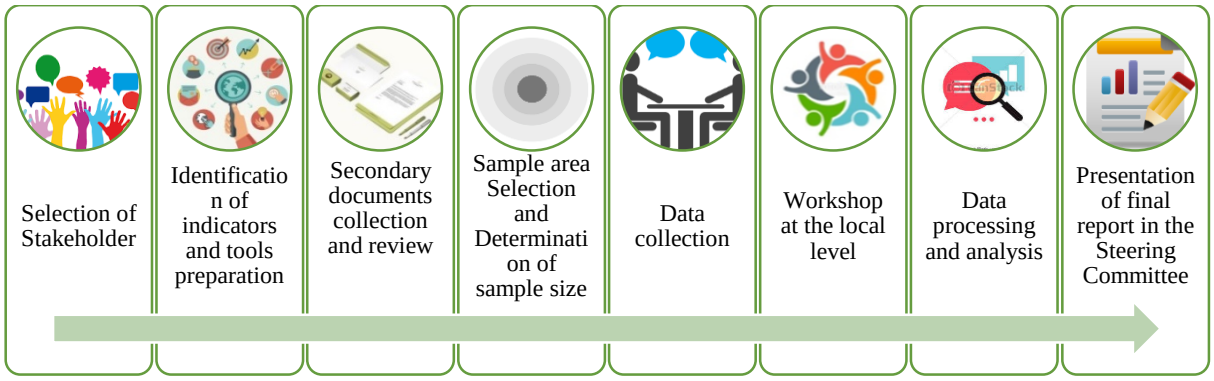

Figure 2 Workflow of the study

The information about the functioning of the components has been collected in the following ways

Table 7 Tools used to evaluate project activities

sl no	Component	Pourashava coverage	Respondents	Tools	Secondary source
1	Prouduction tubewell (74)	37	○ Community people/ representatives of growth centers and other organizations	○ Households/ growth center questionnaire Focus Group discussion	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, PPR-2008
			○ Water supply, health and sanitation official	○ Physical observation ○ Report of lab test	

sl no	Component	Pourashava coverage	Respondents	Tools	Secondary source
				○ Project document ○ Key informant Interview	
2	Pump house with boundary wall (41)	20	○ Water supply, health and sanitation official	○ Physical observation ○ Project document ○ Key informant Interview	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
3	Pipeline (620 km)	40	○ Water supply, health and sanitation official	○ Physical observation ○ Project document ○ Key informant Interview	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
4	House connection (17230)	40	○ Community people/ representatives of growth centers and other organizations	○ Households/ growth center questionnaire ○ Focus Group discussion	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
			○ Water supply, health and sanitation official	○ Physical observation ○ Report os lab test ○ Project document ○ Key informant Interview	

sl no	Component	Pourashava coverage	Respondents	Tools	Secondary source
5	Water points (2165)	40	Community people/ representatives of growth centers and other organizations ○ Water supply, health and sanitation official	○ Households/ growth center questionnaire ○ Focus Group discussion ○ Physical observation ○ Project document ○ Key informant Interview	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
6	Ground water treatment plant (6)	6	○ Water supply, health and sanitation official	○ Households/ growth center questionnaire ○ Focus Group discussion ○ Key Informant Interview	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
7	Surface water treatment plant (2)	2	○ Water supply, health and sanitation official	○ Physical observation ○ Project document ○ Key informant Interview	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
8	Overhead tank (6)	6	○ Water supply, health and sanitation official	○ Physical observation ○ Project document ○ Key informant Interview	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008

sl no	Component	Pourashava coverage	Respondents	Tools	Secondary source
৯	Public toilet (111)	৪০টি পৌরসভা	○ Community people/ representatives of growth centers and other organizations	○ Households/ growth center questionnaire ○ Focus Group discussion	○ DPP, ○ Progress report (physical and financial) ○ Procurement plan ○ PPA- 2006, ○ PPR-2008
			○ Water supply, health and sanitation official	○ Physical observation ○ Project document ○ Key informant Interview	

2.3 List of Indicators

The indicators that have been considered in this study to evaluate the impact of the project are as follows

Table 8 List of indicators

OBJECTIVE	INDICATORS
IMPROVING THE LIVING STANDARD 	✓ Year round access to water; ✓ Time Savings: The amount of time for water collection and effort is reduced; and ✓ Improvement of various services (health, agriculture, livelihood etc.)
REDUCING WATER BORNE DISEASES 	✓ Decrease of water borne diseases; ✓ Easy accessibility to public sanitation ; and ✓ Supply of safe water।
INCREASING O&M CAPACITY 	✓ Division of administrative responsibility.

OBJECTIVE	INDICATORS
CONTRIBUTING IN ACHIEVING VISION 2021 AND SDG 	✓ Reduced pollution; ✓ Food security, safe water supply, livestock rearing etc.; ✓ Empowerment (water projects can help empower people with income generation) ✓ Reduced gender gap; and ✓ Reduced poverty.

2.4 Data Collection and Analysis

2.4.1 **Secondary Document Review**

To monitor, evaluate and analyze the component wise target and actual progress the study has collected the relevant secondary data (project documents) listed in the following table. This tool has also helped the study team to examine whether the provisions of PPA 2006 and PPR 2008 are being followed properly in the procurement process of the packages (goods, works and services) & to analyze these procurement related functions based on predetermined indicators and to evaluate all activities under the project.

Table 9 List of secondary documents

Method	Number	List of documents
Document review	15	✓ DPP ✓ Progress report (financial, physical) ✓ Budget report ✓ Annual work and procurement plan ✓ Project procuremet plan (works, goods and services) ✓ Prcurement report ✓ Tender reports ✓ PPA 2006, PPR 2008, e-GP Guidelines ✓ Project approval report ✓ Exit plan ✓ Minutes of tender meeting ✓ Design of components ✓ Lab test report ✓ Vision 2021 ✓ Sustainable Development Goal (2016-2030)

2.4.2 **Quantitative Sampling Technique**

In this study the areas were selected using purposive sampling and the respondents were through Simple Random Sampling. This sampling techniques have be chosen to ensure maximum accuracy as the project includes physical components and a large number of beneficiaries.

The main objective of the survey is to analyze the progress of the project and conduct in depth monitoring of the project by evaluating the project planning, impact of the components and reviewing relevant documents. For this purpose, DM WATCH has used multiple tools to collect information from primary and secondary sources. Both qualitative and quantitative data have been collected.

DM WATCH conducted Key Informant Interviews, Focus Group Discussions and local level workshops for important qualitative primary data gathering. The information of the physical components were through physical observation and reviewing the lab test reports. Quantitative information related to the impact of the project has been collected through survey questions from direct beneficiaries (Household and Growth Centers). Component wise data have been collected to ensure maximum coverage. If the arease were selected using Probabilistic sampling method inclusion of every component wouldn't be possible.So, Purposive Sampling technique was used while selecting the areas.

2 districts and one pourashava from each district were chosen from 7 divisions (except Rangpur). From Rangpur 2 pourashava were selected from only one district which makes the total number of pourashava 16. The pourashavas were picked in such a way that 100% coverage of components can be ensured. It was done purposively based on the primary progress report. The sample size of the respondents has been proportionally adjusted in line with the number of population in the sample areas so that a consistaency can be maintained with the progress of the project's components.

The sample strategy adopted for the study is shown below

Step 1 : In order to ensure nationwide coverage for data collection, one district of Rangpur division and two districts of the remaining divisions were selected purposively (total 15 districts).

Step 2: A total of 16 municipalities have been selected from each district to ensure the inclusion of all the components of the project in the sample area.

Step 3: Beneficiaries were chosen from the sampled areas though Simple Random Sampling

2.4.3 Quantitative Sample Design

For quantitative survey, the study has followed widely used statistical formula for calculating the sample size. In order to determine the required sample size an approach based on confidence level and precision rate are followed. Apart from the population number what matters in this approach is the required level of probability (confidence level), required degree of precision and the variability of the population. Sample size has been worked out for the quantitative survey following the formula (Bill Godden, 2004).

For quantitative survey, the size (n) of the sample is determined by using the following widely used statistical equation, on conditions that the sample would be 95% likely to yield an estimate with a given level of precision (3%). Precision is defined as the tolerated margins of error in the estimate. The population of these 40 pourashavas are 16,06,640.

$$n = \frac{\frac{p\,(1-p)z^2}{e^2}}{1+\frac{\frac{p\,(1-p)z^2}{e^2}-1}{Population}}$$

Here ,

P = Proportion to be estimated
e = Margin of error in P
$Z_{95\%}$ = Z-value at the 95% statistical confidence limits
n = নমুনা সংখ্যা

Considereing the given margin of error, the sample size obtianed from the above equation was 1066.

Considering that 5 percent beneficiaries selected for the survey may refuse to answer for any reason, the sample size was fixed to be 1120. The sample was distributed proportionately in each of the study area. Four components of this project are connected directly to beneficiaries of the household and Growth Center. Accordingly, quantitative data has been collected from the beneficiaries of Khana and Growth Centers in 16 municipalities. These 16 municipalities have the maximum coverage of the 4 components, which directly benefit the beneficiaries. Prior to gathering information at the field level, DM WATCH collected the list of components and the wards where the project is being implemented. The enumerators collected the information from households in each ward of the respective municipal and at the Growth centers. Households were selected at a interval of 5 households while collecting data. Data has been collected from the household head or an elderly representative. In case of surveying in growth centers, sample was designed according to the information collected from the pourashavas.

Table 10 Sample size of the sampled areas

Division	District	Pourashava	Total population [1]	Sample number for household and growth center
Barishal	Barisal	Mahendiganj	34,500	**43**
	Bhola	Borhanuddin	20,205	**25**
Chattogram	Cox's Bazar	Chakaria	74,669	**94**
	Chandpur	Chhengarchar	38,215	**48**
Dhaka	Narshindi	Palash (ghorashal)	122,912	**154**
	Munshiganj	Mirkadim	120,000	**151**
Mymensingh	Mymensingh	Trishal	35,030	**88**
	Sherpur	Nalitabari	31,370	**39**
Khulna	Jessore	Jhikargacha	37,224	**47**
	Narail	Kalia	23,590	**30**
Rajshahi	Pabna	Bera	59,831	**75**
	Bogura	Gabtoli	23,007	**29**
Rangpur	Dinajpur	Birampur	51,979	**65**
		Fulbari	1,76,023	**221**
Sylhet	Habiganj	Madhobpur	23,837	**30**
	Sylhet	Kaliganj	20,000	**25**
Total				**1120**

[1] http://www.bbs.gov.bd/, বাংলাদেশ পরিসংখ্যান ব্যুরো, ২০১৫

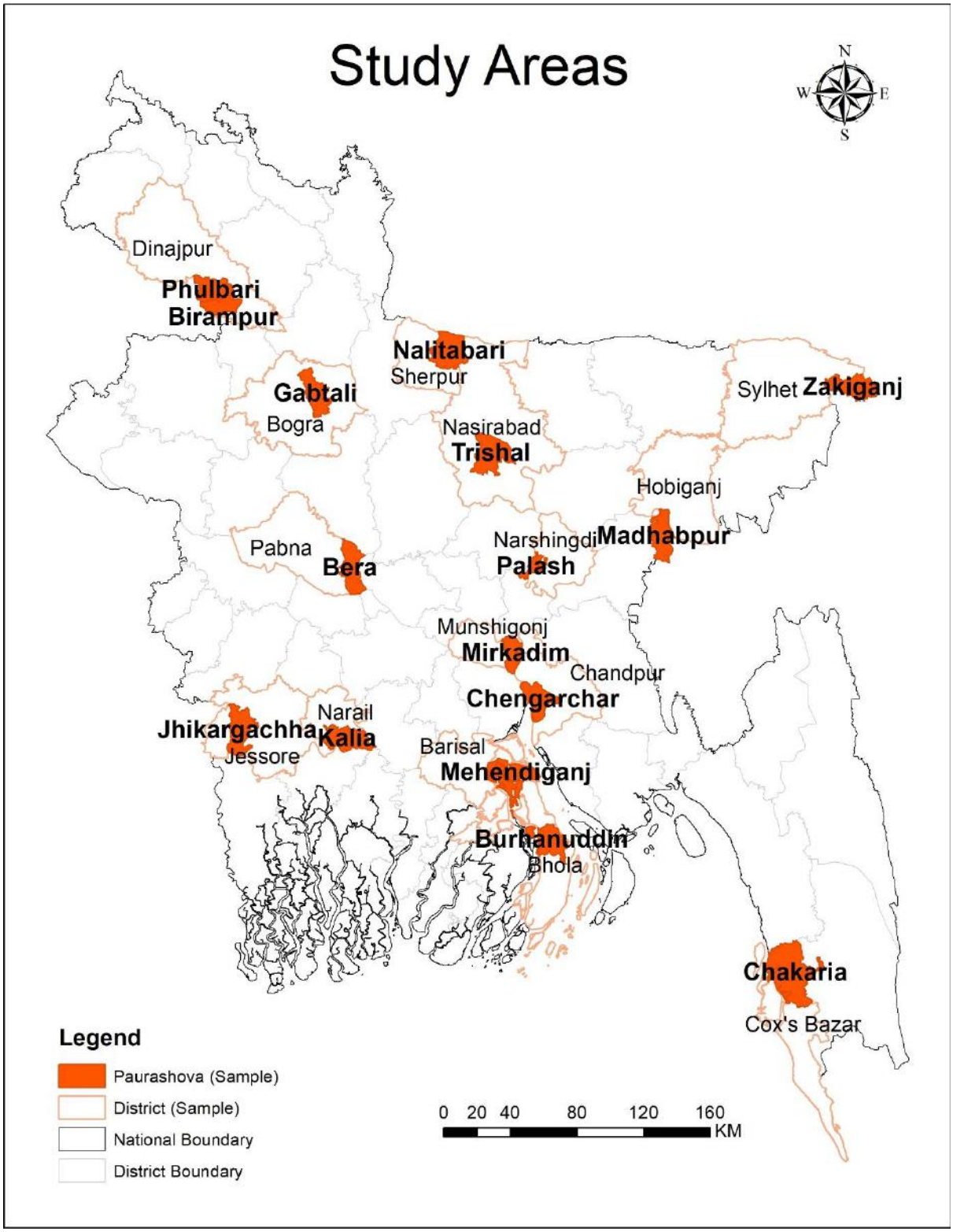

Figure 3 Sampled areas for the study

In this study one sample of each of the components from the sampled areas have been observed according to the checklist.

Table 11 Sample size for physical observation

Pourashava	tube well	pump house	pipline	house connection	Water point	Public toilet	ground WTM	Surface WTM	OHT	Total
Sample	15	7	1600 m	16	16	16	4	1	3	94
Mehendiganj	1	----	100 m	1	1	1	----	----	----	5
Borhanuddin	1	---	100 m	1	1	1	---	----	----	5
Chakaria	1	1	100 m	1	1	1	1	----	----	7
Chhengarchar	1	1	100 m	1	1	1	----	----	1	7
Palash	1	1	100 m	1	1	1	1	----	----	7
Mirkadim	1	----	100 m	1	1	1	----	----	----	5
Trishal	1	----	100 m	1	1	1	----	----	----	5
Nalitabari	1	1	100 m	1	1	1	----	----	----	6
Jhikargacha	1	----	100 m	1	1	1	----	----	----	5
Kalia	1	----	100 m	1	1	1	----	----	----	5
Bera	----	----	100 m	1	1	1	----	1	1	6
Gabtoli	1	1	100 m	1	1	1	----	----	----	6
Birampur	1	----	100 m	1	1	1	----	----	----	5
Fulbari	1	----	100 m	1	1	1	----	----	----	5
Madhobpur	1	1	100 m	1	1	1	1	----	1	8
Kaliganj	1	1	100 m	1	1	1	1	----	----	7

2.4.4 Qualitative Sample Design

Qualitative data were collected using non probability sampling technique Focus group discussion, key informant interview, local and national level workshop were conducted for fulfilling the purpose of the study.

Table 12Qualitative sample size

Sl	Tool	Level	Stakeholder	Quantity
1	Key Informant Interview	National Level	1. Project Director, DPHE 2. Director General, IMED, Sector-3 3. Representative, Physical infrastructure department, planning commission 4. Additional Chief Engineer , DPHE 5. Representative of departmen of environment	5
		Municipality level	1. Executive engineer, DPHE 2. Assistant engineer/ Sub-Assistant engineer ,DPHE 3. Mayor of Municipality 4. Sanitation inspector (Municipality) 5. Executive engineer/ Assistant engineer/ Sub- Assistant enginee, Municipality	5*16=80
Toal				85
2	FGD	Local level	Beneficiaries who got working opportunity from project	1*16
Total				16
3	Local level workshop (38 participants)	Divisional level	Representatives of project officers, municipality representatives, beneficiaries and conscious citizens	1
Overall Total				**102**

2.4.5 Primary Data Collection

In this study, primary data has been collected from respective target respondents, followed by the core set of objectives. Hence, various data collection tools have been applied, which are given below in a detailed manner:

- **Household and Growth Center Questionnaire Survey**

Household/ growthcenter questionnaire survey was conducted to understand the impact of this proejct in the lives of the beneficiaries. A semi structured questionnaire was prepared for interviewing direct beneficiaries to collect data on demography, socio-economic status, health, sanitation, and water supply of 16 municipalities.

- **Key Informant Interview**

To triangulate the qualitative and quantitative data a number of KIIs were conducted with project officials, relevant government officials. The collected data from KII was also used to varify the information collected from document and questionnaire sirvey.

- **Focus Group Discussion**

The study team has steered Focus Group Discussion (FGD) among the different stakeholders to collect qualitative information regarding the project. During the FGD session, the respondents have answered some Boolean questions to describe their perspectives regarding project progress. Along with these, some probing questions were also provided to verify the answers given under the Boolean questions.

- **Local Level Workshop**

A workshop was organized at Ghorashal Municipality at the local level. The workshop was participatory which has been managed and coordinated by the Disaster Management Watch. Participants of the workshop were project officials, stakeholders of the project, local government representative and representative of DM WATCH. The main purpose of the workshop was to find information related to projects from respondents. Discussions on the advantages, progress, recommendations and capabilities of the project, weaknesses, opportunities and threats were discussed.

- **Physical Observation**

In order to assess and monitor the overall implementation of the project, the progress of various components in the sample project area were reviewed. The actual condition of the components has been verified based on certain indicators. Based on the maximum coverage of the components, the sample area has been determined and the sample numbers are given at 4.4.3

- **Review of Lab Test Report**

Test reports of water sample of tube-well have been collected from sampled areas. Reviewing the reports received, the quality has been verified based on the presence of iron, arsenic etc. in water.

2.5 Data Collection Management Process

The study has also applied physical observation tool to evaluate and monitor the overall implementation of the project along with the impact in the project implementation locations

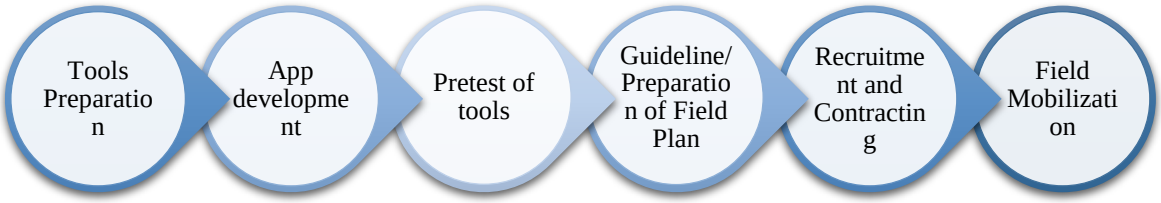

Figure 4 Data Collection procedure

2.5.1 Preparing and Finalizing of study tools (Checklist and survey questionnaire)

In realization of the project objectives and deliverables of the assignment, the following data collection instruments have been used in this study. All these tools are attached in the Annex.

- ✓ Household Questionnaire
- ✓ Physical Observation Checklist
- ✓ FGD Checklist
- ✓ KII Checklist
- ✓ Discussion Agenda of workshop

2.5.2 Data Collection (Digital Data Collection Method)

After the approval of the quantitative and qualitative tools an app was developed using the pre-developed questionnaire. The survey was carried out using modern Tablet based survey instrument where a survey application was developed using KoBoCollector. The application also recorded geographical location of the beneficiaries (GPS coordinate) which ensured the transparency in data collection method.

2.5.3 Pretest of tools

A pilot survey was conducted using the app to look for any bugs and further adjustments. The feedbacks from the pilot survey was recorded to use in the final adjustment of the questionnaire and troubleshooting. Besides, debugging of the app was done to ensure the smooth functioning of the app.

2.5.4 Guideline/ Preparation of Field Plan

After finalizing the checklists and questionnaires, a comprehensive guideline was developed for research assistant and supervisor for conducting (one-to-one) individual survey questionnaire, FGD, KII, and workshops which specifically described important definitions, terminology, question objective, data input instructions, skipping etc. This guideline was easy to use and helpful in data collection process.

2.5.5 Recruitment and Contracting

A field research team was recruited based on their knowledge of collecting information on similar projects. In addition, their prior experience of collecting data in similar domain was given higher consideration.

2.5.6 Field Mobilization

As process of field mobilization, the consultant familiarized themselves with the local authority prior to the data collection. A detail schedule with date, time and venue was prepared and shared with the local authority prior to the survey. A letter was sent to the local authority with the assistance from IMED to inform about the objectives and detail schedule of the study which made the process of data collection easier.

2.5.7 Quality Control

Different quality control methods were applied in this study

Quantitative Data Management

- **Spot check:** The field supervisors at times went back to the respondents and validated the collected data.
- **Daily check:** The filed supervisors checked the data in every day basis to make sure that the data has been entered correctly. He also did a logical check of the database.

Qualitative Data Managemen

The study team has collected qualitative data to understand the overall impact of project in the study areas. Following measures were taken to ensure the data quality of qualitative data.

- **Note keeping:** Research Assistants used to keep the notes during the discussion which were used later on to prepare transcripts.
- **Observation:** Report making report based on observation of daily activities to keep the team on track.
- **Feedback:** Research Associates will discuss with the team leader, and expertise in the research team on the findings at the end of the day.

2.6 Data Processing

2.6.1 Data Cleaning and Editing

After collecting data from filed corrupt or inaccurate records were identified from the record set, table or database. Consequently, these identified data were referred as incomplete, incorrect or irrelevant which was finally replaced, modified or deleted. Hence respective respondents were contacted again to collect those missing data.

2.6.2 Screening of the Data and Coding

After cleaning and editing the collected data a final screening was performed which ensured the usability, reliability and validity for testing. Besides, in need basis data was transformed into suitable code for computer-aided analysis.

2.7 Triangulation and Data Analysis

2.7.1 Quantitative and Qualitative Data Triangulation

Triangulation involves the conscious combination of quantitative and qualitative methodologies as a powerful solution to strengthen a research design where the logic is because a single method can never adequately solve the problem of rival causal factors (Denzin 1978; Patton 1990). Two types of triangulation approach will be followed in this study.

In this study, the quantitative data collected from questionnaire surveys was triangulated within themselves and with the qualitative data collected from KII, FGD and local level workshops.

2.7.2 Data Analysis

The study has used data from both secondary and primary sources. Qualitative tools provided the basis for both content and impact analysis. Neverthetless, primary and secondary data (e.g. Project related documents) were investigated based on the indicators. To check the overall progress and impact of the project on the beneficiaries the consultant analyzed both qualitative and quantitative data align with the OECD framework. Each of the criterions of the OECD framework has specific purpose and looks into different dimensions of the project. Hence both the qualitative and quantitative data analysis reflected each of the component of the project intervention in the in-depth monitoring process.

Quantitative data acquired through questionnaire interviews e.g. learners' survey were analyzed through SPSS and MS Excel software. In particular, this study used SPSS v.22 to

derive at various descriptive as well cross-tabular analyses. This software has been chosen over others because of its superior analytical accuracy (Stolzenberg, 2005). Statistical analysis has been based on respondents' response concerning individual question. For analytical convenience, the questionnaires are framed close-ended where respondents' responses were recorded in numeric expression majorly. Generated cross-tables, later on, were transferred to MS Excel for producing graphs.

Qualitative data collected from different types of stakeholders through various qualitative data collection methods, i.e. IDI, FGD, KII and Local Workshop were organized in four steps.

a) Preliminary analysis of the findings with research assistants and supervisors who were involved in qualitative data collection in a separate session;
b) Thematic coding of data according to content and specific categories;
c) Compiling data by themes to systematically analyses qualitative data;
d) Compiling qualitative observations by themes and selecting issues and appropriate Quotations

2.7.3 SWOT Analysis

However, to understand and realize the significant impact and overall scenario of project intervention benefits, potentials and complexities, SWOT (Strength, Weakness, Opportunity and Threat) analysis was conducted through leveraging the empirical data and secondary records of the project documents.

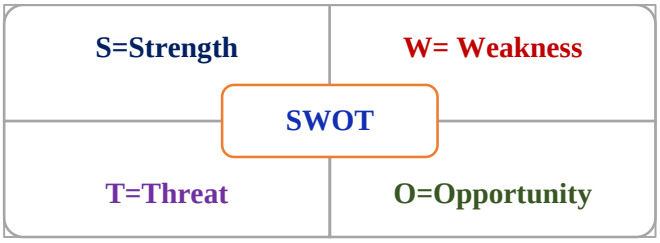

Figure 5 Swot analysis

2.8 Local level Workshop

After reviewing the In depth Monitoring Survey data, DM WATCH has organized workshops at Palash Municipality at the local level where relevant topics related to the project, observation etc. are presented to the participants. This study included participants' recommendation for sustainable implementation of the ongoing project.

2.9 Reporting

Based on the project's in depth monitoring survey, the consultant has already provided an initial report based on ToR. Following the directives and instructions of the RFP and circular of the project to prepare the first draft report, the second draft report, final draft report and final report. Initial reports and final report have been initially evaluated through the technical committee meetings in IMED. Finally, results obtained in the final report were presented in the National Workshop.

Chapter 3: Result and Discussion

3.1 Relevance of the Project

The United Nations has set sustainable development targets (2016-2030) for world-wide development. Targets for water supply and sanitation according to sustainable development target-6 are:

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all;

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

Thus, ensuring water, sanitation and hygiene in the country is mandatory by 2030. DPHE has established water supply through pipelines in 159 out of 327 municipalities. Besides, similar projects are being implanted in 90 other municipalities to ensure water supply through pipelines. According to the section 11 of Vision 2021 and the targets of sustainable development, the project undertaken to ensure water and sanitation facilities in 40 pourashava is fully relevant. The selected components are also consistent with the objectives of the project. However, the revised DPP of the project did not reflect the requirement of municipal-based integrated water supply, sanitation and hygiene demand to meet sustainable development targets. Although the project's title suggests that it supplies water for the entire municipality, not all the residents of the municipality are getting water supply or sanitation services under this project. In addition, although ensuring sanitation facility is one of the main objectives of this project, only a limited number of public toilets have been constructed in the entire municipalities. Other services such as sewerage system, drainage, and waste management facilities were not included in this project for improved sanitation. Also, special attention was not given to the vulnerable communities of population (physically challenged, elderly etc.) when constructing of public toilets, which is an important issue in sustainable development goals. Despite all these limitations, it can be hoped that the project will contribute in achieving the target of SDG to some extent, if not fully.

3.2 Project Implementation and Progress Review

3.2.1 Physical and financial planning and implementation

The project is not being implemented according to the physical and financial work plans mentioned in DPP of the project. The project could not be implemented according to the yearly budget planning mentioned in the DPP of the project. Being unable to make a procurement plan along with the delay in appointing consultant organizations on time, the project could not implement the work plan according to plan. The physical and financial planning according to main and revised DPP and current implementation figures are as follows

Table 13 Actual physical and financial progress in comparison with main DPP (June/2018)

Sl no	Reported time	Physical and financial plan according to main DPP		Progress according to the report sent from the project office to the IMED	
		Physical	Financial	Physical	Financial
1	June/14	12.03%	2215.00	0%	0%
2	June /15	35.58%	6655.20	5.43%	5.43%
3	June /16	32.20%	6931.12	19.50%	18.94%
4	June /17	20.18%	3716.82	37.00%	36.26%
5	June /18	65.94%		53.00%	45.80%

According to the main DPP, the project was designed to be completed by 30 June/2017. But the physical and financial progress of the project was 37.00% and 36.26% respectively on 30th June / 2017, which is lesser than the approved plan of the main DPP. Again, according to the 1st revised plan of the project, physical progress was to be 65.94% on 30th June / 2018 but in reality, on 30th June / 2018 physical and financial progress was 53.00% and 45.80% respectively which is less than the target of the revised plan.

Table 14 Physical and financila planning and progress

Sl no	Fiscal year	Physical and financial plan according to main DPP		Physical and financial plan according to revised DPP		Demand (lakh taka)	Original progress	
		Financial	Physical	Financial	Physical	Financial	Financial	Physical
1.	2014-15 (Jan-June)	2215.00	12.03%	1000.00	4.38%	0.00	0	0
2.	2015-16	6655.20	35.58%	2488.07	10.90%	1000.00	2488.77	10.90%
3.	2016-17	6931.12	32.20%	3200.00	14.02%	5000.00	3190.33	13.97%
4.	2017-18	3716.82	20.18%	8363.77	36.64%	5000.00	3775.80	16.54%
5.	2018-19			7773.45	34.06%	7000.00	2664.526	75%

3.2.2 Physical and financial progress of the main components

The original implementation period of the project was fixed for January / 2014 to June / 2017 spanning 3 years and 6 months, which was later extended to June / 2019. Current

implementation period is 5 years and 6 months. The project has already passed 5 years and 4 months. According to the extended time, the project has already spent 97% of time, but the actual progress of the project is 70% and financial progress is 57.90% (component and package wise progress are given on Table 6 and Table 7 of Attachment). The condition of the progress of the main components are given below

Component: Pump house with boundary wall					
Target (original DPP)		Target (revised DPP)		Progress (April, 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
50	300	74	592.00	59 (79%)	**351.943** (59.44%)

Component: Public Toilet					
Target (original DPP)		Target (revised DPP)		Progress (April, 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
60	300	111	888.00	90 (81.1%)	664.689 (74.9%)

Component: Tube well					
Target (original DPP)		Target (revised DPP)		Progress (April, 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
100	**100**	148	148.0	148 (100%)	137.06 (92.6%)

Component: Production Tube well					
Target (original DPP)		Target (revised DPP)		Progress (April, 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
50	1400	74	1850	70 (94%)	1439.326 (77.8%)

Component: Pipeline					
Target **(original DPP)**		Target (revised DPP)		Progress **(April,** 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
440 km	5280	620 km	7440.0	585 km (88%)	5207.97 (70%)

Component: House connection					
Target **(original DPP)**		Target (revised DPP)		Progress **(April,** 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
1280	724.8	17230	1033.80	10800 (62.7%)	583.36 (56.4 %)

Component: Water points					
Target **(original DPP)**		Target (revised DPP)		Progress **(April,** 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
1500	1125	2165	1623.75	2083 (96.2%)	1317.০২ (81.1%)

Component: Overhead Tank					
Target (original DPP)		Target (revised DPP)		Progress (April, 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
12	1800	6	900.00	2(70 %) 4(15 %)	200 (22.2%)

Component: Water points(250/200/100) m^3 /hr					
Target (original DPP)		Target (revised DPP)		Progress (April, 2019)	
Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)	Physical	Financial (Lakh taka)
12	3900	8	4404.00	2 (60%) 6 (22%)	715.00 (16.23%)

The progress of construction of water treatment plants under the project is unsatisfactory. None of the plant has been fully constructed till date. The latest work orde was issued on 10/01/2019 and according to the contract the latest completion date is 28/07/2020। Current progress of work is 30%. The progress of the treatment plant (as of Feb / 19), as per the agreement with the contractor company under the project.

Physical and Financial Progress

Package no.	Package name	Date of NOA	Completion date according to contract	Contract Price (lakh taka(	Current progress	
					Financial %	Physicla %
WD-359	Construction of 1 water treatment plant in Shahrasti Municipality	26/07/2018	20/3/2020	704.00	-	25%
WD-365	Construction of 1 water treatment plant in Chhengarchar Municipality	08/04/2018	06/12/2019	583.88	-	20%
WD-363	Construction of 1 water treatment plant in Kabirhat Municipality	13/05/2018	25/06/2019	202.14	13%	40%
WD-358	Construction of 1 water treatment plant in Shibpur Municipality	10/01/2019	28/07/2020	596.25	-	10%
WD-364	Construction of 1 water treatment plant in Bera Municipality	07/03/2018	26/08/2019	761.00	50%	65%
WD-369	Construction of 1 water treatment plant in Shathia Municipality	17/09/2018	14/01/2020	676.11	-	20%
WD-361	Construction of 1 water treatment plant in Madhabpur Municipality	13/02/2018	30/06/2019	508.12	61%	70%
WD-360	Construction of 1 water treatment plant in Kaliganj Municipality	17/08/2018	14/01/2020	232.51	0%	30%

Although there is an allocation of Tk 1 lakh for the modernization of water billing system through the project, there is no work in this component yet. According to the data obtained, the progress of all the components except the experimental tube-well is unsatisfactory, although the project has reached towards completion. An overall description of the current progress of the project in 16 municipalities sampled according to the information obtained from Key informants interview at the local level is given below.

Table 15Current scenario in the sampled pourashavas

Pourashava	Comment
Mirkadim	The main reasons for the delay in the project was splitting the work of same component to different contractors. Construction of 1 out of 2 pump houses has been completed. The work of establishing a house connection is almost in the final phase.
Nalitabari	It took time to get the work done by different contractor for different parts of the same components.
Fulbari	The work of all the components except house connection has been completed. According to the authorities, they will be able to transfer the components in April.
Birampur	House connections hasn't been established yet. THe project has less acceptance among the beneficiaries because the water crisis before the project was lesser than other areas. As many of the beneficiaries have submarassible pump, they are not particularly interested in using house connections provided by the project
Gabtoli	The work of all the components except house connection have been completed. Motors are yet to be set up in pump houses. The main cause of the delay is complexity in acquisition of land. Finishing the design of components, buying and procuring machinery, adverse weather conditions worked as major impediments.
Bera	The project is at the last phase. They are hopeful to transfer the components of the project by August. However, the project expires in June, 2019. The complexity in the process of land acquisition is the main reason for the delay.
Madhabpur	Construction work of water treatment plant and overhead tanks are in the initial phase. Construction of 2 pump houses, 2 tube wells, 31 deep tube wells, 1 public toilet and 17 km pipeline have been completed. The main reason for the delay is complexity in land acquisition. The project was also delayed because of the finalization of the components' design. The construction of the water treatment plant was closed for some days because of the local conflict.
Jhikargacha	Tasks of pipelines and tubewells are complete and half of the house connection have been established. The main reasons behind the delay were adverse weather, delayed recruitment of human resource and internal political complexity.

Pourashava	Comment
Kaliganj	About 70% of the work is done. The construction of an water treatment plant is in progress. Site selection, land acquisition, and waterlogging during the rainy season are the main reasons for the delay.
Polash	The work of all the components except house connection have been completed. Site selection, land acquisition, installation of electric connection, and pipeline layout are the main reasons for the delay.
Borhanuddin	The tasks of establishing pipelines, 3 public toilets, 2 pump houses, and tube wells have been completed. 40 percent of the work for house connection is left. Project delay was due to delayed manpower recruitment and rainy season.
Mehendiganj	The works of tube wells and pipelines are accomplished and more than half of the house connection has been established.
Chhengarchar	The project was delayed mainly because of the site selection and land acquisition.
Chakaria	Installation of 3 public toilets, 90 water pumps, pipelines have been completed. Motor needs to be installed in one pump house , whereas boring for another pump house is in progress. The project was delayed because different contractors were recruited for constructing different parts of the same component. Besides, adverse weather, lack of human resource also worked as the hindrance.

3.3 Review of the success of the project objective

Objective 1: To improve the living standard of the people through ensuring availability of safe piped water.

The main purpose of this project is to improve the living standards of beneficiaries by making water availabile. The change that has been made in the lives of the beneficiaries for the benefit of this project is given below:

3.3.1 Increased Water Supply

Figure 6 Collecting water from the water points

The main objective of this project was to provide safe water to the beneficiaries of the selected pourashavas. Demand of water in the areas is high because of the high population.. Prior to the implementation of this project, beneficiaries used contaminated water of very poor quality from tube wells, rivers and ponds. Different types of pollutants such as arsenic and iron were present in the water. According to sanitation officer of the Bera municipality, "Basically the water of Bera municipality was severely contaminated by TCFC, Fiscal Coliform and Manganese." Because of the use of polluted water, people suffered from various diseases. According to the DPHE data, the use of polluted water resulted in the death of people in the past. The normal activities of public life were hampered due to the presence of water scarcity and various harmful substances. Besides, because of the increase in industrial factories (Palash municipality) and coal power plants (such as Phulbari Municipality), the water level has dropped. As a result, lifting of water from the tube wells became difficult. Therefore, it is expected that the problems of the municipality may be resolved somewhat by the implementation of this project.

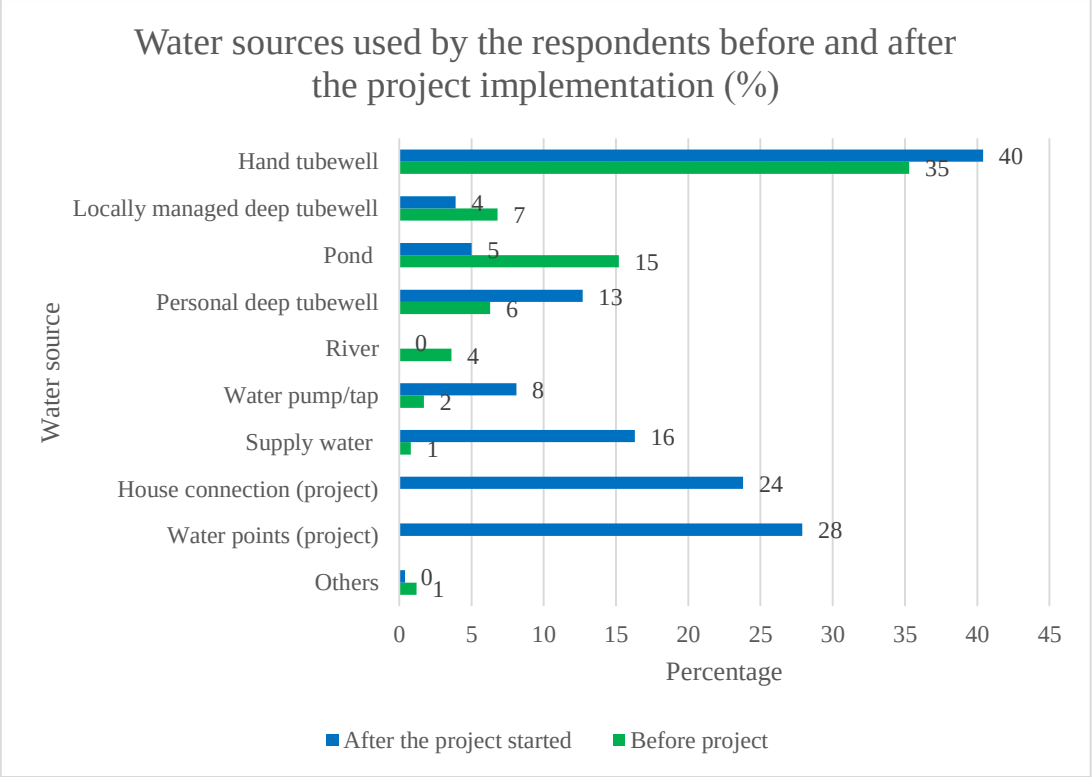

Figure 7 Water sources used by the respondents before and after the project implementation

The diagram shows that some interviewed beneficiaries used to fulfill their daily water demand by using the water from ponds (15.2%) and rivers (3.6%) water, which are mostly polluted. But the percentage of such users dropped dramatically. In depth monitoring found that beneficiaries are getting access to the water from this project. About 27.9% projects beneficiaries of the sampled areas are getting water from the water points and about 23.8% of beneficiaries are getting water from house connections. Field observations show that the construction work of pump house and water treatment plants are still in progress. After the completion of all the components of the project, more people will get benefitted from drinking water.

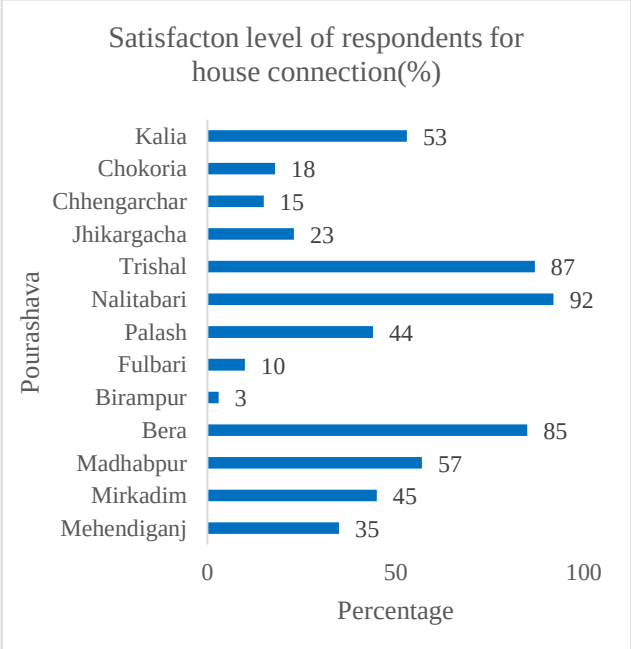

Figure 8 Satisfacton level of respondents for house connection

According to the survey of the households and Growth Centers, about 91% of the beneficiaries reported that the water quality has changed. About 26% of beneficiaries have expressed that they are getting pure drinking water. Most beneficiaries (about 47.59%) expresses that they are getting water, most importantly, in the dry season of the year. The mayor of Madhabpur Municipality said that around 15000 beneficiaries are getting water benefits because of this project. In Chhengarchar, the number is 20000. The project will be more effective once the components are completed. After the completion of this project, one lakh beneficiaries will get pure water. According to the Mayor of Birampur municipality, about 160 people and 50% - 60% of beneficiaries are getting water from this project. The key informants of Chakaria expressed that the beneficiaries are getting water for 24 hours a day. However, only 10% of the beneficiaries of Mirkadim are getting water supply. Most of the beneficiaries are satisfied with the water quality of the water points and household connections received from the project. People of Nilitabari, Bera, and Trishal showed the maximum satisfaction levels for house connections, whereas people of Birampur showed the lowest level of satisfaction. 100% satisfaction was observed for the water point in Chhengarchar. The beneficiaries of Borhanuddin, Jhikargachha, Chakaria also expressed their satisfaction with the quality of water obtained from water points. In this case, Mirakadim and Trishal had the least satisfaction levels.

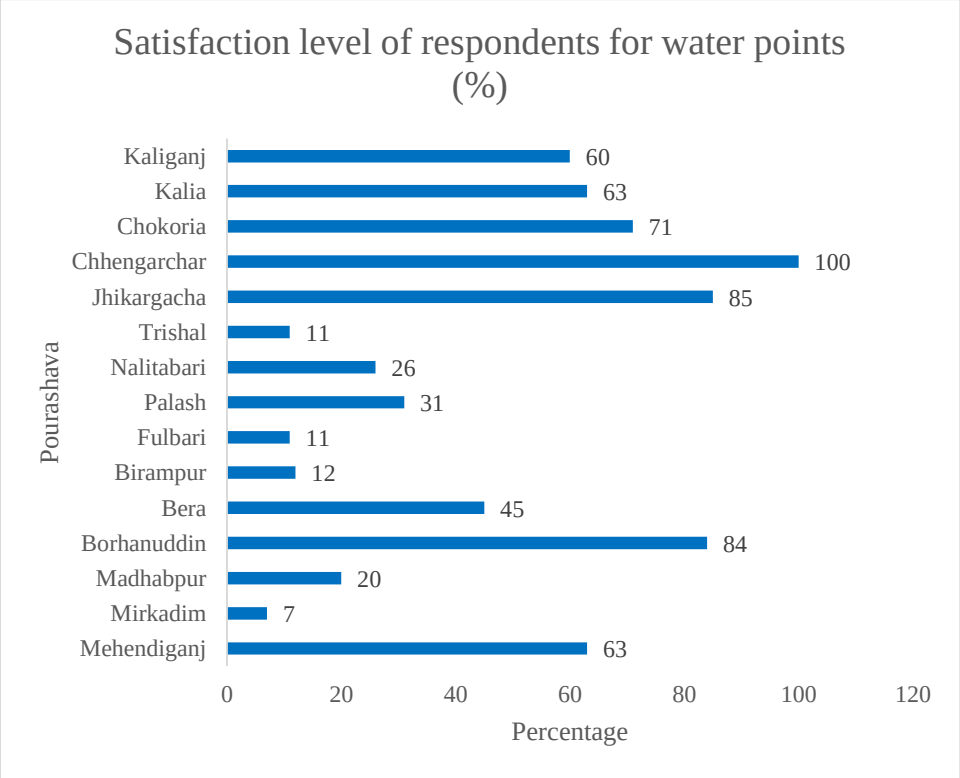

Figure 9 Satisfaction level of respondents for water points

Nevertheless, most beneficiaries have expressed that the number of components are not enough against the existing need of the municipalities. To meet their water needs, the number of water points needs to be increased. According to the people of Mirakadim, the number of components

placed in order to meet the demand of water is not enough as per their population density. The respondents of Trishl also complained about the same issue. Iron has been found in some tube wells of Palash, which were installed under this project in 2015. Because this area is large and industrial, they require more water points, overhead tanks and water treatment plant. Respondents in other municipalities also expressed their need for more overhead tanks, water treatment plants and tube wells to meet their water needs. If the implementation of the project had not been delayed, , the beneficiaries of the sampled areas would already have enjoyed the water supply facility.

3.3.2 Increased Livelihood Options

Before the project started, many people of the municipalities were unemployed without any source of income. They usually worked only for 10 or 12 days a month, and did not have any work during the rest of the time. Their earnings were not enough to sustain their life. After the project started, people from various fields such as farming, rickshaw-pulling, and driving joined the construction andmaintenance work of the project. In addition to their male counterpart, women also got involved in various activities of the project. Especially the elderly women got the opportunity to work such as looking after a public toilet and cooking for workers. Project Director said that because this project required human resources for the management and maintenance, local people got the opportunity of finding jobs.

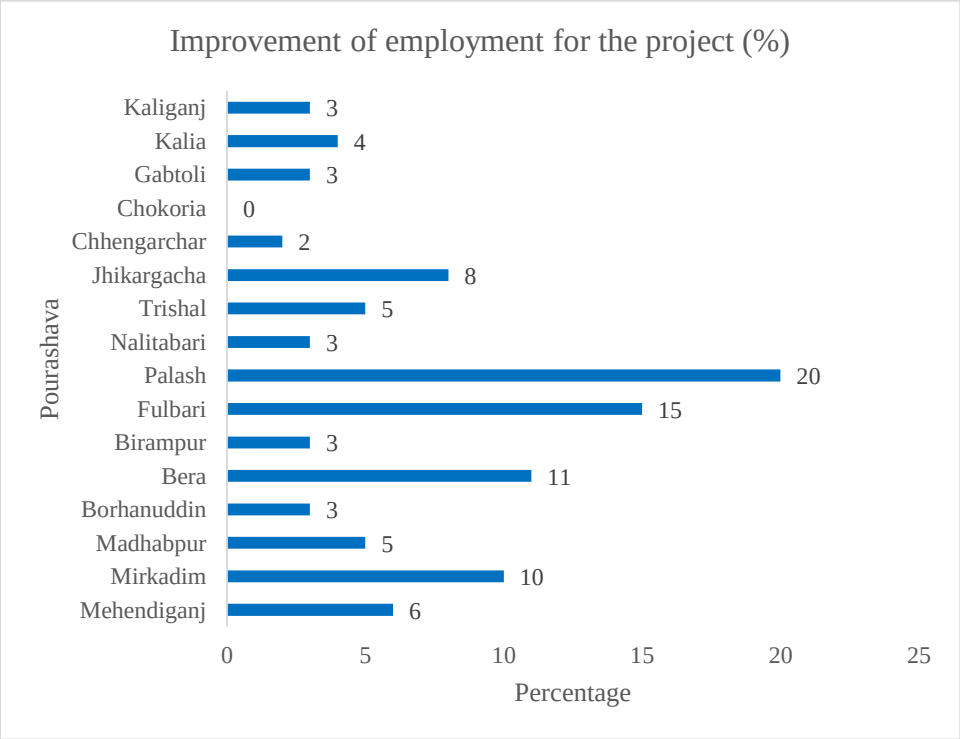

Figure 10 Improvement of employment for the project

In addition to providing water, this project helped beneficiaries get involved in various types of works. Among the sampled respondents, 34% got involved in livestock rearing, 27% started poultry farming, and 22% got involved in vegetable cultivation because of the availability of and accessibility to water. In Borhanuddin, people are getting permanent jobs through the project. Because women are also getting involved in income generating activities, the net income and savings of their households have ameliorated. In Chhengarchar, around 200 people and 50 people in Nalitabari got job opportunities. Both male and female got the opportunity equally Like other municipalities, people's livelihood has improved from the project in Bera municipality, where around 550 to 600 people got the opportunity to work. Earlier, their monthly salary was 9000-10000 Taka, , but now their wages increased up to 15,000– 20000 Taka. As a result of increased income, more families can send their children to school. Overall, the project has had a positive impact on the life and livelihood of beneficiaries.

3.3.3 Reduced social gap (Gender, poverty etc.)

This project has tackled the problems related to social and gender gap created because of the issues related to water supplyto a large extent. Total time taken to fetch water decreased . Specially for the women, who had to travel a long distance to fetch water from nearby ponds and rivers, the water points and household connections have reduced their discomfort.

Beneficiaries enjoying the services of water points, About 250 (about 25%) of the respondents reported that the total distance and time to collect water decreased for them. In addition, 38 respondents reported that various kinds of social harassments occurring during the fetching of water also decreased.

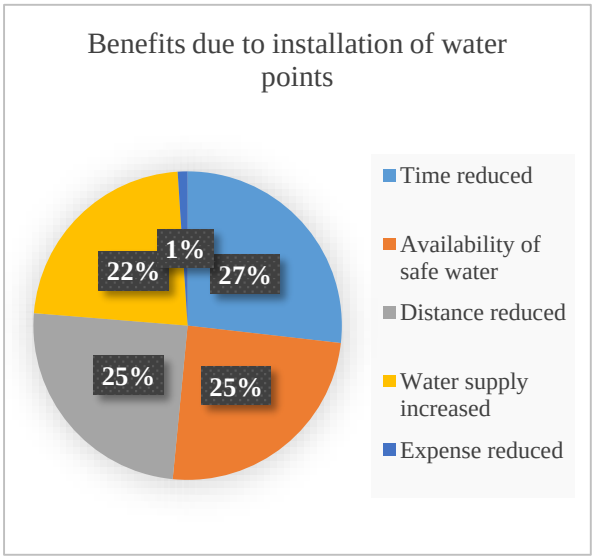

Figure 11 Benefits due to installation of water points

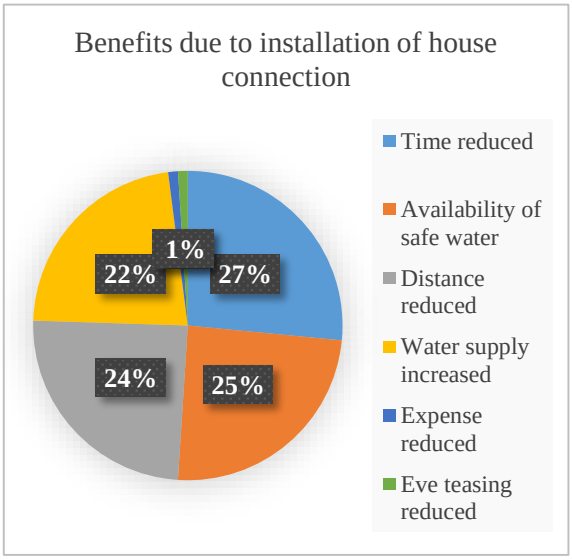

Figure 12 Benefits due to installation of house connection

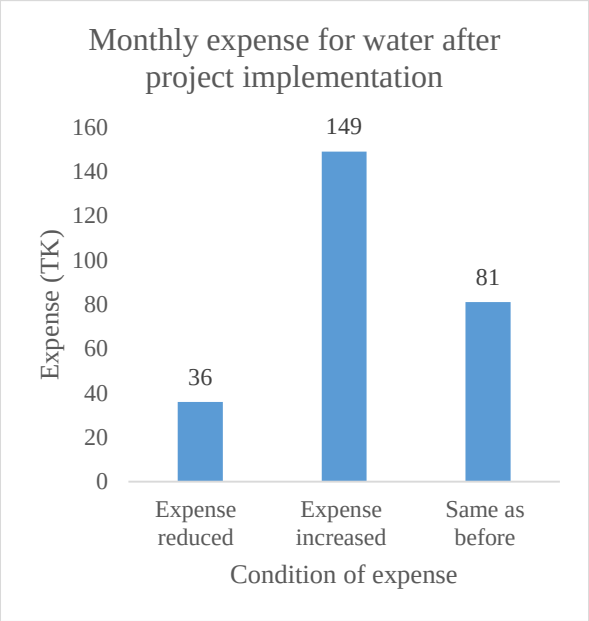

Figure 13 Monthly expense for water after project implementation

The respondents who are benefitted from household water connections also had similar experience. More than 23% (N=184) of the respondents reported that their distance and time of collecting water has decreased. But 56% of the respondents replied that their monthly expenditure on water has increased due to household connection as they have to pay regular monthly bills. The target population under the project are satisfied with the social upheaval they have received owing to the services of the projects. A few of the respondents expressed that they had to negotiate with the neighbours about the collection of water from their sources. Fortunately, these issues were solved to a large extent through this project. The target group is also satisfied with the availability and quality of the water.

Objective 2: Reduction of diarrhea & other water borne diseases with provision of safe water supply & environmental sanitation

In addition to ensuring the availability of water, another basic objective of this project is to reduce the prevalence of disease by providing environmental sanitation system. The effects of this project on sanitation, waterborne diseases and the environment are described below

3.3.4 Sanitation Facility

Besides ensuring availability of water, the project also aims at promoting environmental sanitation in the targeted areas. For this reason, public toilets have been constructed in the targeted areas. This component was incorporated in the project to reduce open excretion and defecation, which pollute the environment and create negative impact on health. There were lack of sanitation facilities before the project was initiated. As a result, most people were dissatisfied with the overall sanitation facilities.

The toilets under this project have been constructed in common places such as growth centers, bus/truck terminals, mosque, and temple. 77% respondents think that the toilets are situated at suitable places. Considering the population of the areas, the number of public toilets constructed under this project are inadequate according to both officials related to this project and general people (40%).

The toilets are constructed ensuring gender inclusiveness. 35.4% of the respondents agreed that there are separate facilities for man and woman in the toilets. But, no service is available for physically challenged, elderly and under-aged population i.e., ramp. Besides the number of cubicles, the design of the toilets was not context specific. The locals complained about not having shower space and separate entrance of male and females. Another drawback includes the absence of hand wash utensils, e.g. soaps. There were odor and dirt in the toilets. Despite the existing problems in the toilets, the disappointment regarding sanitation facilities have lessened among people in the particular sampled areas. The satisfaction level has increased as the increased number of public toilets are contributing to improve sanitation services of the areas. Majority of the respondents (38.2%) of Palash expressed high satisfaction level regarding the public toilets, whereas people in Fulbari (24.5%) were less satisfied. The satisfaction level in Birampur is the least. All the people of Birampur expressed extreme dissatisfaction with the sanitation services. According to the sanitation inspector of Birampur pourashava, only one public toilet has been constructed in the Pourashava. If there were five more public toilets the sanitation services would have been comparatively more satisfactory.

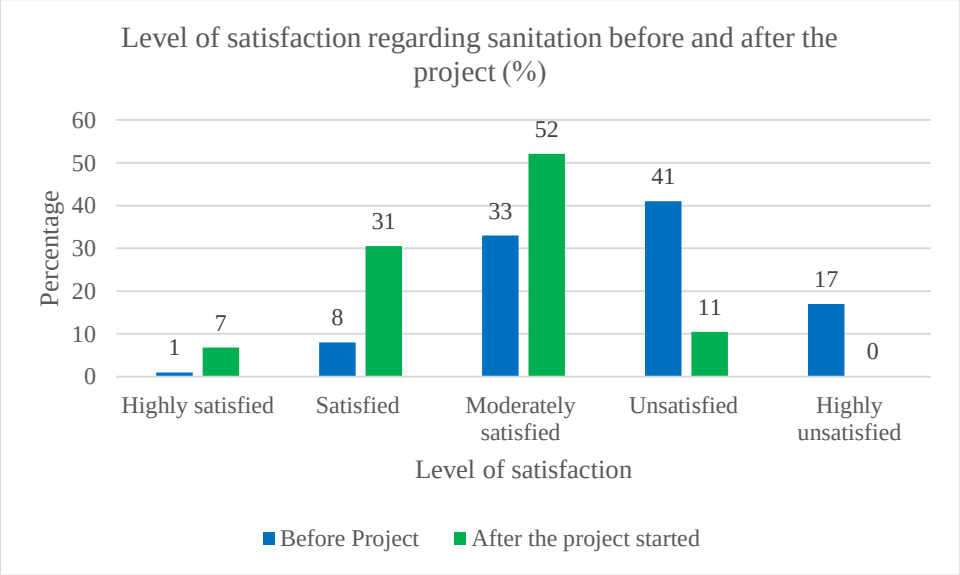

Figure 14 Level of satisfaction regarding sanitation before and after the project

As already stated, this project is contributing to improve the sanitation and water facilities of targeted pourashavas. However, 74.1% respondents of Chokoria thinks that the sanitation facility has deteriorated. As the population density is high, the demand for sanitation is high. According to the Mayor, the priority of public toilet is higher than water. However, according to the Sanitation officer it was an effective project in case of hygiene and better health. Caretaker of the toilet is appointed by the pourashava authority who is in-charge of maintaining the toilet's cleanliness. Sometimes mosque authority also looks after the public toilets adjacent to the mosque or built within the mosque premises. Sanitation officer visits two or three times in a week. In few areas, like Trishal, the toilets have been leased to contractors who are

responsible for the maintenance of the toilets. 24% people of Fulbari believes that the situation has improved.

3.3.5 Prevalance of Water Borne Diseases

Most of the sampled areas had similar problems regarding health and waterborne diseases. As learned from interview with the officials, there was no proper sanitation system, the environment was constantly getting polluted because of open defecation. Water quality of these areas was also very poor. Most of the pourashavas were suffering from iron and arsenic contamination. Besides iron and arsenic, the water in Bera was also contaminated with TCFC, fiscal coliform and manganese. Because of the insufficient water source people of these areas, people had to use the contaminated water and as a result they used to suffer from various waterborne diseases. 46.5% people of the sampled areas responded positively about being affected by waterborne diseases prior to the initiation of the project. Among various diseases, people mostly suffered from diarrehea. People of Gabtoli (27.8%), chhengarchar (33.3%) and Bera (22.2%) suffered from diseases related to arsenic contamination more than other areas. However, majority of the respondents in Palash (66.7%) and Bera (33.3%) said that they haven't been affected by any of these diseases

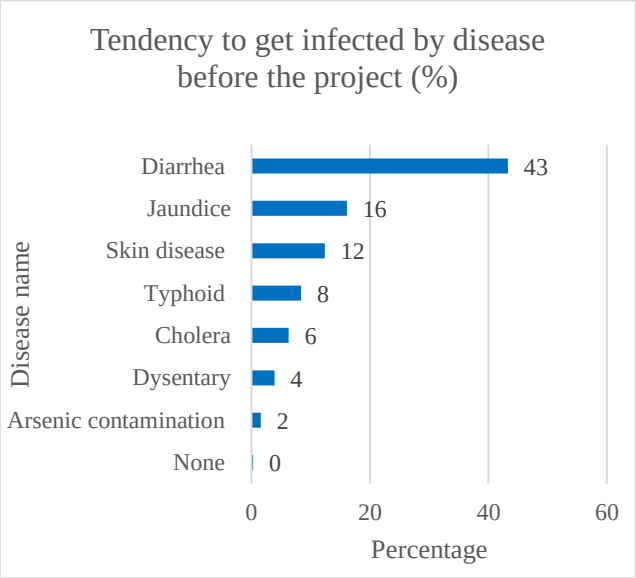

Figure 15 Tendency to get infected by disease before the project

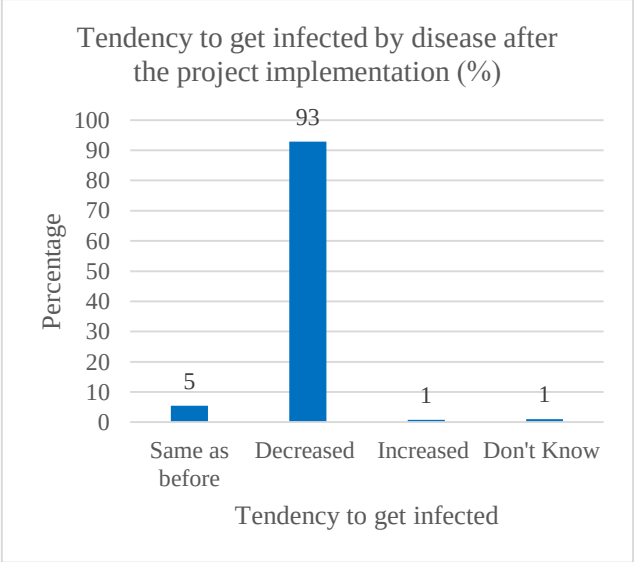

Figure 16 Tendency to get infected by disease after the project implementation

Along with other objectives, the project was also designed to ameliorate the health condition of people in the targeted areas by treating polluted water, ensuring access to water, public toilet. Till now the progress of the components are satisfactory and people have started to get the benefits which is evident by the response of people from the survey. 92.9% respondents of the sampled areas have informed that the frequency of suffering from these diseases have lessened

than previous time (before the project started). Whereas 58.9% people responded that the severity of the diseases have decreased, 32.5% said that it is still as same as before. The personnel from DPHE and pourashavas also validated the improved scenario. According to the panel Mayor of Chhengarchar pourashava, the rate of going to hospitals and clinics for diarrhea, cholera and other waterborne diseases has lessened 80%.

3.3.6 Impact on Environment

The survey found that most of the beneficiaries of the sampled areas had not faced any adverse environmental impact. About 97% people of the sample area expressed that they haven't faced any problems because of the implementation of the project. The research team learned from KII with the local officials and the questionnaire survey with beneficiaries that two of the general difficulties they have faced during construction are noise and air pollution. About 1% of the responded complained about environmental pollution. But the major difficulty faced by the people was the lack of availability of proper sanitation system. The environment was constantly getting polluted because of open evacuation. According to the respondents of household survey and KII, water quality of the rivers, especially in highly industrial areas, is getting deteriorated.

In Polash ground water level is depleting. The main reason of depletion is withdrawal of groundwater from the aquifer by the local industries, e.g., Pran RFL. As the ground water level is lowering down, it is gradually becoming more difficult to withdraw water from aquifer even with deep tube well.

Almost 4% of the people of sampled area expressed that in their locality they have faced destruction of agricultural and forest land whereas in some place some water body has been filled. Most of the respondent in sampled area disclosed that the drainage system is very poor, there is no way to discard waste water. As a result, they have to discard waste water in and around their houses. They have suffered more in rainy season because of polluted water logging. In many of the areas, industrial wastes and chemicals are drained directly into the river. For example, The Shitolokkha river is getting polluted day by day because of industrial wasted water.

According to the national level KII, the representative of natural resource management of "Department of Environment" expressed that "the component has adverse impact on environment and ecosystem". She further said that "mostly water treatment plant affects the aquatic animals by using of river water, which affects the ecosystem of environment. In addition, burning fuel of treatment plant pollute the air quality". The other components which withdraw ground water may cause ground water to deplete. To avoid all the negative impact there are some environmental friendly initiatives such as rain water harvesting, water reservoir, recycle and reuse of the water, treatment of industrial water.

Objective 3: Improvement of operation & maintenance by Pourashava to have sustainable water supply & sanitation

3.3.7 Increased Capacity of Operation and Maintenance

This project is implemented by DPHE with the help of puorashava at local level. Pourashava was liable to the construction of public toilets. The other components were installed by DPHE. But DPHE will be affiliated with the project until the termination. After the completion of the project, DPHE will hand over the components to pourashava for operation and maintenance. But pourashava does not have the budget and capacity (technical and human resource) to ensure proper maintenance and sustainability of the components. The scenario of all the sampled pourashavas are similar in this regard. The interviewed personnel of the 16 pourashavas (Mayor, assistant engineer) expressed their lack of ability to maintain the components by themselves According to the mayor of Phulbari, the municipality does not get any allocation from the government, the municipalities manage their workers as well as the projects with taxes. But the collection of municipal taxes is very low, so they are not financially able to maintain components. Assistant engineers of Chakaria, Mirkadim and Bera municipalities suggested to set up a water meter to reduce the excess use of water. The rate of income of municipality is low because the beneficiaries do not pay regular bills. Setting up of water meters will ensure regular payment and as a result, increase the income of the municipality.

There is a provision of providing training in DPP. The officials of DPHE, like executive engineers, in Jhikargacha, Kalia, Borhanuddin, Mehendiganj, Gabtoli received training from this project. The executive engineer of DPHE, Bera, informed the study team that they always provide training but it is not sufficient. The assistant engineer, DPHE, of Madhobpur pourashava said that DPHE will maintain the components for three months after the termination and during that time they will train the representatives of pourashava. After three months they will hand it over to the pourashava.

Objective 4: Keeping the role of achieving the target of the current government declared Vision 2021 and SDG target

3.3.8 Contribution in Achieving Vision 2021 and SDG

According to Section 11.2 (Promoting and Sustaining Health) of perspective plan of Bangladesh 2010-2021, access to clean water and sanitation could be envisioned for 2021 through, for example, access to piped water, well maintained sewerage systems etc. Arsenic problem in groundwater has put a damper on clean rural water supply. Measures will be necessary for mitigation through provision of user-friendly affordable household **water filter** systems and for piped water supply through deep tube wells by communities and government.

Safe disposal of waste material, monitoring water quality, ongoing education on good hygiene practices and other measures to promote safe water will be strengthened.

Among the broad goals of the Perspective Plan for a Transformed Bangladesh by 2021 one significant goal related to public health and sanitation is

- Supply of pure drinking water for the entire population as soon as possible after 2011, and bring all household under hygienic sanitation by 2013.[2]

The sustainable development goals (SGD) has 17 targets, the sixth target is regarding clean water and sanitation. The sections 6.1, 6.2, 6.3 & 6.4 are as below:[3]

6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all

6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations

6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.

6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.

In order to attain Vision 2021 of the government and SDG goal 6, the components of this project were designed to ensure, ubiquitous supply of pure drinkable water, availability of water, improved sanitation and environment and sustainable withdrawal of water.
The project was successful in fulfilling vision 2021 and SDG goal 6 in the following aspects;

- **Supply of pure drinking water;**

  Through the use of deep hand tube well, house connections and pump houses, pure water supply has been possible in the 40 pourashava under this project. Overhead tank was also established to help supply water and storage of water for better utility
- **Improved water quality**

[2] Final Draft of PERSPECTIVE PLAN OF BANGLADESH 2010-2021, General Economics Division Planning Commission Government of the People's Republic of Bangladesh April 2012
Link:
https://bangladesh.gov.bd/sites/default/files/files/bangladesh.gov.bd/page/6dca6a2a_9857_4656_bce6_139584b7f160/Perspective-Plan-of-Bangladesh.pdf

[3] SUSTAINABLE DEVELOPMENT GOAL 6, Ensure availability and sustainable management of water and sanitation for all
Link: https://sustainabledevelopment.un.org/sdg6

Water treatment plants, production tube wells and water points contributed in ensuring pure and better quality water for the beneficiaries

- **Reduced Arsenic and Iron content in water**
- **Reduced water borne diseases**

  Various disease related to iron and arsenic decreased after the implementation of this project. In addition, the extent of diarrhea, skin disease, jaundice, typhoid, and so on,also decreased.

However, the issues mentioned below were not addressed within the project

- **Drainage facilities:** Well-maintained sewerage facilities has been mentioned in the vision 2021. Apart from that, a proper sewerage and drainage system is essential in order to complete the cycle of appropriate water supply and sanitation services. But drainage facilities were not included within the scope of this project. Hence, even though public toilets, tube wells, house connection, water treatment plant etc. was included in the project, because of the lack of a drainage facilities the beneficiaries faced problems like water logging during rainy season. The beneficiaries of the project faced difficulties in disposing the used water which resulted in pollution and water logging.
- **Waste management system:** Along with the drainage system, waste management service is also essential to ensure a clean and hygienic surrounding. However, this component was not considered within the scope of this project. The areas targeted for this project had huge lacking in terms of a structured waste management system. Waste was disposed in rivers, roads, and ground adjacent to the households, which resulted in environmental degradation and thus the trend of diseases persisted.
- **Withdrawal of water though personal submersible pumps:** The project provides deep hand tube wells and water house connections in households and growth centers, however it has not been able to fulfill all the needs of the 40 target pourashava. Hence many of the household use their personal tube well/taps, were ground water is withdrawn indiscrimately. As this is their personal arrangement, they do not pay the pourashava for withdrawing this water. Nor is this monitored by the pourashava authority. This indiscriminate and unregulated use of ground water, along with growth of industries in the pourashava which are withdrawing water from the ground, are contributing to lowering of the water level from the aquifer. One of the targets of the SDG is to ensure sustainable withdrawal of ground water however this issue has not been addressed within this project.

3.4 Review and analysis of work, design and implementation at field level

Research team of Disaster Management Watch physically observed all the ten physical components under the project in the 16 sample areas of the study design. The data related to

the on-ground work were collected through KII, FGD, and local level workshop and through physical observation. The data of physical observation were collected through Kobo Collector Application. Apart from that the overall progress of the components- the services of the components, impact and quality of work were assessed through qualitative data.

The overall progress of implementation of the physical work is satisfactory. However their remains a few drawbacks in terms of time management, work distribution, tender management and quality assurance of the project.

In some areas the beneficiaries of the Pourashava are already enjoying safe and hygienic water provided by the project components in their area. In other areas, the work is still under progress and the beneficiaries will be able to avail water after completion of the project. A few of the surveyed Pourashavas are still failure to meet the demand for potable water even after completion of the elements of the project due to inadequate quantity against necessity.

Both the Pourashava & DPHE officials faced various obstacles while implementing the project components. The various features of the on ground work has been discussed as such.

3.4.1. Land Filling and Acquisiton

One of the main disadvantages of this project was land filling and acquisition. According to approved DPP, there is no provision for land acquisition in the project. During the processing of the stated project, the provision of 13.50 crore for the acquisition of 90 katha land was in the proposed DPP. The project evaluation committee (PEC) meeting held on 7-11-2013 excluded proposals for the acquisition of land.

One of the major challenges of the project was land filling and land acquisition. In many of the Pourashavas, public land was unavailable. Hence, initiation of the ground work of the components was delayed. As discussed by DPHE and Mayor & Officials of respective Pourashava during KII, the physical work of many of the components (vis-pump house, public toilet, treatment plant-construction) could not commence on time in Trishal, Nalitabari, Fulbari, Gabtoli, Bera, Jhikargacha, Madhobpur, Chengarchar & Chakaria- due to delay in land purchase and land acquisition procedure. Because of shortage of available public land, mayor of Chengarchar provided a piece of land to the project as a gift to the pourashava. In Bera Pourashava, the land initially allocated for the water treatment plant was a playing field for the community youths. This gave rise to protests from the locals, ultimately the authority was compelled to reallocate the site of the water treatment plant. Apart from that, the test-&-trial process of land selection also contributed to the delay. Locations selected had to be changed, after being rendered inappropriate for construction through soil test report. This gave rise to logistical hassle in some of the Pourashavas. In many areas, the sites selected for the components were low land. Land filling and land development led to unexpected cost and delay

in project initiation. Sites had to be changed due to legal and political issues. In Chakaria Pourashava, physical work got delayed because of a land lawsuit.

3.4.6. House Connetion

The house connection component of the 16 surveyed Pourashavas are mostly ongoing. In Birampur the beneficiaries are unwilling to take house connection because they are unwilling to pay monthly bill. They already receive continuous water from their personal submersible tube well. The house connections in Nalitabari, Jhikargacha, Fulbari and Chakaria are required longer time than expected. The reason for delay was lack of electric supply in pump house, and lack of consent for road reconstruction, human resource and coordination between various departments. Apart from that, during the rainy season work could not be continued which led to project delay. The people of many municipalities are not interested for water connection in their houses with paying monthly bill as they have alternative sources of water. During the construction work the quality was checked regularly and as per necessity in the observed sample connections. The cover depth of the water connection ranged from 1-3 feet and the diameter of the service pipe range from 13- 37 milimeter. The water supply range from 4 to 6 hours per day. The overall quality of supplied water is good apart from minor complaints, e.g some of the beneficiaries of Trishal has complained about existence of iron in water received from this project. The beneficiaries who are receiving the water under this project are satisfied with the water quality. As they households have not personal water reservoir to preserve water, periodic supply of water is still an impeding factor in ensuring continuous supply of water for the inhabitants.

Figure 17 House connection in Jhikargacha

3.4.2. Installation of Pipelines

Among the surveyed areas, the pipeline construction in Nalitabari, Gabtoli, Jhikargacha, Kalia, Mehendiganj, Borhanuddin, Chengarchar, Palash & Chakaria are completed. As communicated with Pourashava Mayor & Officials and Assistant Engineer of DPHE of Mirkadim, the overall pipeline construction is still ongoing; only 17 km of pipeline construction has been completed in the area. Hence, targeted households are not receiving water where the construction is scheduled to be completed soon. Apart from that, Pourashava authorities are facing difficulties during construction of the pipeline because residents of the adjacent areas do not want to give consent or support to road deconstruction required for the construction of the pipelines. In Trishal Pourashava, the pipeline construction is not completed yet. The people are receiving water from old pipelines of previous projects which is contaminant. Hence the pipelines need to be washed out. There are some of the difficulties during installation of the pipeline such as road damage, complaints of adjoining private owners during work, disruption of traffic flow etc. An issue faced by the authority in Trishal was that pipelines need to be washed out regularly but there is no allocated in the budget.

The washout system, gas outlet valve, presence of holes in the pipeline and visible defects were observed during the physical observation of the samples. Among the observed samples of the pipeline in 16 Pourashavas, there exist washout system in 11 Pourashavas and gas outlet valve in 9 Pourashavas. The sample observed in Chengarchar Pourashava had none of the above. The quality check of the sample pipelines were done regularly or as per necessity but the sample observed in Ghorashal did not have regular quality maintenance check. The pipeline observed in Mirkadim and Trishal had some visible defects. The overall observation and progress of the pipeline construction is satisfactory. However the implementation lacked holistic coordination between various departments. For example, pipeline were constructed without incorporating facilities for drainage system. As such the roads needed to be reconstructed and sometimes the pipelines needed to be broken while construction of drains afterwards.

Figure 18 Existing and newly constructed pipelines in Bera

3.4.3. Ground/ Surface Water Treatment Plant

Four underground treatment plants were observed and found all in under construction. The progress is 60% of water treatment plant in Bera Pourashava. Overall work is scheduled to be finished by August 2019. The construction work was delayed as the site for the treatment plant had to be changed. The construction progress of the transmission main, Cascade, Flocculation Chamber, Filtration sand bed, Clear Water Reservoir, Electrical Equipment has been observed physically. Clear Water Reservoir, Sedimentation Filter, substation, p-settling plant, and office building construction work were still pending in Bera Pourashava. Piling, Boring, Grate beam, Sand Filling etc. was pending for Chengarchor. The quality check of the overall construction work was done regularly as per necessity. But the quality check of the plant in Kaliganj was irregular. The treatment plant of Kaliganj had no progress other than sand piling of the land. In Chengarchar only boring and land acquisition has been completed. Because of unavailability of public land, Mayor of Chengarchar Pourashava provided his own land (for WTP & production tube well construction). The water quality of the target Pourashavas will improve after completion of the water treatment plant. Land acquisition and site selection was a major difficulty for construction of the treatment plant.

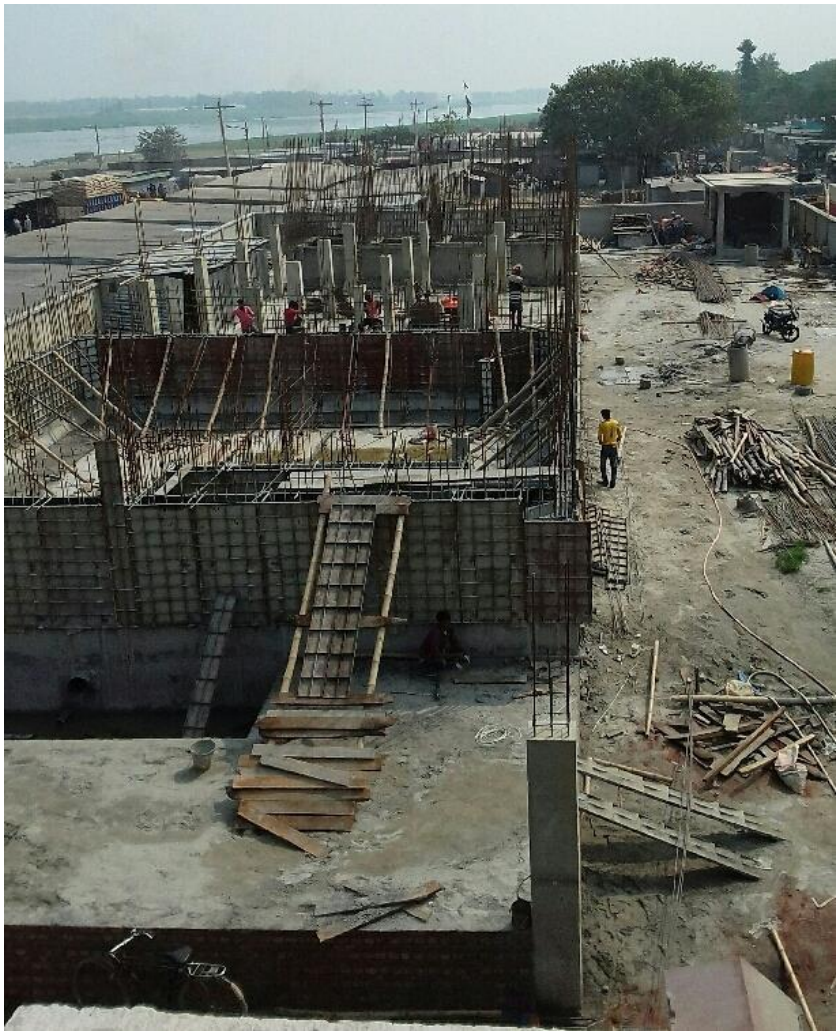

Figure 19 Construction of waer treatment plant in kaliganj

3.4.4 Pump House and Production Tubewell

In Kalia, Borhanuddin, Trishal and Mehendiganj the construction of two of the pump houses has been executed. The pump house construction of Fulbari and Gabtoli is completed, but the motor and Transmitter have not been purchased, hence the PTW is not functioning yet. The overall work of pump house in Birampur is completed. In Chengarchar, the pump houses will be connected to old pipelines (not within the scope of the project). The pump house construction in Mirkadim is taking longer than expected. The tender of the overall implementation had been given to more than one implementation partner. As such the timing of completion of their respective tasks had not aligned which lead to overall delay in the pump house construction. The pump house in Trishal is already under function. But there is no generator in the pump as such, during load shedding water supply is unavailable. The unforeseen delay in the overall construction of pump house and production tube well occurred due to site selection issues, land filling issues and inability to work during rainy season, water logging at site etc. The pump houses under the project is a successful inclusion to solve the water supply requirement of the 40 Pourashava. But still there remain many difficulties like

electricity supply, maintenance and operation of the pump houses. Pourashavas are complaining about inadequate quantity of pump houses due to lack of proper feasibility study and need assessment in the areas.

Figure 20 Pumphouse in mehendiganj and jhikargacha

3.4.5. Overhead Tank

Under the study design, three overhead tanks (OHT) were observed in Bera, Madhobpur and Chengarchor Pourashavas. Construction of three OHTS were ongoing at the time of the survey. The quality check of the construction process of the surveyed samples were done regularly. The physical progress in Bera and Madhabpur was 50% and 60%, respectively. The construction work of OHT in Chengarchor has not started yet; the contract has been finalized to commence the work soon. The construction work of the OHT in Bera is scheduled to be completed by September 2019 and in Madhobpur is by May 2019.
There are only 6 OHTs within the scope of the project. But some Pourashavas need more quantity of OHTs for ensuring the water supply for the inhabitants like Ghorashal Pourashava and others.

Figure 21 Construction of overhead tank in Bera

3.4.7 Public Toilet

The number of public toilets under this project was extremely insufficient considering the needs of the locals. The beneficiaries were not much satisfied with the overall sanitation facilities in respective Pourashavas. The progress of construction of public toilets under this project is satisfactory. In Bera, Kalia and Borhanuddin, the public toilet construction has been completed.

In Mirkadim the toilet construction is completed and waiting for the usage after the official inauguration. The sanitation facility of the project was below standard. Public toilets were not constructed enough by the project in public places with respect to necessity. Apart from that the project lacked feasibility study at its initiation which would indicate the number of toilets and location of the toilets required to best serve the community. The toilets built does not have modern architectural design and construction method. Many of the toilets have no shower space or separation system for males and females. Some of the toilets had been provided in mosques and private spaces where accessibility of the community was not available. The progress of public toilet construction is less in Birampur, Chengarchar and Gabtoli because of the unavailability of land, site development and splitting of tendering process. The toilets observed were comparatively clean. Among the observed toilets, four are maintained by lease holders in Nalitabari, Trishal, Madhobpur and Birampur Pourashavas. Others are maintained by pourashava authority. Some toilets are maintained by the local community or masque committee. The toilet observed in Palash (Ghorashal) was not clean and lacked sanitary utensils and toiletries. In Kaliganj Pourashava, the toilet flush system did not function. The toilet in Bera was not accessible for women. In Birampur, the toilet was unclean. The toilets constructed under this project lacked of facilities for physically challenged people and senior citizens; the cubicles are not suitable for senior citizens or physically challenged people. Toilets are managed in two ways. As some toilets are maintained by the municipality itself, some toilets are leased to the contractors. The public can use public toilets in exchange for 2 to 5 taka. Although the total number of toilets is not enough to provide services to all the people of the area, they are playing significant role to some extent to improve the sanitation and environment of the areas

Figure 22 Public toilet iin Mehendiganj

3.4.8 Water Points

According to the study, water point or hand tube well construction has been done almost 100 % in all the 16 selected Pourashava of this study. The quality was checked regularly during construction. Most of the construction work has been done on time except in Bera, Gabtoli,

Mehendiganj .The main reason of delay in Mehendiganj was site selection. During physical observation it was seen that all the surveyed tube wells had functioning handles and platforms. Though a major drawback was noticed in Nalitabari. The handles of the observed tube well required immense pressure to be moved due to the depleted ground water table. The same was seen in Fulbari. In Borhanuddin water points have been situated in places where house connections aren't available. The ground water level of the surveyed areas are depleting year on year. In Bera, the ground water level had lowered to an extent that the beneficiaries had to put several attempts in pumping the handle before they would get any water. The selection of location of some of the tube wells were not appropriate, where sometimes only few of the households could enjoy the services of the tube well. Though the water quality of most of the tube wells are hygienic, some of them have water contamination. The tube wells have helped to solve huge water availability crisis of the sample areas, and the lifestyles of the beneficiaries have improved tremendously. But according to public demand, the tube wells were not sufficient in all the pourashava area for instance in Jhikargacha, Kalia, Chokoria, Palash they required more tube well.

However, it has been found that in some cases the tubewell has been installed in the private household boundaries, for which people of the adjacent areas are all being deprived of using these due to the owner's restriction.

Figure 23Water points in Borhanuddin

3.5 Review of the quality of the materials used and the supplied water

One of the main objectives of this project is to provide safe water. The DM WATCH survey team collected water quality test reports from the sampled 16 municipalities. Various parameters such as alkalinity, arsenic, chloride, EC, hardness, iron, manganese, PH were examined by the standards of water. By analyzing the results of Physiochemical Examination,

it is understood that the quality of water in these 16 municipalities was satisfactory. Under this project, tube well water in 16 municipalities is free of arsenic and chloride. In most of the municipalities, the level of arsenic is around 0.001 milligram / liter and the level of chloride is below 15 milligrams / liter which is below standard quality of Bangladesh. But in Nilitabari, Jhikargachha, Bera, Mirkadim and Kaliganj municipalities, the amount of iron is more than the standard of0.3-1 milligram/ liter of Bangladesh. Mirakadim municipality has higher iron levels in tube well water (4.17-6.23 milligrams / liter). But in the remaining 11 municipalities, the standard of iron is low, which ensures water quality. The results of lab test are given in Table 9.

Besides reviewing the water quality report, this study also reviewed the quality of construction materials used in different components. Lab tests of uPVC pipes, sand, cement, steel etc. have shown that the quality of the materials used in various municipalities were satisfactory. From lab reports received from the sampled areas, the results of the test values of a few municipal materials are given in attachment (Table 10).

Chapter 4: Review of Procurement

4.1 Review of Procurement Regulations

Under the project, three types of procurement plans have been made. Table 16 summerizes the procurement plan

Table 16 Summarized procurement plan

Stages of preparing procurement plan	No. and types of packages			Comment
	Type	Number	Taka (lakh taka)	
Original DPP	Goods	87	418.76	The package plan described in the DPP has been splitted in some cases
	works	302	16294.80	
	Service	1	392.00	
	Total	390		
Revised DPP	Goods	87	502.33	
	works	373	20095.55	
	Service	1	489.75	
	Total	461		
Approved by chief engineer on 17/10/2017	Goods	15	502.33	
	works	500	20095.55	
	Service	1	489.75	
	Total	516		

Under the project, 2-level purchases have been planned. The number of procurement plan was changed in each level. The continuity of the packages were not maintained in the approved DPP's procurement plan. The instructions that was provided on 17 October, 2017 regarding the increase and reduction of packages, was not maintained in the procurement plan.

The PPA, PPR and e-GP guidelines have been followed in the procurement process under the project implementation and ongoing activities. The packages mentioned in the DPP have been broken. The project director's statement about the breakdown of the package and the approval of the appropriate authorities are summarized as follows.

- Becase the number of packages weren't serially inserted in the revised DPP, the numbers of packages actually increased;
- Because of not recieving the ADP allocation according to the procurement plan of the revised DPP, work of the same package had to be done in different fiscal years. Consequently, the number of packages increased;
- Later, the number of packages will be adjusted before the inter-sector coordination.

According to the revised scheme, the total number of packages in project procurement plan is 461 and according to the latest amendment by the project director the number is 516. Progress reports have been collected from the Project Office till April / 19 months. The analysis of the review is as follows.

1. According to the latest procurement plan, the number of procured packages for goods are 15. From the collected formation of 7 packages from the project office, progress of 6 packages are 100% and the progress of another package is 75%, which hasn't been completed within the determined time;
2. There was provision of one package for procuring service from consulting firms, which is in progress;
3. There are 500 packages for procuring works in the latest procurement plan. There are 498 packages with package numbers in the project office. According to the information received from Project Office, the progress of 387 packages is 100%. 82 packages are in progress and 31 projects have not started;
4. According to the information received from the project office, 130 packages that were implemented at municipal level didn't have any package number and they are not included in the procurement plan. According to the project office, the progress of 126 packages are 100% and 4 did not start; and
5. The number of packages that undergone variation is 24

It is to be noted here that the procurement plan of the project does not include the works of worth Taka 930.50 lakhs of four parts of the revenue sector including electric work.
Packages described in the DPP have been split in some cases. In Ghorashal Municipality, no. 46.203.2600.524.00.17.15-582 dated: 26/09/2017, packages of two public toilets, 35 floors of shallow tube well and 100 house connection have been broken without following the plan. The package number was not assigned in the approved letter from the Project Director's Office. According to Project Director HOPE has approved the procurement of split packages of Kaliganj, Gabtali project in 16 municipal corporations. Considering the supply of water in the project, there was no plan to purchase integrated package for water supply.

There are three types of products (goods, services and works) available in a development project. Large amount of money is allocated in the project for the development of infrastructure and construction. While preparing the DPP of the project, it was necessary to consider the challenges regarding the implementation of the project, and plan packages accordingly. Because there is no package in procurement plans which was prepared in conjunction with water supply related activities, the beneficiaries received the facilities with delay. The following four components of Taka 930.50 lakhs of the project's revenue sector were not included in the plan.

Table 17 Components outside the procurement plan

Sl no	Component	Quantity	Allocation (Lakh taka)
1	Repair and maintenance	Bundle	30.00
2	Repairs works of components like pump house, public toilet, electric connection etc.	Bundle	140.00
3	Rejuvenation of the production tube well	41	60.50
4	Pipeline Renovation / Restoration	Bundle	700.00

Tender documents received from 11 municipalities were reviewed. Samples of each package in each municipality are shown at Table 8 of annexure.

Under the project, the specification of purchases / BoQ / ToR etc. has been created by the DPHE in affiliation with the Electrical and Mechanical Division. The DPP's attached terms of Reference (TOR) were not complete about appointing consultant organizations. Afterwards, arrangements were made to appoint consultant organizations by creating a complete tor.

4.2 Review of Operations and Maintenance Procedure

An agreement has been signed in accordance with the approved sample agreement of the DPP between the Department of Public Health Engineering and the municipality for the procurement / procurement of collective / collected products, operations, services and maintenance under the project. The following are the sections for the operation and maintenance of contract services. -

- After implementation of the project, the municipalities will take theresponsibilities for operating and maintaining the water supply system, whereas,the ownership of water treatment plants, pump houses and pipelines will be entrusted to the local municipality. The municipality will be responsible for managing and maintaining the cost from its own fund.
- The labor force needed to manage and maintain the components will be recruited by the municipality with the recommendation of the Department of Public Health Engineering. The municipality will pay their salaries from their own fund.
- The Municipality will open a bank account regarding water supply management (if not previously opened). The amount deposited in the account can be spent only in the water supply sector. The mayor of the municipality will manage that account. The agreement has already been signed with all the municipalities in the project. The separate accounts of the municipal water supply management bank are not yet opened.

Chapter 5：SWOT Analysis

SWOT Analysis is a strategic planning system that is used to assess strength, weekness, opportunities and threats of a project. SWOT analysis is a framework, which helps to evaluate project's interventions and to take strategic decisions in the upcoming phase. SWOT stands for strengths, weaknesses, opportunities, and threats. SWOT analysis assesses internal and external factors, as well as current and future potential. It is a technique for assessing the performance, risk, and potentiality of any interventions in a project. Under the scope of the study, the research team has performed a SWOT analysis of the project. Primary data collected from KII, FGD and Local level workshop has been used and analyzed to develop SWOT of the project. Moreover, RDPP has also been gone through along with the stakeholders' opinion in this concern. The study has considered both programmatic and operations-related issues in the analysis.

Strengths

1. Increase the standard of living by improving water availability and improving sanitation system for beneficiaries of 40 municipalities;
2. Various components such as tube wells, home connections, water points, pump houses, overhead tanks, water treatment plants help to ensure the availability and accessibility of pure water;
   Beneficiaries of the project are getting arsenic, iron free water;
3. Currently the beneficiaries are able to get water easily compared to the previous time. Due to this project, people of the area do not have to go far or spend more time to collect water;
   In addition to ensuring availability of water, the project is also working to promote environmental sanitation. The construction of the public toilet has reduced the tendency to defecate openly;
4. Availability of pure water supply and sanitation system has contributed to the improvement of the health conditions of the beneficiaries, resulting in the prevalence of water borne diseases decreasing satisfactorily.

Weakness

1. The DPP doesn't state the actual number of beneficiaries to be benefitted by the project which is a weakness of the project design.
2. The feasibility study at the beginning of the project was not done properly. As a result, the design, quantity, selection of the components are not suitable for some places;
3. The number of public toilets is very less compared to the density of population in various municipalities;

4. To ensure the availability of water during the power outage, generators need to be installed in pump houses. But this is ignored in the project;
5. Some water points are located in the private house premises, which prohibits the people of adjacent houses to use the tubewells.
6. There is a lack of coordination among various parts of the municipality. After completion of the construction of the pipeline in Fulbari Municipality, the pipeline has to be re-cut for drainage system, since it was not planned in the beginning; and
7. The estimation of the items mentioned in the tender has been determined following the old rate schedule which is not compatible with the current market price. Therefore, the tenderers have been reluctant to work in most cases.

Opportunities

1. People are getting easy accessibility to water, sanitation and esafe environment;
2. This project has created working opportunities for the local people;
3. Women are getting employment opportunities which is helping them to develop their financial condition. Consequently, it is reducing gender and social gap.
4. This project is helping employees to live a better life. As a result of the increase in income, they are able to send their children to school
5. Previously, women needed to travel to distant places to collect water. This problem is somewhat solved because of the ease of collecting water from the project; and
6. People are now getting involved in different types of business, fostering animals and cultivating vegetables. The standard of living of the people has improved day by day.

Risks

1. The pourashavas don't have sufficient financial allocation, skilled human resource, and physical resources. If a component becomes ineffective, the water supply system will be interrupted. Without proper training, the pourashavas are unable to maintain the components, especially those with water treatment plant. No technical expert is available for the supervision of treatment plants and pump houses.. So the components are likely to be at risk in future;
2. Improper use of the components because of the lack of awareness among the beneficiaries are likely to hamper their stability.

Chapter 6:Anomalies and OverallObservation

6.1 Reasons behind the project's inhibition

The important actions related to the implementation of a development project is to prepare the project DPP and implementing the procurement plan, realigning the plan, recruiting consultants timely and imforming all the relevant departments and agencies about their respective responsibilities in writing. These issues are reviewed and analyzed using project documents, reports and field visits which provide insights behind the delay in project implementation. The findings are discussed below

1. Preparation and processing of DPP

The 2nd phase of "Water Supply through pipeline and Environmental Sanitation in the municipalities of Thana Sadar and Growth Centers (2nd phase) project" for 83 pourashavas was submitted by DPHE at ECNEC meeting, chaired by honorable prime minister, on 1/6/2010. The project didn't get approval. However the prime minister ordered to complete the unfinished works in 38 pourashavas of the first phase by designing a separate project. Following the directive of the ECNEC meeting on 01/06/20, the project was re-processed by the Department of Public Works, Department of the Department of Public Health, Local Government Division and Planning Commission and got approved by the nale and again called "40 Pourashava and Growth Center Water Supply and Environmental Sanitation Project (Phase-II) " in the meeting of 25/02/2014. After geting instructions to design a new project, it took 3 years and 2 months to get approval. Having spent so much time in the project processing, the inefficiency of project formation is expressed by preparing the DPP of the designated organization.

2. Preparation of procurement plan and implementation at field level

According to the original DPPP of the project, there were a total of 290 package for goods, services and works, and the project was approved by the Honorable Planning Minister in the 07/08/2017, with the approval of 461 packages in the revised project. Later, on, 18/10/2017 the Project Director again adjusted the number of packages to be approved and after fixing the total of 516 packages, the Chief Engineer accepted the revised plan. The latest adjustment in package procurement plans for the project did not follow the instructions of the DPP's procurement plan. All procurements of a project are done according to DPP's approved plan. It is important to carefully plan the procurement based on the real purpose to bring the momentum to the implementation of the field level activities. As the procurement plan was not correct on the stated project, the plan has been changed at different times.

3. Consultant recruitment

After approval of the project on 25/02/2014, the designated officer of the Department of Public Health Engineering, called the EOI on 27/02/2014 to appoint consultant organizations and completed the evaluation process and issued an RFP to the shortlisted consultants on 30/09/2014. After evaluating the EOIs, contract was signed with the eligible consultant firm on 1/7/2015. But according to the DPP's approved procurement plan, the fixed time period of EOI calling was in April/2014, RFP submission was in May/2014 and contract signing with consultants was in July/2014. It took 1 year 4 months to hire consultant organizations. The consultant firms had the responsibility prepare planning, design, estimation worth of 15311.00 lakh taka (project estimated cost 18414.00 lakh taka) of different components. Due to the failure in appointing the consulting firms within the determined time frame,

4. Involvement of Minucipality

Under the project, a five-member Local Project Consultant Committee headed by the municipal mayor at the municipality level was supposed to be formed. The committee was scheduled to review the progress of the project every six months according to the criteria of the production tubewell, pump house, treatment plant etc. given by the project office. Some municipalities failed to ascertain accuracy in determining the demand of the project related components and to review the overall activities which subsequently hindered the progress.

5. Involvement of Internal Departments of DPHE

In order to implement the project's activities, the following departments of Public Health Engineering Department have been involved .

- DPHE Design, Mechanical and Electrical Division;
- DPHE Store circle;
- Superintending Engineer circle;
- Project Implementation Committee (PIC);
- Executive Engineer (Store).

In spite of having consultative resources in a project involving a full-time project director, some aspects of the project have been delayed. Because in some cases these internal departments worked as implementers.

6.2 Overall Observation of the Project

1. DPP was not compatible with project planning and action plan in reality. As a result, after the DPP was approved, the physical and financial progress of the project was not consistent with the year-wise plan of the project. According to the original DPP's action plan, the project was scheduled to be completed on 30th June, 2017, but on that date the physical and financial progress remained 37% and 36.26%, respectively. After the first amendment to the project, on June 30, 2018, physical progress was supposed to be 65.94%, but in reality it was 53% and financial progress was 45.80%, which was less than the target of the plan.
2. The objectives and targets of the project haven't been specified according to the characteristics of pourashavas and DPP was prepared without prior feasibility study. Before preparing the DPP, a feasibility study of such a complex government investment project was compulsory. Although it hasn't broken any rule of project designing, it created problem in the implementation at field level because of inappropriate determination of local need cost;
3. The project was delayed as the DPP didn't have any provision for land acquisition and site selection;
4. The construction of ground water treatment plant couldn't be started timely because of the lack of feasibility survey, delay in acquiring land, delayed soil test, and the incorrect fixation of unit price in DPP;
5. The area wise actual cost was different from the cost that has been shown in the DPP and the yearly cost fixed in the DPP was also not followed;
6. Four components of revenue section worth of 930.50 lakh taka was not included in the procurement plan;
7. Some parts of the project (water points, public toilets, house connections etc) are to be implemented directly through the municipality, and the implementation is going on likewise. No informative meeting was held for the municipality mayor and concerned officers after the project was approved;
8. The project is meant to form a 5-member Local Project Consultant Committee headed by the municipality mayor, but it has not been formed. The committee was responsible for reviewing the progress of the components every 6 months;
9. The progress of the implementation of the project has been severely hampered because of spending 1 year 2 months in appointing consulting firm. Despite of mentioning in the DPP, design and BoQ of all the components could not be completed in 9 months of the appointment of the consulting firm.
10. The project included modernization of water billing system as one of the components. But the implementation process hasn't been started yet;

11. The beneficiaries did not get the water supply in due time. The packages were not designed in a coordinated way and, thus, different contractors were assigned to construct different parts of the concerned components, which caused delay in the implementation of the project;
12. Internal departments of DPHE such as DPHE design, mechanical, electric store division, executive engineers were involved in the implementation of the project. Owing to their lack of coordination, several components were delayed;
13. The work of 8 treatment plants under the project is in progress. According to the agreement of the contract, after the construction of the latest treatment plant, the municipality authorities would require 6 months of training on operation and maintenance of the plant. The project needs to increase its duration for another one and a half year to complete the construction of the treatment plants and to hand them over to the municipality;
14. The project is creating a positive impact in the lives of the benificiaries through water supply and sanitation. However, in case of the sanitation, construction of public toilets cannot improve the overall sanitation conditions in the municipalities. Therefore, environmental sanitation cannot be ensured; and
15. The human resource recruited for the implementation of the project is meagre considering the volume of work.

Chapter 7：Recommendations and Exit Plan

7.1 Recommendations

1. Conducting monthly meeting including all the implementing stakeholders (contractors, DPHE, Pourashava) to speed up the project unfinished work and to resolve the challenges at field level (section 3.2, observation 1);
2. To understand the need of beneficiaries and to ensure proper implementation of the project feasibility study should be conducted; (observation 2, section 3.4.3, 3.4.4, 3.4.7,chapter 5-weakness 2)
3. To specify the number of beneficiaries in each of the project area while designing the DPP so that the impact of the project can be properly evaluated (chapter 5- weakness 1);
4. Considering the important role of consultant firm in investment projects, activities conducted by the concerned authorities including the appointment of consultant organizations at the right time under the project need to be monitored (section 6.1, observation 9) ;
5. The implementing agency should prepare a practical procurement plan with updated unit cost of the materials (observation 4) ;
6. Updating the procurement plans of the project and getting approval through the implementing committee according to the instructions of the DPP (observation 5,6, section 4.1) ;
7. Recruiting the contractors in timely manner, assigining the works of one component to one single party so that the installation of components can be done within target period and benificiaries can enjoy the facilities in due time (section 3.2, observation 11);
8. Ensuring the 360 degree method of sanitation facilities. In addition to public toilets, drainage and waste management system should also be incorporated for a sanitation system in its entirety. Besides, generators should be installed in the pump houses to ensure the water availability during the load shedding (observation 14, section 3.3.4, chapter 5-weakness 3 and 4) ;
9. Arranging awareness programs to promote improved sanitation system and appropriate use of water at local level (Chapter 5- threat 1);
10. To ensure the maximum coverage and equall accessibility of all the beneficiaries while selecting the site for the components (section 3.4.8);
11. The DPP should consider provision of land acquisition for some components according to their need (section 3.2.2, 3.4.1, observation 3);

12. Depletion of water level due to the use of water in the local industrial factory at the municipality should be monitored and if necessary, legal action should be taken (section 3.3.6, 3.3.8);
13. Taking necessary steps for the training of personnel of the planning unit of DPHE and the designated officers of DPP on how to implement a project perfectly in time by the professionals experienced in the project preparation and implementation. (section 6.1);
14. Taking measures to remove the delay in decision-making at various levels by the concerned Ministry and Planning Commission, including the designated departments responsible for implementation of the project (section 1.4);
15. Providing training to the concerned officials of pourashavas to ensure effective operation and sustainability of the components (section 3.3.7, 7.1);
16. In implementing of a project, internal division of an organization should not be given the responsibility of implementing a project without a project director Pourashava shoould be more involved as one of the implementers of the project (Section 6.1, observation 12); and
17. In case of project monitoring, different standards (appointment of consultant organization, procurement plan and annual implementation plan under project) should be prepared for specific important parts of the project and taking measures of monitoring by the higher authorities (Section 6.1).

7.2 Exit Plan

After the completion of the project activities, the most important task is to ensure effectiveness and sustainability. Even if the project implementation goes as per the plan, the success of the project depends on its sustainability and maintenance after the project is complete. Hence, it is critical to allocate scopes and strategies of the project sustainability within the detailed plan of the project.

After the completion of the project implementation, DPHE authority will supervise the project components for three months. DPHE, Then,will hand over the maintenance work to the Pouroshovas. According to Pourashava officials, most pourashavas do not have enough budget and skilled labor force as well as enough resources to ensure effective maintenance. To ensure the appropriate maintence of the components, proper training of labor forces and facilities for budget needs to exist. Training has been provided to DPHE officials, but the labor forces required to ensure operations and maintence after the completion of the project have not received training. The Pourashava officials demanded that DPHE should supervise the project components for at least a year along with the assistance of Pourashava authorities. This will also be an opportunity for the labor forces appointed by the Pourashava to get skilled. Besides, the Pourashava officials as well as the beneficiaries of households and growth centers expressed that there needs to be awareness program to enlighten the beneficiaries as well as the authority in executing the right use of the water and sanitation behavior.

Annexure

Figure 1: KII in Borhanuddin

Figure 2 Household survey at palash

Figure 3: Local level workshop

Attachment A: Work plan of the study

Table 1: Detailed workplan of the study

Sl no.	Activities	Year/2019															
		January/2019				February/2019				March/2019				April/2019			
		Week				Week				Week				Week			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Activity Group 1: Initial orientation meeting with concerned IMED officials																
2	Literature review																
3	Study Design																
4	Prepare data collection tools																
5	Pretest of tools																
6	Finalization of tools																
7	Preparation of survey plans with sample design																
8	Submit an initial report																
9	Approval of research designs and data collection materials																
10	Activity Group 2: Enumerator selection and training for the survey																
11	Field survey																
a)	Supervision of data collection																
b)	Focus group discussion																
c)	Key informant interview																
d)	Local workshop																
e)	Physical observation																
f)	Data cleaning																
12	Activity Group 3: Preparation of output table plan																
13	Data screening and cleaning																
14	Data accuracy																
15	Data processing																
16	Data Analysis																
17	Report writing																
18	Submission of 1st Dragt																

Sl no.	Activities	Year/2019															
		January/2019				February/2019				March/2019				April/2019			
		Week				Week				Week				Week			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
19	Activity Group 4: Review meeting with the technical committee on 1st draft																
20	Correction of draft report based on comments given by technical committee																
21	Presenting the 2nd draft report in the meeting of the Steering Committee																
22	Comment on the revised draft report																
23	Preparation of final draft report																
24	Comment on the final draft report																
25	Finalizing the Final Draft Report																
26	Submission of the final report																

Attachment B: Area wise description of components

Table 2- Area wise distribution of components

DPHE circle	District	Pourashava	Production Tube well **(nos)**	Reconstruction of PTW pump (nos)	Pipe line (km)	House connection (nos)	Water points (nos)	Ground water treatment plant	Surface water treatment plnat (nos)	Overhead tank (nos)	Public toilet (nos)
Barisal	Barisal	Mehendiganj	3	0	20	400	70				3
Barisal	Bhola	Borhanuddin	2	0	18	400	50				3
Barisal	Pirojpur	Shorupkathi	2	0	20	400	55				3
Chattogram	Chandpur	Shanarash	0	0	20	600	85		1 (250 cm/hr)	1	3
Chattogram	Chandpur	Chhengarchar	2	2	15	600	45	1 (250 cm/hr)		1	3
Chattogram	Kumilla	Daudkandi	3	0	20	500	65				3
Chattogram	Cox's Bazar	Chakaria	3	1	15	400	90				3
Chattogram	Laxmipur	Daudkandi	2	0	15	600	80				4
Chattogram	Noakhali	Kabirhat	2	0	20	550	90	1 (100 cm/hr)			4
Dhaka	Dhaka	Savar	1	7	10	440	50				3
Dhaka	Faridpur	Bhanga	2	0	15	400	70				4

DPHE circle	District	Pourashava	Production Tube well **(nos)**	Reconstruction of PTW pump (nos)	Pipe line (km)	House connection (nos)	Water points (nos)	Ground water treatment plant	Surface water treatment plnat (nos)	Overhead tank (nos)	Public toilet (nos)
Dhaka	Kishoreganj	Katiadu	1	3	10	440	60				3
Dhaka	Kishoreganj	Hosainpur	2	0	12	400	60				2
Dhaka	Kishoreganj	Pakundia	2	0	15	400	60				2
Dhaka	Munshiganj	Mirkadim	3	0	20	500	70				3
Dhaka	Mymensingh	Trishal	2	0	15	400	45				2
Dhaka	Narsingdi	Palash (Ghorashal)	3	3	15	400	85				4
Dhaka	Narsingdi	MOnohordi	1	3	10	400	65				4
Dhaka	Narsingdi	Shibpur	1	2	15	400	35	1 (200 cm/hr)		1	2
Dhaka	Narsingdi	Naria	2	0	14	400	60				2
Dhaka	Shariatpur	Damudda	1	1	10	600	35				4
Dhaka	Shariatpur	Zazira	1	2	10	400	50				3
Dhaka	Shariatpur	Bhedergan j	0	2	5	400	25				2
Dhaka	Sherpur	Nalitabari	2	1	15	400	50				3
Khulna	Jessore	Noapara	3	1	20	400	60				3
Khulna	Jessore	Jhikargachha	2	0	20	400	50				3
Khulna	Narail	Kalia	2	0	15	400	25				3
Rajshahi	Natore	Gurudaspur	2	2	15	400	55				3
Rajshahi	Natore	Singra	2	2	15	500	50				3
Rajshahi	Pabna	Bera	3	0	20	400	75		1 (250 cm/hr)	1	3
Rajshahi	Pabna	Sathia	2	1	15	400	40	1 (250 cm/hr)		1	3
Rajshahi	Sirajganj	Shahjadpur	3	2	20	400	50				3
Rajshahi	Chapainawabganj	Ratanpur	2	0	15	400	50				3
Rajshahi	Dinajpur	Fulbari	2	0	20	400	50				2
Rajshahi	Dinajpur	Setabganj	2	0	15	400	40				1
Rajshahi	Dinajpur	Birampur	2	0	20	500	50				4
Rajshahi	Bogura	Gabtoli	2	2	15	300	20				1
Rajshahi	Bogura	Shantahar	2	1	15	300	40				2
Sylhet	Habiganj	Madhobpur	2	2	20	400	30	1 (200 cm/hr)		1	1
Sylhet	Sylhet	Kaliganj	1	1	10	400	30	1(100 cm/hr)			1
Total			74	41	620	17230	2165	6	2	6	111

Attachment C: Component wise physical and financial plan

Table 3- Year wise financial and physucal plan of the components (২০১৩-২০১৬)

Components	Unit	2014-2015 fiscal year			2015-2016 fiscal year		
		Financial (Lakh taka)	Physical		Financial (Lakh taka)	Physical	
			Component (%)	Project (%)		Component (%)	Project (%)
Manpower	nos	18.71	8.13	0.08	30.95	13.46	0.13
Distribution and service	Bundle	67	17.18	0.29	80.26	20.58	0.35
Training	nos	0	0	0	0	0	0
Consultant	nos	0	0	0	133.2	27.2	0.58
Water quality test and monitoring	Bundle	0	0	0	0	0	0
Repaire and maintenance	Bundle	0	0	0	10	33	0.04
Renovation of pump house, public toilet and electric connection	Bundle	0	0	0	22.9	16.36	0.1
Regeneration of production tubewell	nos	30	49.59	0.13	13.86	22.91	0.06
Renovation/ reinstallation of pipeline	Bundle	84.29	12.04	0.37	198.2	28.31	0.86
Jeep	nos	0	0	0	70	100	0.31
Motorcycle	nos	0	0	0	6.58	100	0.03
Instruments for operation and maintenance	nos	0	0	0	0	0	0
Photocopier manchine	nos	2	100	0.01	0	0	0
Computer printer and machineries	nos	8	23.7	0.03	24.22	71.76	0.11
Mordenization of billing system	Bundle	0	0	0	0	0	0
Land development	m^3	0	0	0	0	0	0
Construction of pump house	nos	0	0	0	16	2.7	0.07
Construction of public toilet	nos	0	0	0	51	5.74	0.22
Tubewell	nos	10	6.76	0.04	38.5	26.01	0.17
Production tubewell	nos	113	6.11	0.49	375.65	20.31	1.64
Pump distribution (column pipe, installation of electric panel board)	nos	0	0	0	7.2	1.62	0.03
Installation of pipeline (different dia)	km	176.25	2.37	0.77	943.34	12.68	4.11
Connection between existing tubewell and pipeline	nos	5	13.89	0.02	1.5	4.17	0.01
House connection	nos	0	0	0	45.41	4.39	0.2
Water points	nos	483.75	29.79	2.11	411.64	25.35	1.79
Ground and surface water treatment plant (250/200/100 m^3/ hour)	nos	0	0	0	0	0	0
Construction of OHT	nos	0	0	0	0	0	0
Transformer	nos	2	0.47	0.01	7.66	1.78	0.03
Auto voltage regulator	nos	0	0	0	0	0	0
distribution and connection of Solar power panel	Bundle	0	0	0	0	0	0

Table 4- Year wise financial and physucal plan of the components (2016-2019)

Components	2016-2017 fiscal year			2017-2018 fiscal year			2018-2019 fiscal year		
	Financial (Lakh taka)	Physical		Financial (Lakh taka)	Physical			Physical	
		Component (%)	Project (%)		Component (%)	Project (%)	Financial (Lakh taka)	Component (%)	Project (%)
Manpower	36	15.65	0.16	72	31.3	0.31	72.34	৩১.৪৫	0.32
Distribution and service	71	17.03	0.31	90	23.08	0.39	81.74	২০.৯৬	0.36
Training	5	50	0.02	3	30	০.০১	2	২০	0.01
Consultant	120	19.37	0.43	178	36.34	0.78	58.58	১১.৯৫	0.26
Water quality test and monitoring	1	2.5	0.004	18	45	0.08	21	৫২.৫	0.09
Repaire and maintenance	3	10	0.01	10	33.33	0.04	7	২৩.৩৩	0.03
Renovation of pump house, public toilet and electric connection	69	66.69	0.4	48.1	34.36	0.21	0	০	0
Regeneration of production tubewell	5	8.26	0.02	11.64	19.24	0.05	0	০	0
Renovation/ reinstallation of pipeline	190	27.14	0.82	150	21.43	0.65	77.51	১১.০৭	0.35
Jeep	0	0	0	0	0	0	0	০	0
Motorcycle	0	0	0	0	0	0	0	০	0
Instruments for operation and maintenance	0	0	0	0	0	0	60	১০০	0.26
Photocopier manchine	0	0	0	0	0	0	0	০	0
Computer printer and machineries	0	0	0	1.53	4.53	0.01	0	0	0
Mordenization of billing system	0	0	0	0	0	0	10	100	0.04
Land development	0	0	0	200	66.67	0.87	100	33.33	0.44
Construction of pump house	10	18.51	0.48	240	40.54	1.05	226	38.18	0.99
Construction of public toilet	270	30.41	1.98	360	40.54	1.58	207	23.31	0.91
Tubewell	37	25	0.16	44	29.73	0.19	18.5	12.5	0.08
Production tubewell	450	24.32	1.97	513	27.73	2.25	398.35	21.53	1.75
Pump distribution (column pipe, installation of electric panel board)	100	22.52	0.44	195	43.92	0.85	141.8	31.94	0.62
Installation of pipeline (different dia)	1348	18.19	5.91	3000	40.32	13.14	1972.41	26.51	8.64
Connection between existing tubewell and pipeline	0	0	0	19.5	54.17	0.08	10	27.78	0.04
House connection	170	16.44	0.74	480	46.41	2.1		32.73	1.48

Components	2016-2017 fiscal year			2017-2018 fiscal year			2018-2019 fiscal year		
	Financial (Lakh taka)	Physical		Financial (Lakh taka)	Physical		Financial (Lakh taka)	Physical	
		Component (%)	Project (%)		Component (%)	Project (%)		Component (%)	Project (%)
Water points	150	9.24	0.6	375	23.09	1.64	203.36	12.52	0.89
Ground and surface water treatment plant (250/200/100 m^3/ hour)	0	0	0	160	36.66	7.01	2804	63.67	12.28
Construction of OHT	0	0	0	400	44.44	1.75	500	55.56	2.18
Transformer	40	9.3	0.18	185	43.02	0.81	195.34	45.43	0.85
Auto voltage regulator	25	7.58	0.11	150	45.54	0.66	155	46.97	0.68
Distribution and connection of Solar power panel	0	0	0	20	66.67	0.09	10	33.33	0.04

Attachment D: Progress of components

Table 5- Yearwise expenditure

Fiscal Year	**DPP wise financial allocation (lakh taka)**	**Demand from the project (lakh takta)**	**Allocation recieved from main DPP (lakh taka)**	**Allocation recieved from revised ADP (lakh taka)**	**Financial expenditure (lakh taka)**	**expenditure (lakh taka)**	**Unspent finance (lakh taka)**	comment
1	2	3	4	5	6	7	8	9
Jan 14-hune14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	The unspent money was surrendered
2014-15	1000.00	200.00	200.00	1000.00	১০০০.০০	1000.00	0.00	
2015-16	2488.07	3500.00	3000.00	2500.00	2488.773	2488.773	11.227	
2016-17	3200.00	5000.00	3000.00	3200.00	3190.331	3190.331	9.669	
2017-18	8363.77	3500.00	3500.00	3813.00	3775.801	3775.801	37.200	
2018-19	773.45	4000.00	4000.00	4000.00	1687.674 (Dec 18)	1687.674 (Dec 18)	0	
Total	22825.29	16203.00	13704.00	14500.00	12142.581	12142.581		

Table 6- Physical and financial progress till April/19

		Unit	RDP wise Target		Progress till April/19	
			Physical	Financial	Physical	Financial
(ক)	**Revenue components**					
১	Manpower	Nos	11	230.00	1	153.219
২	Distribution and service	Bundle	Bundle	390.00	Bundle	298.691
৩	Training	Nos	10	10.00	5	7.259
৪	Consultant	Nos	1	489.75		368.382
৫	Water quality test and monitoring	Bundle	Bundle	40.00	Bundle	18.711
৬	Repaire and maintenance	Bundle	Bundle	30.00	Bundle	26.92
৭	Renovation of pump house, public toilet and electric connection	Bundle	Bundle	140.00	Bundle	134.618
৮	Regeneration of production tubewell	Nos	41	60.50	34	57.059
৯	Renovation/ reinstallation of pipeline	Bundle	Bundle	700.00	48 km	655.747
	Total revenue		2090.25		-	1689.793
(খ)	**Capital Components**	-	-	-	-	-
১০	Jeep	Nos	1	70.00	1	70.00
১১	Motorcycle	Nos	5	6.58	5	6.58
১২	Instruments for operation and maintenance	Nos	40 set	60.00	-	0.000
১৩	Photocopier manchine	Nos	1	2.00	1	2.20
১৪	Computer printer and machineries	Nos	45	33.75	38	27.225
১৫	Mordenization of billing system	Bundle	Bundle	10.00	-	0.000
১৬	Land development	m^3	100000 m^3	300.00	75000 m^3	113.83
১৭	Construction of pump house	Nos	74	592.00	59	351.943
১৮	Construction of public toilet	Nos	111	888.00	90	664.689
১৯	Tubewell	Nos	148	148.00	148	137.06
২০	Production tubewell	Nos	74	1850.00	70	1439.326
২১	Pump distribution (column pipe, installation of electric panel board)	Nos	74টি	444.00	59	311.256
২২	Installation of pipeline (different dia)	km	620 km	7440.00	545 km	5207.971
২৩	Connection between existing tubewell and pipeline	Nos	12	36.00	0	0.000

		Unit	RDP wise Target		Progress till April/19	
			Physical	**Financial**	**Physical**	**Financial**
২৪	House connection	Nos	17230	1033.80	10800	583.363
২৫	Water points	Nos	2165	1623.75	2083	1317.016
২৬	Ground and surface water treatment plant (250/200/100 m^3/ hour)	Nos	8	4404.00	2 (60%), 6 (22%)	715.00
২৭	Construction of OHT	Nos	6	900.00	2(70%) 4 (1৫%)	200.000
২৮	Transformer	Nos	86	430.00	54	203.825
২৯	Auto voltage regulator	Nos	110	330.00	42	101.2৯৮
৩০	Distribution and connection of Solar power panel	Bundle	Bundle	30.00	0	0
a	**Total capital**			20631.88	-	11496.231
b	**Physical anecdotal**			51.58	-	0
c	**Cost anecdotal**		Bundle	51.58	-	0
d	**Sub total**			22825.29	-	13216.837

Table 7- Progress of packages till April/19

Pourashava	Total package	Package with number	Package without number	Package with number			Package without number		
				100% progress	Running	Not started yet	100% progress	Running	Not started yet
Mehendiganj	24	20	4	16	4	0	4	0	0
Borhanuddin	12	12	0	10	2	0	0	0	0
Shorupkathi	18	14	4	11	2	1	4	0	1
Shanarash	13	8	5	5	3	0	4	0	0
Chhengarchar	12	10	2	5	4	1	2	0	0
Daudkandi	24	19	5	14	4	1	5	0	0
Chakaria	16	13	3	11	2	0	3	0	0
Daudkandi	16	11	5	7	4	0	4	0	1
Kabirhat	14	13	1	8	4	1	1	0	0
Savar	6	6	0	2	1	3	0	0	0
Bhanga	15	11	4	10	0	1	4	0	0
Katiadu	16	12	4	11	1	0	4	0	0
Hosainpur	10	10	0	6	4	0	0	0	0
Pakundia	12	12	0	8	3	1	0	0	0
Mirkadim	14	12	2	5	6	1	2	0	0
Trishal	15	15	0	15	0	0	0	0	0
Palash (Ghorashal)	16	9	7	9	0	0	7	0	0
MOnohordi	17	10	7	10	0	0	7	0	0
Shibpur	18	11	7	6	4	1	7	0	0
Naria	21	15	6	14	1	0	6	0	0
Damudda	18	12	6	11	1	0	6	0	0
Zazira	15	9	6	8	1	0	6	0	0

Pourashava	Total package	Package with number	Package without number	Package with number			Package without number		
				100% progress	Running	Not started yet	100% progress	Running	Not started yet
Bhederganj	9	7	2	5	1	1	2	0	0
Nalitabari	20	17	3	17	0	0	3	0	0
Noapara	22	19	3	13	6	0	3	0	0
Jhikargachha	22	20	2	17	3	0	2	0	0
Kalia	14	13	1	13	0	0	1	0	0
Gurudaspur	21	16	5	12	3	1	4	0	1
Singra	16	12	4	11	1	0	4	0	0
Bera	14	10	4	7	3	0	4	0	0
Sathia	15	12	3	6	4	2	3	0	0
Shahjadpur	14	8	6	7	1	0	6	0	0
Ratanpur	17	15	2	14	1	0	2	0	0
Fulbari	17	12	5	10	2	0	5	0	0
Setabganj	9	8	1	8	0	0	0	0	0
Birampur	17	14	3	14	0	0	3	0	0
Gabtoli	12	10	2	10	0	0	2	0	0
Shantahar	12	9	3	8	1	0	3	0	0
Madhobpur	14	13	1	10	3	0	1	0	0
Kaliganj	6	7	2	3	2	2	2	0	0

Attachment E: Overview of tender packages

Table 8- Description of one tender packages from each sampled pourashava

Sl. no	Procurement information according to PPA-2006 and PPR-2008						
		Mirkadim	Palash	Borhanuddin	Mehendiganj	Nalitabari	Trishal
1.	Package no	40/5	NGP 40/05	01	NGP 40/05	Pou-01	
2.	Name of the work according to the tender	Installation of test tubewell of 38 mm dia, Construction of pump houses and production tube wells with 350x150 mm dia	Replacement of pipeline of different dia in ghorashal pourashava of Narshingdi upazila	Construction of two public toilet in Borhanuddin Pourashava (FY 2017-2018)	Establishment of 100 house connections in different places of Mehndiganj pourashava	Installation of 2 sets of submersible pump motor and in Nalitbari pourashava of Sherpur district	Construction of pump house, submersible pump motor supply and installation, 50 kVA electric transformer and other electrical components
3.	Tender Calling Agency	Office of Executive engineer DPHE (Mirkadim)	Office of Executive engineer DPHE	Mayor, Borhanuddin Pourashava	Mayor, Mehendiganj Pourashava	Office of Executive engineer	Office of Executive engineer
4.	Procurement Type	NCT	NCT	N/A	N/A	NCT	NCB
5.	Procurement Method	OTM	LTM	OTM	OTM	OTM	OTM

Sl. no	Procurement information according to PPA-2006 and PPR-2008						
		Mirkadim	Palash	Borhanuddin	Mehendiganj	Nalitabari	Trishal
6.	Package Type	e-GP	e-GP	N/A	N/A	e-GP	
7.	Media for publication of tender (national / internationa l)	National	National	National	National	National	National
8.	Name of newspaper where tender advertiseme nt was published	N/A	Doinik Jay Jay din New Asian age	Doinik Jay Jay din The daily new nation	Doinik Bhorer pata, New Financial Express	Doinik Bhorer Daak The daily star	Doinik New Times The new nation
9.	Start date of Tender document selling	22/6/2016	23/3/2016	3/2/2018	12/6/2018	21/5/2018	15/12/201 6
10.	Last date and time for selling tender document	11:40 am 19/7/2016		5:00 pm 27/2/2018	2/7/2018	3:00 pm 3/6/2018	28/12/201 6
11.	Last date and time for submitting tender document	12:30 pm 20/7/2016	12:40 pm 18/4/2016	N/A	1:00 pm 3/7/2018	12:40 pm 4/6/2018	12:30 pm 29/12/201 6
12.	Number of total tender sold	7	3	5	3	1	3
13.	Number of total tender submitted	6	3	3	3	1	3
14.	Responsive tender	2	2	3	3	1	3
15.	Non Responsive tender	4	1	0	0	0	0
16.	Tender opening deadline	12:40 pm 20/7/2016	1:00 pm 18/4/2016	3:00 pm 28/2/2018	3:00 pm 3/7/2018	12:00 pm 4/6/2018	1:15 pm 29/12/201 6
17.	Evaluated tender	6	3	3	0	0	0
18.	Non evaluated tender	0	0	0	0	0	0
19.	Whether the Tender evaluation Committee was formed properly?	Yes	Yes	Yes		Yes	Yes

Sl. no	Procurement information according to PPA-2006 and PPR-2008						
		Mirkadim	Palash	Borhanuddin	Mehendiganj	Nalitabari	Trishal
20.	Tender evaluation Committee meeting date	31/8/2016	26/4/2016	7/3/2018		4/6/2018	30/1/2017
21.	Liquid asset	n/a	n/a	n/a	n/a	n/a	n/a
22.	Relevant experience	n/a	n/a	n/a	n/a	n/a	n/a
23.	NOA issue date	26/9/2016	22/6/2017				
24.	Estimated cost	53,95,472	16,22,035		5,52,000	1232350	1992806
25.	Contract price	41,49,958.523	15,40,933.251	1556536.26	6,03,060	1108323	2191268.30
26.	Contract signing date	9/10/2016	25/5/2016	8/3/2018	26/9/2018	12/6/2018	3/4/2017
27.	Work order issue date	9/10/2016	25/5/2016	8/3/2018	27/9/2018	18/6/2018	3/4/2017
28.	Starting date according to work order	9/10/2016	With 7 days of getting the work order	8/3/2018	28/9/2018	12/6/2018	3/4/2017
29.	Completion date according to work order	12/7/2017	With 60 days of getting the work order	10/7/2018	26/12/2018	With 120 days of getting the work order	With 90 days of getting the work order
30.	Whether the contracted amount was higher than the cost mentioned in tender	No	No	yes	9.25% higher	No	

Sl. no	Procurement information according to PPA-2006 and PPR-2008					
		Jhikargacha	Kalia	Madhabpur	Bera	Chhengarchar
1.	Package no	02	KP/40pourashava/2017-18/02	02	FPGCWESP/2015-16/2	WD-241
2.	Name of the work according to the tender	Construction of 152 house connections in Jhikargach	5 deep tube wells and 6 hand pumps	Construction of underground water treatment plant with	Construction of public toilet in Dargabari Mosque of Banagram	Construction of overhead tank with a capacity of 450^3 m with

Sl. no	Procurement information according to PPA-2006 and PPR-2008					
		Jhikargacha	Kalia	Madhabpur	Bera	Chhengarchar
		ha Pourashava		capacity of 200m3 / hour capacity in Madhabpur Pourashava		boundary wall and sliding gate (Chongarchar)
3.	Tender Calling Agency	Mayor Jhikargacha Pourashava	Mayor Kalia Pourashava	Office of Executive engineer DPHE	Mayor, Bera Pourashava	Office of Executive engineer DPHE (Chandpur)
4.	Procurement Type	N/A		NCT	N/A	NCT
5.	Procurement Method	OTM	OTM	OTM	OTM	OTM
6.	Package Type				e-GP	e-GP
7.	Media for publication of tender (national / international)	National	National	National	National	National
8.	Name of newspaper where tender advertisement was published	Doinik Amader Kontho The aily evening news	Doinik Jonokontho		Doinik Jonokontho The daily star	N/A
9.	Start date of Tender document selling	21/5/2017	21/11/2017		1/11/2015	26/12/2017
10.	Last date and time for selling tender document	5:00 pm 11/6/2017	5:00 pm 11/12/2017		5:00 pm 25/11/2015	11:00 am 10/1/2018
11.	Last date and time for submitting tender document	1:00 pm 12/6/2017	2:30 pm 12/12/2017	12:30 pm 29/12/2016	2:00 pm 26/11/2015	12:30 pm 10/1/2018
12.	Number of total tender sold		3		N/A	1
13.	Number of total		3		N/A	1

Sl. no	Procurement information according to PPA-2006 and PPR-2008					
		Jhikargacha	Kalia	Madhabpur	Bera	Chhengarchar
	tender submitted					
14.	Responsive tender	3:00 pm 12/6/2017	3:30 pm 12/12/2017	12:30 pm 29/12/2016	3:00 pm 26/11/2015	12:30 10/1/2018
15.	Non Responsive tender		3	1	5	1
16.	Tender opening deadline		3	1	5	1
17.	Evaluated tender		0	0	0	0
18.	Non evaluated tender		0	0	0	0
19.	Whether the Tender evaluation Committee was formed properly?		Yes	Yes	Yes	Yes
20.	Tender evaluation Committee meeting date		19/12/2017	১২/২/২০১৮	৭/৩/২০১৮	২৫/১/২০১৮
21.	Liquid asset	n/a	2.02 lakh (minimum requirement 0.95 lakh)	n/a	n/a	n/a
22.	Relevant experience	n/a	16.35 lakh (minimum requirement 0.95 lakh)	n/a	n/a	n/a
23.	NOA issue date	22/6/2017				
24.	Estimated cost	812910		51067482		
25.	Contract price	812910	406,660	50812144.571	750072	14139500
26.	Contract signing date	14/11/2017		20/2/2018		4/3/2018
27.	Work order issue date	28/11/2017		20/2/2018		5/3/2018
28.	Starting date according	Within 7 days of getting the work order		20/2/2018		5/3/2018

Sl. no	Procurement information according to PPA-2006 and PPR-2008					
		Jhikargacha	Kalia	Madhabpur	Bera	Chhengarchar
	to work order					
29.	Completion date according to work order	Within 120 days of getting the work order		৩০/৬/২০১৮	With8n 180 days of signing the conrtract	4/3/2019
30.	Whether the contracted amount was higher than the cost mentioned in tender	No	9.62% higher	No		Yes

Attachment F: Quality test result sample of water and other materials

Table 9- Lab test result of one water source from the each sampled pourashava

Pourashaava	**Test date**	**Sample ID and source**	**Parameter**	**Test name**	**Result (mg/L)**	**Standard (mg/L)**	**Comment**
Nalitabari	11/04/2016	**Deep Tubewell** MYM2016040077	Arsenic	AAS	.014	0.05	Unsatisfactory
			Iron	AAS	2.44	0.3-1	
			Cholrine	TM	10	150-160	
Palash	03/05/2016	**Shallow Tubewell (STW-6)**	Arsenic	AAS	0.002	.05	Satisfactory
Kalia	07/06/2017	**Production Tubewell** CEN2017060136	Arsenic	AAS	0.003	0.05	Satisfactory
			Iron	AAS	0.05	0.3-1	
			Cholrine	TM	240	150-600	
Trishal	11/05/2016	**Deep Tubewell** MYM 2016050032	Arsenic	AAS	0.001	0.05	Satisfactory.
			Iron	AAS	1.71	0.3-1	
			Cholrine	TM	10	150-600	
Mehendiganj	28/06/2015	**Deep Tubewell (DTW-6)**BAR2015060610	Arsenic	AAS	<LOQ	0.05	Satisfactory
			Iron	AAS	0.190	0.3-1	
			Cholrine	TM	120	150-600	
Jhikargacha	07/10/2015	**Deep Tubewell (DTW6)**	Arsenic	AAS	0.001	0.05	Unsatisfactory
			Iron	AAS	0.31	0.3-1	

Pourashaava	Test date	Sample ID and source	Parameter	Test name	Result (mg/L)	Standard (mg/L)	Comment
		Khu20151100047	Cholrine	TM	15	150-160	
Chakaria	19/04/2017	**Production Tubewell**	আর্সেনিক	AAS	0.002	0.05	Satisfactory
			Iron	AAS	0.77	0.3-1	
			Chloride	TM	12	150-160	
Bera	17/04/2016	**Tubewell** CEN2016040385	Arsenic	AAS	0.003	0.05	Unsatisfactory
			Iron	AAS	1.47	0.3-1	
			Cholrine	TM	84	150-160	
Gabtoli	29/11/2016	**Deep Tubewell**	Arsenic	AAS	0.002	0.05	Satisfactory
			Iron	AAS	0.22	0.3-1	
			Cholrine	-	-	150-160	
Mirkadim	16/03/2017	**Tubewell** CEN2017030143	Arsenic	AAS	0.001	0.05	Unsatisfactory
			Iron	AAS	33.81	0.3-1	
			Cholrine	TM	190	150-160	
Borhanuddin	30/08/2015	**Deep Tubewell - 6** (BAR2015080043)	Arsenic	AAS	<LOQ	0.05	Satisfactory
			Iron	AAS	0.250	0.3-1	
			Cholrine	TM	15	150-160	
Chhengarchar	17/01/2019	**Deep Tubewell** COM2019010344	Arsenic	AAS	0.002	0.05	Satisfactory
			Iron	AAS	<LOQ	0.3-1	
			Cholrine	TM	249	150-160	

Table 10- Lab test report of various materials collected fromMadhobpur

Material	Lab test	Used standard	Result		Comment
uPVC pipe	Dimension test	BS 3505: 1968	Outer dia (mm)	114.3	Outer dia and thickness are acceptable
			Thickness	3.7	
	Hydrostatic Pressure test	BS 3505: 1968	No hole found		Acceptable
	Resistance to aceton test	BS 3505: 1968	No pollution or isolation was observed		Acceptable
	Impact test	BS 3505: 1968	None of the 14 hit failed		Acceptable
Sand	Sieve Test	Determined FM 2.5	2.62		Acceptable
Composite portland cement	Compressive strength	ASTM c150-12	25.8 Mpa (7 days)		Acceptable
Steel	Power test	-	673.76 Mpa		Satisfactory

Attachment G Household survey questionnaire

Enumerator's name			Signature	Start time	End time
Check			Field supervisor's name		
	Yes	No	Date	TIme	Signature
Back check	1	2	/ / 2019		

Introductory information

Respondent's name: .....

Mobile no.: ……

Mahalla's name: ……Ward no: ……Upazila: ……District:…….. Division: ……

Signature: ..... | Date: .....

Sl no.	Question	Code	Answer
1	Do you know about the project (40 pourashava water supply and sanitation) that is being implemented in your area? (If no, the enumerator will discuss))	☐	1. Yes 2. No
Water supply			
2	From which source do you collect water? (Multiple answer) If the answer is 1-7 ask 2.1-2.4 questions If the answer is 8,9,10, ask 2.5-2.22	☐ ☐ ☐ ☐ ☐	1. Hand tubewell 2. Personal deep tubewell 3. Locally managed deep tubewell 4. Water pump/tap 5. Pond 6. River 7. Supply Water 8. Tubewell installed by project 9. Water points installed by project 10. House connection installed by project 11. Others
2.1	What is the distance of your household from the water source		.....km/ yard/ foot
2.2	How much time do you need to collect water?		……Min/ hour
2.3	Are you satisfied with the water quality?	☐	1. Yes 2. No
2.4	If no, why not?		.....
2.5	What was the source of water prior the implementation of the project? (Multiple answer)	☐ ☐ ☐ ☐ ☐	1. Hand tubewell 2. Personal deep tubewell 3. Locally managed deep tubewell 4. Water pump/ Tap water 5. Pond 6. River 7. Supply water 8. Others.....

Sl no.	Question	Code	Answer
2.6	How much time did you need to collect water before the implementation of the project?		…… Min/ hour
2.7	How much time do you need to collect water after the implementation of the project?		…… Min/ hour
2.8	What was the distance of your household from the water source before the implementation of the project?		.....feet /yard/ mile
2.9	What was the distance of your household from the water source after the implementation of the project?		.....feet /yard/ mile
2.10	How many hour did you get water before the project?		.....Hour
2.11	How many hour did you get water after the project??		..... Hour
2.12	Are you getting water throughout the year after the implementation of the project?	☐	1. Yes 2. No
2.13	If no, when do you not get water?	☐	1. Summer 2. Rainy season 3. Winter 4. Others
2.14	Are you satisfied with the water quality due to the implementation of project?	☐	1. highly satisfied 2. satisfied 3. Moderately satisfied 4. Unsatisfied 5. Highly unsatisfied
2.15	If the answer of ques 2 is 8 What benifits did you get from the tubewell? (multiple answer)	☐ ☐ ☐ ☐	1. Safe drinking water 2. Increased water supply 3. Expense reduced 4. Time reduced 5. Distance reduced 6. Eve teasing reduced 7. Others
2.16	How much did your cost reduced due to the tubewell?		..... Taka
2.17	If the answer of ques 2 is 9 What benifits did you get from the water pointsl? (multiple answer)	☐ ☐ ☐ ☐	1. Safe drinking water 2. Increased water supply 3. Expense reduced 4. Time reduced 5. Distance reduced 6. Eve teasing reduced 7. Others
2.18	How much did your cost reduced due to the tubewell?		..... Taka
2.19	If the answer of ques 2 is 10 What benifits did you get from the house connection? (multiple answer)	☐ ☐ ☐ ☐	1. Safe drinking water 2. Increased water supply 3. Expense reduced 4. Time reduced 5. Distance reduced 6. Eve teasing reduced 7. Others
2.20	How much did your cost reduced due to the house connection?		..... Taka
2.21	Did this project provide you opportunities for increased income generating work?	☐	1. Yes 2. No
2.22	If yes, what type of opportunity? (multiple answer)	☐ ☐ ☐	1. Vegetable cultivation 2. Poultry 3. Livestock rearing 4. non agriculture 5. Others

Sl no.	Question	Code	Answer
Health			
3	Is the number of public toilet constructed under this project enough for your locality?	☐	1. Yes 2. No 3. Don't know
4	Are the public toilets constructed at appropriate location?	☐	1. Yes 2. No 3. Don't know
5	What facilities do the public toilets have? (multiple answer possible)	☐ ☐ ☐ ☐ ☐	1. Clean toilet 2. Dry floor 3. No odor 4. air freshner/ naptholene 5. Soap 6. soap case 7. Enough light 8. Door lock 9. Seperate facilities for male and female 10. High cost of using toilet 11. Female caretaker 12. Proper ceiling 13. Low cost of using toilet 14. everyone can access 15. Gender inclusive 16. Child sensitive 17. Disability sensitive 18. Others .....
6	What disadvantages do the public toilets have? (multiple answer possible)	☐ ☐ ☐ ☐ ☐	1. Dirty toilet 2. Dirty floor 3. odor 4. No water supply 5. No soap 6. No soapcase 7. Not enough light 8. No lock 9. No seperate facility for male and female 10. High cost of using the toilet 11. No female caretaker 12. No ceiling 13. Toilet is not situated at accessible location 14. TOilet is situated at distant place 15. others .
7	Were you satisfied with the sanitatin facility prior the project?	☐	1. highly satisfied 2. satisfied 3. Moderately satisfied 4. Unsatisfied 5. Highly unsatisfied
8	Are you satisfied with the sanitatin facility that you get from the project?	☐	1. highly satisfied 2. satisfied 3. Moderately satisfied 4. Unsatisfied 5. Highly unsatisfied

Sl no.	Question	Code	Answer
Disease prevalace			
9	Did any of your family member suffered from water borne diseases before the project? If yes, answer 9.1-9.2 If no, answer 9.3		1. Yes 2. No 3. Don't know
9.1	Name of the diseases (Multiple answer possible)	☐ ☐ ☐ ☐	1. Diarrhea 2. Cholera 3. Jaundice 4. Typhoid 5. Skin disease 6. Arsenic pollution 7. Disease due to salinity 8. Otherts _____ 9. none
9.2	How is the prevalance of disease after the implementation of the project?	☐	1. Increased 2. Same as before 3. Reduced 4. Don't know
9.3	Has the prevalance of diseases changed due to the implementation of the project?	☐	1. Increased 2. Same as before 3. Reduced 4. Don't know
10	Have your living standard changed due to the implementaiton of the project? (Multiple answer possible)	☐ ☐ ☐	১. Health facility developed ২. Employment opportunity ৩. Same as before ৪. Others
10.1	If the answer is 2, how much have your income increased?		……Taka
Limitation of the project			
11	What problems did you face due to the project? (Multiple answer possible)	☐ ☐ ☐ ☐ ☐ ☐	1. The forest is destroyed 2. Wetlands have been destroyed 3. Agriculture has been destroyed 4. Environment pollution 5. Stop the water supply 6. No problem 7. Other .....
11.1	If the answer is 5, what measures were taken?		.....
12	What complaints did you have regarding the project? (Multiple answer possible)	☐ ☐ ☐ ☐	1. Infrastructure of the toilet is not satisfactory 2. Water connection doesn't work properly 3. Bad smell in water 4. Land acquisition 5. no complain 6. Others
13	Was there any scope to file a complaint about project services?	☐	1. Yes 2. No 3. Don't know
13.1	If yes, did you file any complaint? (if yes, answer the following questions)	☐	1. Yes 2. No

Sl no.	Question	Code	Answer
13.2	In response to which service of the project you filed a complaint? (multiple answer possible)	☐ ☐ ☐	1. House connection 2. Tubewell 3. Public toilet 4. Water point 5. Others
13.3	Has any action been taken after the complaint?	☐	1. Yes 2. No
14	ccording to your satisfaction level on water supply and sanitation system, please provide number for the following services (4-0) (4= highly satisfied, 3= satisfied, 2= moderately satisfied , 1= unsatisfied, 0=don't know)		1. House connection 2. Tubewell 3. Public toilet 4. Water point

Information about the efficiency and effectiveness of the project

15	How successful is the project based on the following services? Considering the previous scenario (before implementation of the project)				
		Developed	Same as before	Deteriorated	Don't know
Health					
Employment					
Sanitation					
Livelihood					
Disease					
Agriculture					
16	What measures can be taken to make the project more effective	…… ……			

Attachment H: Checklist for physical observation

Component: Ground /Surface Water Treatment Plant

Contract ID:	**Contract Cost (Taka):**	**Date of commencement:**	**Scheduled date of completion:**	**Target date of completion:**	**Physical Progress:**
Reason if delayed:					
Location/Address:					

Observation Parameter	Probable findings	Observation findings (For note-down with photo)
1) Treatment Unit status:	Overall status, If ongoing work: Transmission Main, Cascade, Flocculation Chamber, Filtration (sand-bed), Clear water reservoir	☐ Completed ☐ Ongoing ☐ Completed ☐ Ongoing ☐ Completed ☐ Ongoing ☐ Completed ☐ Ongoing ☐ Completed ☐ Ongoing ☐ Completed ☐ Ongoing
1) Electrical Equipment	Stage of work, Ongoing work	☐ Completed ☐ Ongoing _____ (to be mentioned)
2) Occupational health and safety at treatment facilities	Assurance, Insufficient, Absent	☐ Assurance ☐ Insufficient ☐ Absent
3) Supervision for quality control (during construction)	How, Frequency of supervision	Very good /satisfactory /unsatisfactory / (comment) Regularly /as necessary /irregular /(other comment)
4) Water Quality [Treated Water]	Odor, Taste, Test report, Result (if Avaiable),	☐ Normal ☐ Objectionable ☐ Normal ☐ Objectionable ☐ Available ☐ Unavailable ☐ Standard ☐ Below standard
5) EMP Accomplishment	How, Availability of document /guideline	Assurance /Insufficient /(comment) ☐ Yes (collection) ☐ No
6) O&M Action	How, Availability of document /guidelines	Assurance/Insufficient/ (other comment) ☐ Yes (collection) ☐ No
7) Visual defect	Anywhere of the Plant	☐ Yes (list the defects) ☐ No 1. _____ 2. _____
8) Other Comments	If anything	

Enumerator:

Component: Over Head Tank (OHT) Construction

Observation Parameter	Probable findings	Observation findings (For note-down with photo)
1) Water level Indicator	Availability Functional	☐ Yes ☐ No ☐ Yes ☐ No
2) Leakage	Availability Where Quantity	☐ Yes ☐ No _____(no. of leakage found)
3) Rust in Water-pipe	Availability, Where	☐ Yes ☐ No _____

4) Lightning rod	Availability, Functioning	☐ Yes ☐ No ☐ Yes ☐ No
5) Sluice valve at outlet point	Availability, Functioning	☐ Yes ☐ No ☐ Yes ☐ No
6) Water meter	Availability, Functioning	☐ Yes ☐ No ☐ Yes ☐ No
7) Accessibility with Ladder through Manhole	Availability, Effective	☐ Yes ☐ No ☐ Yes ☐ No
8) Supervision for quality control (during construction)	How, Frequency (how often quality control has been supervised)	Very good /satisfactory /unsatisfactory / (comment) Regularly /as necessary /irregular /(comment)
9) O&M Action	How, Availability of document /guidelines	Assurance/Insufficient/ (other comment) ☐ Yes (collection) ☐ No
10) Visual defect	Anywhere of the component	☐ Yes (list the defects) ☐ No 1. _____ 2. _____
11) Other Comments	If anything	

Enumerator:

Component: Installation of Tube well *(Production TW)*

Observation Parameter	Probable findings	Observation findings (For note-down with photo)
1) Location of (Production) Tube Well	Where Distance from latrine (m)	_____(location) _____ m /More than 10m
2) Ground Water level	How much functioning	_____ m ☐ Yes ☐ No
3) Drawdown records	How much, Record available	_____ m /Not Found ☐ Yes ☐ No
4) Ground Water Quality	Test report, Result (if Yes),	☐ Available ☐ Unavailable ☐ Standard ☐ Below standard
5) O&M Action	How, Availability of document /guidelines	Assurance/Insufficient/ (other comment) ☐ Yes (collection) ☐ No
6) Visual defect	Anywhere of the component	☐ Yes (list the defects) ☐ No 3. _____ 4. _____
7) Other Comments	If anything	

Enumerator:

Component: Pump house construction with boundary wall

Observation Parameter	Probable findings	Observation findings (For note-down with photo)	
1) Pump house: Cleanliness	Status, irregular	☐ Clean ☐ Yes	☐ Dirty ☐ No
2) Pump: Sound & vibration	Objectionable, How much	Yes High /medium /low	☐ No
3) Motor: Movement status	Functioning, Direction of movement	☐ Yes Clockwise	☐ No /Anti-clockwise
4) Pipeline: Valve-fittings, Water-meter	Availability, Functioning	☐ Yes ☐ Yes	☐ No ☐ No
5) Electric Control Panel: Sound & vibration	Objectionable How much	Yes High /medium /low	☐ No
6) Boundary wall condition	Type, Progress	RCC-Brick /Brick only / Other comment) Completion /Ongoing with Progress %	
7) Supervision for quality control (during installation)	How, Frequency of supervision	Very good /satisfactory /unsatisfactory / (comment) Regularly /as necessary /irregular /(other comment)	
8) O&M Action	How, Availability of document /guidelines	Assurance/Insufficient/ ☐ Yes (collection)	(other comment) ☐ No
9) Visual defect	Anywhere of the component	☐ Yes (list the defects) 5. _____ 6. _____	☐ No
10) Other Comments	If anything		

Enumerator:

Component: Installation of Pipeline

Observation Parameter	Probable findings	Observation findings (For note-down with photo)	
1) Wash-out system	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No
2) Air release Valve	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No
3) Pipeline leakage & repairing	Availability, how much (if Yes), repairing action	☐ Yes _____ (No. of leakage) ☐ Yes	☐ No ☐ No
4) Pipeline Condition	Overall status, functioning	_____ (comment) ☐ Yes	 ☐ No

Observation Parameter	Probable findings	Observation findings (For note-down with photo)	
6) O&M Action	How, Availability of document /guidelines	Assurance/Insufficient/ ☐ Yes (collection)	(other comment) ☐ No
7) Visual defect	Anywhere of the component	☐ Yes (list the defects) 7. _____ 8. _____	☐ No
8) Other Comments	If anything		

Enumerator:

Component: Water Connection

Observation Parameter	Probable findings	Observation findings (For note-down with photo)			
1) Cover depth (mm)	How much, any record	_____ (mm) ☐ Yes		Not Found ☐ No	
2) Service Pipe diameter	How much	_____ (mm)			
3) Water Pressure	How much,	☐ acceptable		☐ objectionable	
4) Pipeline Condition	Overall status, functioning	_____ ☐ Yes		☐ No	
5) Water quality	Odor, Taste, Test report, Result (if Available),	☐ Normal ☐ Normal ☐ Available ☐ Standard		☐ Objectionable ☐ Objectionable ☐ Unavailable ☐ Below standard	
6) Water availability	Supply when, Supply time	☐ Morning _____ (hour)	☐ Noon	☐ Afternoon	☐ Evening
7) Visual defect	Anywhere of the component	☐ Yes (list the defects) 9. _____ 10. _____		☐ No	
8) Other Comments	If anything				

Enumerator:

Component: Water Points (Tap System)

Observation Parameter	Probable findings	Observation findings (For note-down with photo)	
1) Condition of stand and tap	Overall status, functioning	_____ ☐ Yes (collect the record)	☐ No
2) Service Pipe diameter (mm)	How much, any problem	_____ (mm) ☐ Yes (list the problems)	☐ No
3) Water Pressure	How much,	☐ Acceptable	☐ objectionable
4) Pipeline Condition	Overall status, functioning	_____ ☐ Yes	☐ No
5) Water quality	Odor, Taste	☐ Normal ☐ Normal	☐ Objectionable ☐ Objectionable
6) Water availability	Supply when, Supply time	☐ Morning ☐ Noon _____ (hour)	☐ Afternoon ☐ Evening
7) Tap submerges during flood	Yes, No	☐ Yes	☐ No
8) Visual defect	Anywhere of the component	☐ Yes (list the defects) 11. _____ 12. _____	☐ No
9) Other Comments	If anything		

Enumerator:

Component: Construction of Public Toilet

Observation Parameter	Probable findings	Observation findings (For note-down with photo)	
1) Supervision for quality control (during construction)	How, Frequency of supervision	Very good /satisfactory /unsatisfactory / (comment) Regularly /as necessary /irregular /(other comment)	
2) Water supply system in toilet	How	☐ Running water ☐ storage in bucket ☐ collection nearby ☐ (Other comment)	
3) Cleanliness condition	Dirty, clean etc.	☐ Dirty	☐ Clean
4) Pan with water-flash	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No
5) Inside lighting	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No
6) Ventilation gas-pipe	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No

Observation Parameter	Probable findings	Observation findings (For note-down with photo)	
7) Septic tank	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No
8) Soak well	Availability, functioning	☐ Yes ☐ Yes	☐ No ☐ No
9) Male & female separation	Assurance:	☐ Yes ☐ Yes	☐ No ☐ No
10) Accessibility for disables	Assurance:	☐ Yes ☐ Yes	☐ No ☐ No
11) Users' availability	How much,	☐ sufficient	☐ insufficient
12) Users' satisfaction	How, any record	☐ Negative ☐ Yes (collect the record)	☐ Positive ☐ No
13) Operation (by whom)	Authority, leasing contract	By authority /by leasing contractor /(other comment)	
14) Income status	How	☐ Loss	☐ Profit ☐ Not applicable
15) O&M Action	How, Availability of document /guidelines	Assurance/Insufficient/ ☐ Yes (collection)	(other comment) ☐ No
16) Visual defect	Anywhere of the component	☐ Yes (list the defects) 13. _____ 14. _____	☐ No
!7) Other Comments	If anything		

Enumerator:

<u>Component: Land development (sand filing)</u>

Observation Parameter	Probable findings	Observation findings (For note-down with photo)
1) Purpose for development	Specific purpose	_____
2) Removal action	Required any, damage	Water line /Gas line /Drainage system/Plants /
3) Sand filling works	FM, thickness, Compaction, Test Result availability etc.	FM of Sand = Thickness of sand filling = Test result =Standard/Below standard /Not found Test Report =Available /Unavailable
4) Supervision for quality control (during work)	How, Frequency of supervision	Very good /satisfactory /unsatisfactory / (comment) Regularly /as necessary /irregular /(other comment)
5) Other Comments	If anything	

Enumerator:

Attachment I : Checklist for Key Informant Interview

Primary Information of the respondent	
Name	
Occupation	
Designation	
Phone no.	
Address	
Name of enumerator	
Name of note taker	

1.1.1.1 National level

1. Project director (DPHE), Additional chief engineer (DPHE)

1. What were the identified problems related to water supply, water hygiene, sanitation, water borne-diseases in the target areas before the project was implemented?
2. Why were these specific project components proposed to solve the water supply, hygiene and sanitation problems of the target areasয়
3. How is the project going to serve SDG health & sanitation goals & Vision 2021?
4. To what extent has the project achieved its objectives till now?
5. How is the target population being benefited by this project?
6. Has this project ensured environmental sanitation in the target areas??
7. How many people are getting sanitation facilitites from this project?
8. To what extent have the objectives being achieved?
9. How is the target population being benefited by this project besides getting water and sanitation facilities?
10. Has this project improved the living standard of people?
11. How is the project going to reduce poverty?
12. Do you have any plan to generate employment opportunities for the target population through this project?
13. What steps did you take to ensure gender & minority inclusiveness?
14. What were the major obstacles while implementing the project?
15. Is the project going as per work plan till now?
16. Was the implementation process delayed? What was the reasons of the delay? (financing, procuring goods, managerial inefficiency, which caused increase of project cost
17. How can the project be made more effective in order to meet the objectives?
18. What could be done to make the project implementation more effective?
19. How are you planning the project termination and ensuring its sustainability? (Exit plan)
20. What is the plan to manage the human resource associated with the project after the project implementation timeline?
21. What were the strengths, weakness; threat and opportunities (SWOT) of the project elements?
22. What is your recommendation regarding the remainder of the project

2. Director General IMED, Sector-3

1. What were the identified problems related to water supply, water hygiene, sanitation, water borne-diseases in the target areas before the project was implemented?
2. Why were these specific project components proposed to solve the water supply, hygiene and sanitation problems of the target areas?
3. How is the project going to serve SDG health & sanitation goals & Vision 2021?
4. To what extent has the project achieved its objectives till now?
5. How is the target population being benefited by this project?
6. Has this project ensured environmental sanitation in the target areas??
7. How many people are getting sanitation facilitites from this project?
8. To what extent have the objectives being achieved?
9. How is the target population being benefited by this project besides getting water and sanitation facilities?
10. Has this project improved the living standard of people?
11. How is the project going to reduce poverty?
12. Do you have any plan to generate employment opportunities for the target population through this project?
13. What steps did you take to ensure gender & minority inclusiveness?
14. How can the project be made more effective in order to meet the objectives?
15. What could be done to make the project implementation more effective?
16. What were the strengths, weakness; threat and opportunities (SWOT) of the project elements?
17. What is your recommendation regarding the remainder of the project

3. Representative of physical infrastructure department (IMED)

1. What are the importance of water and sanitation in peoples' lives?
2. Are the components constructed under this project harmful for environment?
3. How is the project going to serve SDG health & sanitation goals & Vision 2021?
4. To what extent has the project achieved its objectives till now?
5. How is the target population being benefited by this project?
6. Has this project ensured environmental sanitation in the target areas??
7. How many people are getting sanitation facilitites from this project?
8. How is the target population being benefited by this project besides getting water and sanitation facilities?
9. What were the strengths, weakness; threat and opportunities (SWOT) of the project elements?
10. What is your recommendation regarding the remainder of the project

4. Representative of IMED

1. How is the overall progress of the project?
2. Could the project be implemented according to the yearwise plan?
3. What were the drawbacks in the implementation of the project?
4. Reasons behind the drawbacks?
5. How could the project be more effective?
6. Recommendation

5. Representative of Department of Environment

1. Importance of safe water supply and environmental sanitation to improve the living standard of people?
2. Can the components cause harm to the environment and ecology of the areas?
3. How useful is this project to address the goals of SDG?
4. What can make this project more effective?
5. What can be done to ensure the sustainability of the project?
6. What were the strengths, weakness, threat and opportunities (SWOT) of the project elements
7. Recommendation

1.1.1.2 Local Level (Municipality)

1. Pourashava Mayor

Date	Respondent's name	District name	Pourashava name	Phone no.	Enumerator's name

1. What were the major problems related to water supply and water hygiene and sanitation in your area before the project was implemented?
2. What was the crisis related to the water borne diseases in your areas? How is this project helping to tackle these issues?
3. Can this project address all the issues related to water and sanitation in your areas?
4. What do you think is the overall impact of the project on your town?
5. Has this project improved the living standard of people?
6. Is this project mitigating the major issues related to your area?
7. What other steps could have been taken to address these problems in your area?
8. What could be done to make the project more effective?
9. Is your Pourashava capable to operate and maintain (O&M) the service implemented by the Project?
10. Has the Project provided training to the O&M team in your Pourashava?
11. Is this project a sustainable solution to the issues in your area?
12. What issues should be taken care of to make the project sustainable?
13. How are you going to ensure its sustainability in your area after the completion of the project?
14. What were the strengths, weakness; threat and opportunities (SWOT) of the project elements?
15. What is your recommendation regarding the remainder of the project

2. Executive engineer (DPHE)

Date	Respondent's name	District name	Pourashava name	Phone no.	Enumerator's name

1) What is the current progress of the project?
2) Was the procurement of goods and services done following proper guidelines?

3) How effective is the project to ensure water supply and sanitation?
4) How efficient was the implementation process?
5) What were the major obstacles while implementing the project?
6) Was the implementation process delayed? What was the reasons of the delay? (financing, procuring goods, managerial inefficiency, which caused increase of project cost)
7) Did you face any complication regarding tender?
8) How are the procured goods and services managed?
9) What is the plan to manage the human resource associated with the project to ensure the timely implementation of the project?
10) What is the inconsistency in the initial work plan and current implementation progress?
11) Who will operate and maintain (O&M) the Project-component after completion.
12) Is there any arrangement for training to the O&M team?
13) What is the impact on peoples' lives?
14) How can the project be more effective?
15) Who will operate and maintain (O&M) the Project-component after completion.
16) Is there any arrangement for training to the O&M team?

3. Assistant engineer (DPHE)

Date	Respondent's name	District name	Pourashava name	Phone no.	Enumerator's name

1) What is the current progress of the project?
2) Was the procurement of goods and services done following proper guidelines?
3) How effective is the project to ensure water supply and sanitation?
4) How efficient was the implementation process?
5) What were the major obstacles while implementing the project?
6) Was the implementation process delayed? What was the reasons of the delay? (financing, procuring goods, managerial inefficiency, which caused increase of project cost)
7) Did you face any complication regarding tender?
8) How are the procured goods and services managed?
9) What is the plan to manage the human resource associated with the project to ensure the timely implementation of the project?
10) What is the inconsistency in the initial work plan and current implementation progress?
11) Who will operate and maintain (O&M) the Project-component after completion.
12) Is there any arrangement for training to the O&M team?
13) What is the impact on peoples' lives?
14) How can the project be more effective?
15) Who will operate and maintain (O&M) the Project-component after completion.
16) Is there any arrangement for training to the O&M team?

4. Sanitation inspector pourashava

Date	Respondent's name	District name	Pourashava name	Phone no.	Enumerator's name

1. What was the disease prevalence, sanitation scenario in the area before the project implementation?
2. Does the project give enough attention to environmental sanitation issues?
3. How the project is contributing to improved sanitation and health in your area?
4. Is there any visible change in this sector?
5. Are the newly constructed public toilets in your area enough to serve the population? Are those accessible to all? Maintained regularly?
6. What could be done to make the project more effective
7. What were the strengths, weakness, threat and opportunities (SWOT) of the project elements (sanitation)
8. Recommendation

1.1.1.3 Local Level (District)

5. Executive engineer (DPHE)

Date	Respondent's name	District name	Pourashava name	Phone no.	Enumerator's name

1) What is the current progress of the project?
2) Was the procurement of goods and services done following proper guidelines?
3) How effective is the project to ensure water supply and sanitation?
4) How efficient was the implementation process?
5) What were the major obstacles while implementing the project?
6) Was the implementation process delayed? What was the reasons of the delay? (financing, procuring goods, managerial inefficiency, which caused increase of project cost)
7) Did you face any complication regarding tender?
8) How are the procured goods and services managed?
9) What is the plan to manage the human resource associated with the project to ensure the timely implementation of the project?
10) What is the inconsistency in the initial work plan and current implementation progress?
11) Who will operate and maintain (O&M) the Project-component after completion.
12) Is there any arrangement for training to the O&M team?
13) What is the impact on peoples' lives?
14) How can the project be more effective?
15) Who will operate and maintain (O&M) the Project-component after completion.
16) Is there any arrangement for training to the O&M team?

Attachment J: Checklist for focus group discussion

Project Context and People's Livelihood

- Are you aware of the project?
- Do you think your livelihood has changed after the implementation of the project?
- Are you being benefited by employment due to the current project?
  Apart from jobs created during its construction/project implementation, has the facility led to more jobs for members of the community?

Water Supply Facility

- How were the water supply facilities before the project?
- What problems did you face regarding water supply before the implementation of the project?
- Level of satisfaction regarding current water supply?
- What is your perception about the water supply facility due to the project?

Sanitation Facility

- How were the sanitation facilities in your community before the project?
- What problems did you face regarding sanitation before the implementation of the project?
- Level of satisfaction with the current sanitation facility?
- What were the changes in the sanitation facilities due to the project?
- What is your perception about the sanitation facilities due to the project?

Environment & water Borne Diseases

- How was the frequency and intensity of waterborne diseases before the project?
- Has the prevalence of water-borne disease decreased after the implementation of project?
  Are you getting safe water after implementation of the project?
- Do you feel that the community is saving money as the expenditure on medicines and doctor has reduced due to the decline in the diseases as a result of the project?
- Do you think this project has created any severe harmful effect on your area?

Operation and Maintenance

- How was the previous water billing system in your household? Level of satisfaction regarding the previous billing system.
- Are you satisfied with the billing system being implemented due to the project?

Recommendation & Observation

- Has the project implementation met your expectations?
- Overall benefits of the project
- What could be done to enhance the benefits of the project?
- Do you have any complain about the project
- Strength, weakness, Opportunity and Threat of the project


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