Draft Final

Limited Environmental & Social Impact Assessment
And
Environmental & Social Management Framework

Bangladesh:
Dhaka Environment and Water Project

Volume 1: Main Text

Department of Environment

&

Local Government Engineering Department

May, 2010

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Abbreviations

AP	Affected Person
ARIPO	Acquisition/ Requisition of Immovable Property Ordinance
BNBC	Bangladesh National Building Code
BP	Bank Procedure
CCL	Cash and Compensation under a Law
CERP	Coastal Embankment Rehabilitation Project
CETP	Common Effluent Treatment Plant
DBO	Design, Build and Operate
DCC	Dhaka City Corporation
DEW	Dhaka Environment and Water
DOE	Department of Environment
DWASA	Dhaka Water and Sewerage Authority
EA	Environmental Assessment
ECA	Environmental Conservation Act
ECC	Environmental Clearance Certificates
ECR	Environmental Conservation Rules
ED	Executive Director
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESA	Environmental & Social Assessment
ESMF	Environment & Social Management Framework
ETP	Effluent Treatment Plant
GOB	Government of Bangladesh
GDP	Gross Domestic Product
GPP	Guidelines for People's Participation
IEE	Initial Environmental Examination
LGED	Local Government Engineering Department
LMU	Learning and Monitoring Unit
LGI	Local Government Institutions
MOEF	Ministry of Environment and Forest
NEMAP	National Environment Management Action Plan
NOC	No-objection-certificate
NWMP	National Water Management Plan
OP	Operational Policy
PAP	Project Affected People
PCC	Pollution Control Cell
PPP	Public Private Partnership
RAP	Resettlement Action Plan
RRMP	Rural Road Maintenance Project
USD	US Dollar
WDF	Washing, Dyeing and Finishing (Textile) sector

1. Introduction

1.1 Background

1. Greater Dhaka[1] currently represents more than 40 percent of Bangladesh's national GDP and its population is growing annually at around 9 percent. Dhaka's population of 12 million people is projected to nearly double by the year 2025. Dhaka is surrounded by rivers and inter-connected with canals which have always formed a life-line for city residents. In last twenty years, a convergence of unregulated industrial expansion, rural-to-city migration, encroachment of the rivers, overloaded infrastructure, confusion about the institutional responsibility for the quality of Dhaka's water bodies, and weak enforcement of environmental regulations have all taken their toll on surface water quality. There is only one sewage treatment plant at Pagla which is currently operating below capacity because of sewerage system failures, and few industries operate Effluent Treatment Plants. Almost all the waste from humans, industry, and millions of farm animals, along with tons of pesticides and fertilizers, make their way into Dhaka's surface water untreated, and a percentage of these wastes infiltrate the groundwater. As a result, pollutant levels in the groundwater are increasing, and many sections of the rivers and canals in the city and surrounding areas, especially the Buriganga and Sitalakhya, are biologically dead during the dry season, spurring widespread public concern and promoting reaction at the highest political levels.

2. Given the institutional and governance constraints in Bangladesh, effectively tackling industrial pollution in the Dhaka watershed requires a pragmatic approach, which offers a combination of rewards and penalties that will encourage industries to adopt pollution prevention and abatement practices. Waste water pre-treatment and optimization initiatives are an important first step and significant investments in pollution abatement infrastructure are required.

3. The proposed project is designed to demonstrate (i) the business and environmental advantages of cleaner production and (ii) a financially and technically sustainable model of central effluent treatment facilities in the greater Dhaka watershed. It will help to develop further capacity of the Department of Environment (DOE) in monitoring and enforcing pollution control. The project will have four components: i) Monitoring and Environmental Compliance; ii) Industry Pollution Prevention and Abatement Demonstration Program; iii) CETP Design, Construction and Operationalization; and iv) Program Management, Monitoring and Evaluation and Stakeholder Engagement.

4. In order to enhance project design, maximize flexibility and maintain clear incentives, a programmatic approach will be followed in the project in two distinct phases over 6 years.

- The first phase will focus on setting the right incentives and institutional framework, through better monitoring and environmental compliance and pollution prevention demonstration programs. The on-going experience from the implementation of this first phase will be carefully monitored through a structured learning program in order to better design the demonstration CETP.

[1] Comprising the areas administrated by Dhaka City Corporation (DCC), Dhaka District, Gazipur District, and Narayanganj District

- The second phase, which involves the detailed design, construction and operationalization of the CETP, would only be initiated once key readiness criteria have been achieved (in Year 2-3). The phasing of investments will be built into the project design by attaching disbursement conditions for the financing of the CETPs. In order to ensure the project objectives are achieved, a tight governance decision-tree will be put in place from the start, to inform and guide the government's project team – and insulate them from demands which do not meet the project objectives/basic assumptions/parameters.

5. The project will also be structured in a way to ensure, if the implementation of the demonstration CETP is successful, it can be readily scaled up through additional financing. Project activities will initially focus on three of the nine major Dhaka watershed pollution hot-spots – located in Narayanganj and Gazipur Pourashavas. These clusters typically have over 75 percent of industries in the garment, washing and dyeing sectors, which increases cluster homogeneity and responsiveness to global supply chain incentives.

1.2 The Report

6. Projects and programs financed with IDA resources need to comply with the World Bank Operational Policies. Therefore, the project components eligible for funding under Dhaka Environment and Water (DEW) will be required to satisfy the World Bank's safeguard policies, in addition to conformity with environmental legislation of the Government of Bangladesh (GOB). The Limited Environmental & Social Assessment (ESA) and Environment & Social Management Framework (ESMF) have been prepared by the Department of Environment (DOE) and Local Government Engineering Department (LGED), the implementing agencies for the Dhaka Environment and Water (DEW) Project. Since the design and exact locations of the cleaner productions and CETPs are not finalized at this stage and only will be available at the end of the phase 1, the full scale environmental and social impact assessment cannot be carried out during the main project preparation. The full scale environmental assessment for each CETP will be carried during the design phase of the CETP. At this stage, the Limited ESA covers an overall assessment of the potential sites of CETPs. The environmental screening/assessment for cleaner production will be carried out after the environmental auditing of individual factories under Component 2. ESMF provides the guidelines and procedures to be integrated in design and implementation of sub-projects. The report has been prepared in accordance with the requirements of the World Bank. The report also covers the requirements of the Government of the Bangladesh.

2. Description of the Project

2.1 Component 1 – Monitoring and Environmental Compliance

7. This component will be implemented by the Department of Environment to strengthening its capacity for better monitoring of industrial pollution and to enforce the environmental legislation towards reducing environmental pollution in Greater Dhaka. The estimated component budget is USD 4.6 million. This component has four sub-components.

8. ***Sub-component 1.1 Establishment of a Pollution Control Cell (PCC).*** This sub-component will help the DOE (i) establish a PCC that will be in charge of monitoring industrial pollution and enforcing pollution control regulations, including the designation of DOE staff to join PCC and the provision of dedicated office space and facilities; (ii) the development of clear implementation guidelines for the management and enforcement of effluent emissions which offer a more flexible mix of sanctions-based, compliance-based and market-based approaches for tackling both point and non-point sources of pollution; (iii) extensive PCC staff training program; and (iv) development of policy guidelines for the operation of CETPs.

9. ***Sub-component 1.2 Establishment of an integrated environmental management information system.*** Comprehensive, accurate, just-in-time and relevant information is the bed-rock of any effective environmental compliance system. This component will help (i) establishment of a water quality monitoring network, to be piloted in the project area (ii) establishment of a system for the collection, analysis and dissemination of a range of data from different sources, and (iii) identify streamlining options for the site-clearance process. Together, this will ensure the establishment of an integrated environmental management system which provides relevant information to both government agencies and the public. The database will be housed within the PCC.

10. ***Sub-component 1.3 Supporting DOE partnerships for Third-Party Monitoring.*** DOE is keen to work more closely with other partners and stakeholders. This sub-component will pilot innovative partnership models for better environmental monitoring, by promoting greater awareness from local communities, civil society industries and local government institutions, and encourage greater participation in joint-monitoring. Its particular emphasis will be to target a range of constituencies within and around the selected three industrial clusters through (i) local stakeholder awareness campaign; (ii) organization of community groups through local civic organizations to conduct basic water quality monitoring; (iii) supporting voluntary industry benchmarking; (iv) a communications and awareness program targeted at Local Government Institutions (LGIs), particularly their role in site-clearance processes.

11. ***Sub-component 1.4 Sludge management.*** The wastewater treatment process produces sludge, which can sometimes also be toxic and hazardous. Drawing on lessons learnt from hazardous hospital waste management, this sub-component will help DOE design a framework for sludge management.

2.2 Component 2 – Industry Pollution prevention and Demonstration Program

12. This demonstration program will be implemented by the Local Government Engineering Department (LGED) and will target mostly textile factories in the Washing, Dyeing and Finishing (WDF) sector, located in 3 industrial pollution hotspots. Approximately 70 factories in each of the clusters (200 in all) are expected to participate in the program. The objective of this component is to mobilize factories within a given cluster, raise their awareness of, and demand for, pollution prevention and abatement measures. A consulting firm will support the LGED with the roll-out of this comprehensive program: including information gathering, the establishment of industry cluster associations, cleaner production and pre-treatment measures. The estimated budget of the component is USD 20.6 million and the component has 4 subcomponents.

13. ***Sub-component 2.1 – Cluster consultation, mobilization and information gathering.*** The success of this component first depends on building, in the three designated industrial clusters, factory awareness and demand for the proposed services. This communications strategy will need to bring together a range of key stakeholders including DOE, LGIs, business associations, local civil society and local residents. Since these informal industrial clusters lack a coherent institutional structure/representation, technical assistance will be provided to support the creation of a cluster level industry association – to ensure industries are represented in the Special Purpose Association which will oversee the design, construction and operation of the CETP. The industry demonstration program will also provide an on-going opportunity to gather basic information on the cluster factories including (i) geo-referencing the location of each factory, size, sector and wastewater characteristics; (ii) mapping the supply chain linkages for each factory; (iii) willingness to pay for pollution abatement. This sub-component will also ensure careful monitoring of all activity progress, to ensure learning by doing, and allow the program to be adapted, as necessary.

14. ***Sub-component 2.2 – Cleaner Production Program.*** Factory environmental assessments will be provided to industries located in the designated industrial clusters. These factory audits will highlight areas for cleaner production options throughout the factory's production line. Considerable savings (up to 40%) can be made in the quantity of energy, water and chemicals needed – which simultaneously reduce operational and pollution abatement costs.

15. Technical support will then be provided through matching grants to industries to make these low cost changes. Early adopters (typically consisting of some of the larger, more progressive factories) will act as demonstrators. Achievements by the earlier group will be communicated through a variety of means to their factory peers. A voluntary benchmarking system will be established to enable industries to compare their performance relative to their peers. The process improvement technologies under consideration for textile industries for this project is briefly explained in Annex-A.

16. ***Sub-component 2.3 – Pre-treatment and flow metering program.*** This component will provide all participating factories with basic pre-treatment and wastewater flow measuring devices. These wastewater flow meters will help track achievements in wastewater reduction through the implementation of cleaner production processes. Reductions in wastewater volumes

will be an important indicator of factory uptake of cleaner production initiatives. Lower wastewater volumes will also decrease the CETP tariff charges for individual factories. Additional pre-treatment may also be provided to small and medium industries where their wastewater characteristics (e.g. presence of certain chemicals) require more extensive pre-treatment prior to treatment in a CETP.

17. ***Sub-component 2.4 – TA to support CETP DBO preparation.*** Technical assistance will be provided to (i) finalize the preliminary designs and financial models for the DBO contract; (ii) help set up a Special Purpose Association to oversee the contracting and management of private CETP operator, and (iii) oversee the contracting of the DBO process.

2.3 Component 3 CETP Design, Construction and Operationalization

18. This component will be implemented by the Local Government Engineering Department (LGED) and will facilitate the design, construction and operation of a demonstration CETPs in the best performing industrial sub-cluster (based on the relative success of the pollution prevention and abatement program under component 2). The budget allocated for this component is USD 40 million.

19. The construction of the CETP will use a 'Design, Build and Operate' turn-key arrangement based on a single procurement package. Project funds will be used to finance the CETP capital costs while industries will be responsible for operation and maintenance (and depreciation of capital). The private operator will be responsible for operating the treatment plant and collecting tariffs.

20. CETP works will include the construction of a transport industrial wastewater collection network, lift stations to deliver industrial wastewater to treatment plants, a CETP, a treated CETP outfall and a sludge treatment and disposal facility. The sizing and alignment of the transport system will be site specific within each of the set of identified industries to be included within each CETP system.

2.4 Program management, monitoring and evaluation and stakeholder engagement

21. This component will support the implementation and coordination of the overall DEW program project and the activities of the Learning and Monitoring Unit (LMU), including the establishment of a MoEF project data-base, training and study tours for the wider project stakeholders. The estimated cost for this component is USD 4.8 million.

22. The cleaner production program, pre-treatment activities, design and implementation of CETP can be represented by the flow-diagram shown in Figure – 1.

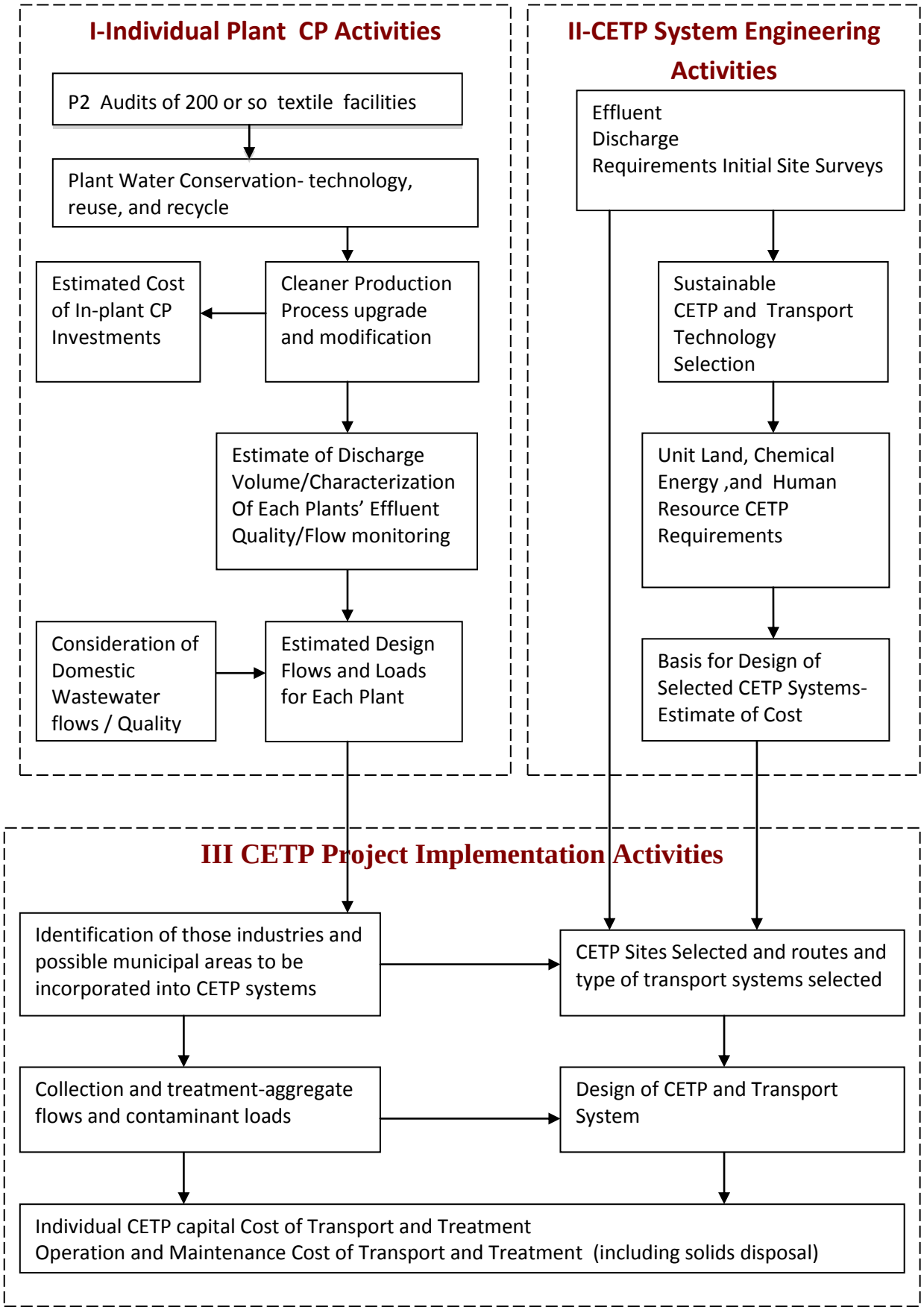


Figure – 1: Flow Diagram of Project Interventions for Cleaner Production and CETP

3. Relevant Policy and Regulations

3.1 Relevant Government Policies, Acts, Rules and Plans

23. The importance of environmental consideration, occupational health & safety and land acquisition related to construction projects has been recognized in a number of national documents. The major relevant policies, acts, rules and plans are:

Environment
Environment Policy, 1992 and Environment Action Plan, 1992
National Environment Management Plan, 1995
Environmental Conservation Act (ECA), 1995
Environmental Conservation Rules (ECR), 1997
Environmental Courts Act, 2000

Water Resources
National Water Policy, 2000
National Water Management Plan, 2001

Industry, Occupational Health & Safety and Construction
Industrial Policy, 2005
The Bangladesh Labor Act, 2006
Bangladesh National Building Code (1993, 2006)

Land Acquisition/Requisition
Acquisition/ Requisition of Immovable Property Ordinance (ARIPO, 1982)

3.1.1 Environmental Policy, 1992 and Environmental Action Plan, 1992

24. The concept of environmental protection through national efforts was first recognized and declared with the adoption of the Environment Policy, 1992 and the Environment Action Plan, 1992. The importance of policies in beefing up the environmental regime is recognized in a number of international instruments including the World Conservation Strategy in 1980 and the Brundtland Commission Report, 1987. Paragraph 14 of Chapter 8 of Agenda 21 underscored the necessity of formulation of national policies as well as laws for environmental protection and sustainable development. The major objectives of Environmental policy are to i) maintain ecological balance and overall development through protection and improvement of the environment; ii) protect the country against natural disaster; iii) identify and regulate activities, which pollute and degrade the environment; iv) ensure environmentally sound development in all sectors; v) ensure a sustainable, long term and environmentally sound base of natural resources; and vi) actively remain associate with all international environmental initiatives to the maximum possible extent.

3.1.2 National Environment Management Plan, 1995

25. The National Environment Management Action Plan (NEMAP, 1995), based on a nationwide consultation program identified the main national environmental issues, including those related to the water sector which EA practitioners should note. The main related national concerns included flood damage, riverbank erosion, environmental degradation of water bodies, increased water pollution, shortage of irrigation water and drainage congestion; various specific regional concerns were also identified.

3.1.3 Bangladesh Environmental Conservation Act (ECA), 1995

26. The Environmental Conservation Act (ECA) of 1995 is the main legislative framework document relating to environmental protection in Bangladesh. This umbrella Act includes laws for conservation of the environment, improvement of environmental standards, and control and mitigation of environmental pollution. This Act established the Department of Environment (DOE), and empowers its Director General to take measures as he considers necessary which includes conducting inquiries, preventing probable accidents, advising the Government, coordinating with other authorities or agencies, and collecting & publishing information about environmental pollution.

27. According to this act (Section 12), ***no industrial unit or project shall be established or undertaken without obtaining, in a manner prescribed by the accompanying Rules, an Environmental Clearance Certificate (ECC) from the Director General of DOE***.

28. In addition, through a gazette notification date September 1, 2009, the High Court declared the 4 rivers surrounding Dhaka, namely Buriganga, Turag, Balu and Shitolakhkhya, as Ecologically Critical Areas, citing the ECA 1995, Section 5. Subsequently pollution creating activities that are detrimental to the water and aquatic life in those rivers has been declared forbidden.

3.1.4 Bangladesh Environmental Conservation Rules (ECR), 1997

29. The Environment Conservation Rules, 1997 were issued by the Government of Bangladesh in exercise of the power conferred under the Environment Conservation Act (Section 20), 1995. Under these Rules, the following aspects, among others, are covered:

(i) Declaration of ecologically critical areas

(ii) Classification of industries and projects into 4 categories

(iii) Procedures for issuing the Environmental Clearance Certificate

(iv) Determination of environmental standards

30. These Rules were amended three times (17 February 2002, 26 August 2002 and 01 April 2003) to specify different sections like inclusion of Certificate of Fitness, Pollution Under Control Certificate, Fees for Environmental Clearance Certificate and other services etc.

31. ECR'97 (Rule 7) classifies industrial units and projects into four categories depending on environmental impact and location for the purpose of issuance of ECC. These categories are:

- Green
- Orange A
- Orange B, and
- Red

32. All existing industrial units and projects and proposed industrial units and projects, that are considered to be low polluting are categorized under "Green" and shall be granted Environmental Clearance. For proposed industrial units and projects falling in the Orange- A, Orange- B and Red Categories, firstly a site clearance certificate and thereafter an environmental clearance certificate will be issued. A detailed description of those four categories of industries has been given in Schedule-1 of ECR'97. Apart from the general requirements, for every Orange-B and Red category proposed industrial unit or project, the application must be accompanied with feasibility report on Initial Environmental Examination (IEE), Environmental Impact Assessment (EIA) based on approved TOR by DOE, Environmental Management Plan (EMP) etc.

33. The ECR'97 also contains the procedures for obtaining Environmental Clearance Certificates (ECC) from the Department of Environment for different types of proposed units or projects. Any person or organization wishing to establish an industrial unit or project must obtain ECC from the Director General. The application for such certificate must be in the prescribed form together with the prescribed fees laid down in Schedule 13, through the deposit of a Treasury *Chalan* (Pay Order) in favor of the Director General. Rule 8 prescribes the duration of validity of such certificate (3 years for green category and 1 year for other categories) and compulsory requirement renewal of certificate at least 30 days before expiry of its validity.

34. The ECR'97 also establishes the National Environmental Quality (EQS) for ambient air, various water sources/ bodies, industrial effluents, etc. Table -1 shows Industrial Project Effluent standard for Bangladesh.

Table- 1: Bangladesh Standards for Industrial Project Effluent according to EQSB of DOE

Sl. No.	*Parameters*	*Unit*	*Discharge To*		
			Inland Surface Water	*Public Sewer from Secondary Treatment Plant*	*Irrigable Land*
1	Ammonia cal nitrogen (as elementary N)	mg/l	50	75	75
2	Ammonia (as free ammonia)	mg/l	5	5	15
3	Arsenic (as As)	mg/l	0.2	0.05	0.2
4	BOD_5 at 20^oC	mg/l	50	250	100
5	Boron	mg/l	2	2	2
6	Cadmium (as Cd)	mg/l	0.05	0.5	0.5
7	Chloride	mg/l	600	600	600
8	Chromium (as total Cr)	mg/l	0.5	1.0	1.0
9	COD	mg/l	200	400	400
10	Chromium (as hexavalent Cr)	mg/l	0.5	1.0	1.0
11	Copper (as Cu)	mg/l	0.5	3.0	3.0
12	Dissolved oxygen (DO)	mg/l	4.5-8	4.5-8	4.5-8
13	Electro-conductivity (EC)	µmhoms/cm	1200	1200	1200
14	Total dissolved solids	mg/l	2100	2100	2100
15	Flouride (as F)	mg/l	2	15	10
16	Sulfide (as S)	mg/l	1	2	2
17	Iron (as Fe)	mg/l	2	2	2
18	Total kjeldahl nitrogen (as N)	mg/l	100	100	100
19	Lead (as Pb)	mg/l	0.1	1	0.1
20	Manganese (as Mn)	mg/l	5	5	5
21	Mercury (as Hg)	mg/l	0.01	0.01	0.01
22	Nickel (as Ni)	mg/l	1.0	2.0	1.0
23	Nitrate (as elementary N)	mg/l	10.0	Not yet set	10
24	Oil and grease	mg/l	10	20	10
25	Phenolic compounds (as C_6H_5OH)	mg/l	1.0	5	1
26	Dissolved phosphorus (as P)	mg/l	8	8	15
27	Radioactive substance	(to be specified by Bangladesh Atomic Energy Commission)			
28	pH		6-9	6-9	6-9
29	Selenium (as Se)	mg/l	0.05	0.05	0.05
30	Zinc (as Zn)	Mg/l	5	10	10
31	Total dissolved solids	Mg/l	2100	2100	2100
32	Temperature	^oC (summer) ^oC (winter)	40 45	40 45	40 45
33	Suspended solids	Mg/l	150	500	200
34	Cyanide (As Cn)	Mg/l	0.1	2.0	0.2

Source : *Schedule –10, Rule-13, Environment Conservation Rules, 1997 (Page 3132 - 3134 of the Bangladesh Gazette of 28 August 1997) (Own authentic translation from original Bengali).*

Note :
- *These standards will be applicable for all industries other than those which are specified under 'industrial sector specific standards'.*
- *These standards will have to be complied with from the moment of trial production in the case of industries and from the very beginning in the case of projects.*
- *These standards will have to be met at any point of time and at any sampling. In case of need for ambient environment condition, these standards may be made more stringent.*
- *Inland surface water will include drains, ponds, tanks, water bodies, ditches, canals, rivers, streams and estuaries.*
- *Public sewer means leading to full fledged joint treatment facility comprising primary and secondary treatment.*
- *Land for irrigation means organized irrigation of selected crops on adequate land determined on the basis of quantum and characteristics of waste water.*
- *If any discharge is made into public sewer or on land which does not meet the respective definitions in notes 5 and 6 above, then the inland surface water standards will apply.*

3.1.5 Environmental Courts Act, 2000

35. The **Environment Court Act**, 2000 has been enacted in order to establish environmental courts in each administrative division of Bangladesh. Under this Act, the court has concurrent jurisdiction i.e. to try both civil and criminal cases. The basis for instituting a case is a violation of the "environmental law", meaning the Bangladesh Environment Conservation Act, 1995 (ECA) and Rules made thereunder. In particular the environment court is empowered to:

i) Impose penalties for violating court orders;

ii) Confiscate any article, equipment and transport used for the commission of the offence[2];

iii) Pass any order or decree for compensation;

iv) Issue directions to the offender or any person (a) not to repeat or continue the offence; (b) to take preventive or remedial measures with relation to any injury, specifying the time limit and reporting to the DOE regarding the implementation of the directions.

[2] The due diligence conducted so far has not indicated the existence retroactive liability law for factories. In that respect, the World Bank cannot be held responsible for actions undertaken prior to the implementation of the project, and provisions to ensure this will be included in the project's legal agreements. In order to substantiate such a position, a baseline survey will be conducted at the inception of the project will provide a detailed record of all factories and workers in each of the clusters retained for the DEW project, to avoid any possible claims that changes or issues be attributed to project.

36. Under this Act the Director General of the DOE has the power to impose heavy penalties to industrial polluters who are dumping untreated wastewater into the environment or not operating their legally mandated ETPs.

3.1.6 Implications of Policies and Environmental Clearance Procedure

37. Legislative bases for EIA in Bangladesh are the Environmental Conservation Act 1995 (ECA'95) and the Environmental Conservation Rules 1997 (ECR'97). Department of Environment (DOE), under the Ministry of Environment and Forest (MOEF), is the regulatory body responsible for enforcing the ECA'95 and ECR'97. According to the ECR'97, construction/reconstruction/expansion of CETPs is classified as a "Red" category project. Please note that works such as laying of a network of pipes etc. that transport the effluents to the CETP will fall under CETP project and will also be Red Category. All major structures will require environmental impact assessments and DOE clearance.

38. It is the responsibility of the proponent to conduct an EIA of the development proposal. The responsibility to review EIAs for the purpose of issuing Environmental Clearance Certificate (ECC) rests on DOE. The procedures for "Red" Category include submission of:

- **An Initial Environmental Examination (IEE)**
- **An Environmental Impact Assessment (EIA)**
- **An Environmental Management Plan (EMP)**

39. Environment clearance has to be obtained by the respective implementing agency or project proponent (private sector) from Department of Environment (DOE). The environmental clearance procedure for Red Category projects can be summarized as follows:

Application to DOE →Obtaining Site Clearance →Applying for Environmental Clearance →Obtaining Environmental Clearance → Clearance Subject to annual renewal

Detailed steps for getting an Environmental Clearance Certificate:

40. The following are the steps need to be followed in getting an environmental clearance certificate from the Department of Environment (DOE).

(a) Feasibility Study Report of the Project (applicable only for proposed industries or projects);

(b) Initial Environmental Examination (IEE) Report together with the terms of reference of the Environmental Impact Assessment (EIA) and the process-flow diagram of the project, or, the Environmental Impact Assessment (EIA) Report prepared on the basis of terms of reference approved earlier by the Department of Environment, layout plan (indicating the site for the effluent treatment plant), design and time-schedule to construct the effluent treatment plant and the process-flow diagram;

(c) Environment Management Plan (EMP) together with process-flow diagram, layout plan (indicating location of effluent treatment plant), design and efficiency of the effluent treatment plant;

(d) No-objection-certificate (NOC) from the local authority;

(e) Contingency plan with respect of adverse environmental impacts together with a plan to reduce pollution load;

(f) Outlines of relocation, rehabilitation plan (where applicable); and

(g) Other relevant information.

3.1.7 National Water Policy, 1999

41. The National Water Policy was promulgated in 1999 with the intention of guiding both future public and private actions to ensure the optimal development and management of water that benefits both individuals and the society at large. The policy aims to ensure progress towards fulfilling the national goals of economic development, poverty alleviation, food security, public health and safety, decent standard of living for the people and protection of natural environment. According to the policy, ***all agencies and departments entrusted with water resource management responsibilities (regulation, planning, construction, operation, and maintenance) will have to enhance environmental amenities and ensure that environmental resources are protected and restored in executing their tasks. Environmental needs and objectives will be treated equally with the resources management needs.***

42. The policy has several clauses related to the protection of the natural environment. Some of the relevant clauses are:

> ***Clause 4.5b:*** Planning and feasibility studies of all projects will follow the Guidelines for Project Assessment, the Guidelines for People's Participation (GPP), the Guidelines for Environmental Impact Assessment, and all other instructions that may be issued from time to time by the Government.
>
> ***Clause 4.9b:*** Measures will be taken to minimize disruption to the natural aquatic environment in streams and water channels.
>
> ***Clause 4.12a:*** Give full consideration to environmental protection, restoration and enhancement measures consistent with National Environmental Management Action Plan (NEMAP) and the National Water Management Plan (NWMP).
>
> ***Clause 4.12b:*** Adhere to a formal environmental impact assessment (EIA) process, as set out in EIA guidelines and manuals for water sector projects, in each water resources development project or rehabilitation program of size and scope specified by the Government from time to time.

3.1.8 Industrial Policy, 2005

43. Several sections of the policy highlight the importance of environmental issues in industrial development.

***Section 2.11*:** Provide all necessary assistance for producing environment-friendly product with the objective for creating a pollution-free environment in the industrial sector.

Section 3.24: Arrange for incentives to be given for research and development, acceptance and transfer of environmentally friendly appropriate technology. At the same time, develop market-oriented institutional structure in overall technological development.

Section 17.1: One of the foremost objectives of the Industrial Policy 2005 is to help attain competitive efficiency by developing technology, reducing consumers' costs by using cost-effective technology, and assisting in the development of an environmentally friendly industrial production system.

Section 18.6: Environmental pollution control: The Environmental Protection Act 1995 and other relevant legislations are gradually implemented to control environmental pollution. Those industries that pollute the environment and endanger public health must ensure safety measures in respect of environmental pollution control. Industrial enterprises will be encouraged to obtain ISO-14000 certificates.

3.1.9 Bangladesh Labor Act, 2006

44. The Bangladesh Labor Act, 2006 provides the guidance of employers' extent of responsibility and workmen's extent of right to get compensation in case of injury by accident while working. Some of the relevant Sections are:

Section 150. Employer's Liability for Compensation: (1) If personal injury is caused to a workman by accident arising out of and in the course of his employment, his employer shall be liable to pay compensation in accordance with the provisions of this Act; and (2) Provided that the employer shall not be so liable - (a) in respect of any injury which does not result in the total or partial disablement of the workman for a period exceeding three days; (b) in respect of any injury, not resulting in death or permanent total disablement, caused by an accident which is directly attributable to - (i) the workman having been at the time thereof under the influence of drink or drugs, or (ii) the willful disobedience of the workman to an order expressly given, or to a rule expressly framed, for the purpose of securing the safety of workmen, or (iii) the willful removal or disregard by the workman of any safety guard or other device which he knew to have been provided for the purpose of securing the safety of workmen.

Section 151. (1) *Amount of Compensation:* Subject to the provisions of this Act, the amount of compensation shall be as follows, namely :- (a) where death results an amount equal to fifty from the injury cent of the monthly wages of the deceased workman multiplied by the relevant factor; or an amount of fifty thousand rupees, whichever is more; (b) where permanent total an amount equal to disablement results from sixty the injury per cent of the monthly wages of the injured workman multiplied by the relevant

factor, or an amount of sixty thousand rupees, whichever is more; and (2) On the ceasing of the disablement before the date on which any half-monthly payment falls due, there shall be payable in respect of that half-month a sum proportionate to the duration of the disablement in that half-month.

3.1.10 Bangladesh National Building Code, 2006

45. Part-7, Chapter -1 of the Bangladesh National Building Code (BNBC) clearly sets out the constructional responsibilities according to which the relevant authority of a particular construction site shall adopt some precautionary measures to ensure the safety of the workmen. According to section 1.2.1 of chapter 1 of part 7, "In a construction or demolition work, the terms of contract between the owner and the contractor and between a consultant and the owner shall be clearly defined and put in writing. These however will not absolve the owner from any of his responsibilities under the various provisions of this Code and other applicable regulations and bye-laws. The terms of contract between the owner and the contractor will determine the responsibilities and liabilities of either party in the concerned matters, within the provisions of the relevant Acts and Codes (e.g.) the Employers' Liability Act, 1938, the Factories Act 1965, the Fatal Accident Act, 1955 and Workmen's Compensation Act 1923". (After the introduction of the Bangladesh Labor Act, 2006, these Acts have been repealed).

46. Section 1.4.1 of chapter-1, part-7 of the BNBC, states the general duties of the employer to the public as well as workers. According to this section, "All equipments and safeguards required for the construction work such as temporary stair, ladder, ramp, scaffold, hoist, run way, barricade, chute, lift etc shall be substantially constructed and erected so as not to create any unsafe situation for the workmen using them or the workmen and general public passing under, on or near them".

47. Part-7, Chapter-3 of the Code has clarified the issue of safety of workmen during construction and with relation to this, set out the details about the different safety tools of specified standard. In relation with the health hazards of the workers during construction, this chapter describes the nature of the different health hazards that normally occur in the site during construction and at the same time specifies the specific measures to be taken to prevent such health hazards. According to this chapter, exhaust ventilation, use of protective devices, medical checkups etc. are the measures to be taken by the particular employer to ensure a healthy workplace for the workers.

48. To prevent workers falling from heights, the Code in section 3.7.1 to 3.7.6 of chapter 3 of part 7 sets out the detailed requirements on the formation and use of scaffolding. According to section 3.9.2 of the same chapter, "every temporary floor openings shall either have railing of at least 900 mm height or shall be constantly attended. Every floor hole shall be guarded by either a railing with toe board or a hinged cover. Alternatively, the hole may be constantly attended or protected by a removable railing. Every stairway floor opening shall be guarded by railing at least 900 mm high on the exposed sides except at entrance to stairway. Every ladder way floor opening or platform shall be guarded by a guard railing with toe board except at entrance to opening. Every open sided floor or platform 1.2 meters or more above adjacent ground level shall be guarded by a railing on all open sides except where there is entrance to ramp, stairway or

fixed ladder….. the above precautions shall also be taken near the open edges of floors and roofs".

49. The major challenge is the proper implementation of the Code as section 2.1 of chapter 2 of part 1 duly states that, "The Government shall establish a new or designate an existing agency responsible for the enforcement of this Code with a given area of jurisdiction. For the purpose of administering and enforcing the provisions of the Code, the enforcing agency shall have the authority of the Government and shall herein be referred to as the Authority."

50. Part 9, 1.2.1 states that if the land is changed and the occupants of the area are against the change, no change in use of an existing building will be allowed.

51. Section 1.2.3 of Part-9 also states that in case of partial changing of a building, fire resistance should be ensured and all provisions with greater public safety should be applied to the entire building structure.

52. Section 1.2.4 of Part 9 clearly states "Additions to existing building shall comply with all of the requirements of the BNBC for new constructions. The combined height and area of the existing building and the new addition shall not exceed the height and open space requirements for new building specified in Part 3 of the Code. Where a fire wall that complies with Table 3.3.1 of Part 3 is provided between the addition and the existing building, the addition shall be considered as a separate building."

3.1.11 Acquisition and Requisition of Immovable Property Ordinance, 1982

53. Currently the only legal framework that governs land acquisition in Bangladesh is the **Acquisition and Requisition of Immovable Property Ordinance, 1982.** The Acquisition of Immovable Property Rules, 1982 (No. S. R. O. 172-U82) are made for the exercise of the powers conferred upon by Section 46 of the Acquisition and Requisition of Immovable Property Ordinance, 1982 (Ordinance. No. II of 1982). The rules spell out the procedural details required for the acquisition of immovable properties in the following sub-heads:

a) Proceedings for acquisition
b) Notices under sections 3, 6, and 7
c) Declaration of acquisition and possession
d) Declaration of abatement and revocation of proceedings Transfer of acquired land
f) Assessment of compensation, and
g) Unutilized acquired property

54. In other words, when the pre-requisites are fulfilled, the step-wise activity of land acquisition process that has to be followed is given below:

- Submission of land acquisition proposal by the requiring body to the Deputy Commissioner.
- Holding District Land Acquisition meeting and providing land allocation.
- Serving Notice under Section 3 to the affected persons.

- Joint verification of the acquired property
- Final approval of land to be acquired by the Deputy Commissioner (for area of land 50 big has or less) or the Land Ministry (for area of land over 50 big has) on the basis of land area requirement.
- Serving notice under Section 6 to settle any dispute
- Estimation of jointly verified property for cost compensation and informing requiring body.
- Acceptance of estimate of cost compensation and placement of fund to the Deputy Commissioner by the requiring body.
- Serving Notice under Section 7 by the Deputy Commissioner to the affected land owners for disbursement of compensation.
- Disbursement of compensation as per estimate to the affected persons.
- Giving possession of land to the requiring body.
- CCL payment by the Deputy Commissioner.

3.1.12 Gaps in Acquisition and Requisition of Immovable Property Ordinance, 1982

55. The provisions in acquisition and requisition of Immovable Property Ordinance are not adequate to address adverse impacts associated with land acquisition and involuntary displacement and do not fully satisfy the requirements of the Bank's Operational Policy (OP 4.12) on Involuntary Resettlement or that of the international practices. In essence, the law is largely indifferent to the landowners' present socio-economic conditions, or the long-term adverse impacts on incomes and livelihood that the acquisition and displacement may cause on the affected people. Also, there are no other policies that complement the acquisition ordinance in ways to assess, mitigate and monitor adverse impacts that the affected people may suffer. Some of the salient gaps in the existing legal framework are summarized below:

- ***Avoiding/Minimizing Land Acquisition***: The law only implicitly discourages unnecessary acquisition, as lands acquired for one purpose cannot be used for a different purpose, and lands that remain unused be returned to the original owners. However, there are no mechanisms to monitor if these conditions are actually adhered to.

- ***Eligibility for Compensation***: The law stipulates compensation only for the persons who appear in the land administration records as the owners. It does not recognize the rights of those, such as squatters, who do not possess a legal title to the lands they live in or make a living from. There is thus no provision to mitigate the adverse impacts they suffer.

- ***People who are impacted through loss of income are not recognized***. The Land Acquisition Act provides for compensation for lands and other fixed assets built and grown on them (structures, trees and orchards, crops and any other developments like ponds, built amenities, etc.). However there is no provision to assess the impacts on peoples' incomes, livelihood, loss of employment and businesses for mitigation measures to restore loss of incomes and livelihood.

- ***Compensation Standards:*** Although the law stipulates payment of compensation at 'market prices' for acquired lands as the just compensation, the legal assessment procedures used almost always results in prices that are far below the actual market prices.
- ***Relocation of Displaced Persons***: There is no provision in the existing laws for relocation of displaced families who are affected by the loss of their assets: land and/or structures.
- ***Ensuring Payment/Receipt of Compensation***: The legal process to determine entitlements are too cumbersome and time consuming and do not ensure payment of compensation prior to their displacement. Lands are legally acquired and handed over to the project execution agency as soon as the authority identifies the owners (or 'awardees'), by examining the records, and sends a legal notice advising them to claim the compensation (or 'awards'). The onus is left on the affected land owners to prove, by producing an array of documents, that the acquired lands legally belong to them. As gathering these documents is a long, expensive and cumbersome process, many landowners may be unable to claim their awards. The project has meanwhile started to use the lands.
- ***Socio-economic Rehabilitation***: The existing legal framework does not have any provisions to mitigate long-term impacts on peoples' livelihoods caused by their displacement. Except for the compensation at the 'market price' for the loss of land, there are no other provisions, in the acquisition or other laws that require the government to mitigate the resultant adverse impacts caused by the acquisition. Socioeconomic rehabilitation of the involuntarily displaced persons is totally absent in the legal regime of the country.

3.2 World Bank Policies on Environment and Social Safeguard

56. The World Bank's environmental and social safeguard policies are a cornerstone of its support to sustainable poverty reduction. The objective of these policies is to prevent and mitigate undue harm to people and their environment in the development process. Safeguard policies have often provided a platform for the participation of stakeholders in project design, and have been an important instrument for building ownership among local populations.

57. The effectiveness and development impact of projects and programs supported by the Bank has substantially increased as a result of attention to these policies. The World Bank has ten environmental, social, and legal safeguard policies. The World Bank's environmental assessment policy and recommended processing are described in Operational Policy (OP)/Bank Procedure (BP) 4.01: Environmental Assessment. This policy is considered to be the umbrella policy for the Bank's environmental "safeguard policies" which among others include: Natural Habitats (OP 4.04), Forests (OP 4.36), Pest Management (OP 4.09), Physical Cultural Resources (OP 4.11), and Safety of Dams (OP 4.37). Operational Policies (OP) are the statement of policy objectives and operational principles including the roles and obligations of the Borrower and the Bank, where as Bank Procedures (BP) are the mandatory procedures to be followed by the

Borrower and the Bank. The Complete list of safeguard policies is given below and relevant policies are discussed.

Environmental Policies

- OP/BP 4.01 Environmental Assessment
- OP/BP 4.04 Natural Habitats
- OP/BP 4.09 Pest Management
- OP/BP 4.36 Forests
- OP/BP 4.37 Safety of Dams

Social Policies

- OP/BP 4.10 Indigenous Peoples
- OP/BP 4.11 Physical Cultural Resources
- OP/BP 4.12 Involuntary Resettlement

Legal Policies

- OP/BP 7.50 International Waterways
- OP/BP 7.60 Disputed Areas

58. In addition to the 10 safeguard policies, BP 17.5 exists as the Bank Disclosure Policy, which also relates to safeguards. Bank disclosure Policy supports decision making by the Borrower and Bank by allowing the public access to information on environmental and social aspects of projects. The policy requires disclosure in both English and Local language before project appraisal and must meet the World Bank standards.

3.2.1 OP/BP 4.01 Environmental Assessment

59. Environmental Assessment is one of the 10 environmental, social, and legal Safeguard Policies of the World Bank. Environmental Assessment is used in the World Bank to identify, avoid, and mitigate the potential negative environmental impacts associated with Bank lending operations. In World Bank operations, the purpose of Environmental Assessment is to improve decision making, to ensure that project options under consideration are sound and sustainable, and that potentially affected people have been properly consulted.

60. The Bank requires environmental assessment (EA) of projects proposed for Bank support to ensure that they are environmentally sound and sustainable, and thus to improve decision making. EA is a process whose breadth, depth, and type of analysis depend on the nature, scale, and potential environmental impact of the proposed project. EA evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, siting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation. EA takes into account the natural environment (air, water and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples and physical cultural resources); and transboundary and global environmental aspects.

The borrower is responsible for carrying out the EA and the Bank advises the borrower on the Bank's EA requirements.

61. The Bank classifies the proposed project into three major categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

> ***Category A:*** The proposed project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works.
>
> ***Category B:*** The proposed project's potential adverse environmental impacts on human population or environmentally important areas-including wetlands, forests, grasslands, or other natural habitats- are less adverse than those of Category A projects. These impacts are site specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than Category A projects.
>
> ***Category C:*** The proposed project is likely to have minimal or no adverse environmental impacts.

3.2.2 OP/BP 4.04 Natural Habitats

62. The conservation of natural habitats, like other measures that protect and enhance the environment, is essential for long-term sustainable development. The Bank therefore supports the protection, maintenance, and rehabilitation of natural habitats and their functions in its economic and sector work, project financing, and policy dialogue. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. The Bank promotes and supports natural habitat conservation and improved land use by financing projects designed to integrate into national and regional development the conservation of natural habitats and the maintenance of ecological functions. Furthermore, the Bank promotes the rehabilitation of degraded natural habitats. The Bank does not support projects that involve the significant conversion or degradation of critical natural habitats.

3.2.3 OP/BP 4.11 Physical Cultural Resources

63. Physical cultural resources are defined as movable or immovable objects, sites, structures, groups of structures, and natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Their cultural interest may be at the local, provincial or national level, or within the international community. Physical cultural resources are important as sources of valuable scientific and historical information, as assets for economic and social development, and as integral parts of a people's cultural identity and practices. The Bank assists countries to avoid or mitigate adverse impacts on physical cultural resources from development projects that it finances. The impacts on physical cultural resources resulting from project activities, including mitigating measures, may not contravene either the borrower's national legislation, or its obligations under relevant international environmental treaties and agreements. The borrower addresses impacts on physical

cultural resources in projects proposed for Bank financing, as an integral part of the environmental assessment (EA) process. The following projects are classified during the environmental screening process as Category A or B, and are subject to the provisions of this policy: (a) any project involving significant excavations, demolition, movement of earth, flooding, or other environmental changes; and (b) any project located in, or in the vicinity of, a physical cultural resources site recognized by the borrower. Projects specifically designed to support the management or conservation of physical cultural resources are individually reviewed, and are normally classified as Category A or B. When the project is likely to have adverse impacts on physical cultural resources, the borrower identifies appropriate measures for avoiding or mitigating these impacts as part of the EA process. These measures may range from full site protection to selective mitigation, including salvage and documentation, in cases where a portion or all of the physical cultural resources may be lost.

3.2.4 OP/BP 4.12 Involuntary Resettlement

64. The World Bank policy on involuntary resettlement requires:

i) Avoiding or minimizing adverse project impacts where possible;
ii) Consulting with affected people (AP) in project planning and implementation;
iii) Disclosure of RAP and project related information to the affected person;
iv) Payment of compensation for acquired assets at the market/replacement value; Resettlement assistance to Project Affected People (PAP), including non titled persons (informal dwellers/ squatters and encroachers);
vi) Income restoration and rehabilitation program; and
vii) Special attention for vulnerable groups.

65. The above issues must be taken into consideration in dealing with the land acquisition/ requisition required for the construction of the CETP, waste water collection net-work and other related infrastructures. According to the World Bank Operational Polices OP 4.12, the borrower should take in to consideration certain specific issues during preparation of RAP in the cases of Involuntary Resettlement. These are as follows:

- Bank experience indicates that involuntary resettlement under development projects, if unmitigated, often gives rise to severe economic, social, and environmental risks; production systems are dismantled; people face impoverishment when their productive assets or income sources are lost; people are relocated to environments where their productive skills may be less applicable and the competition for resources are greater; community institutions and social networks are weakened; kin groups are dispersed; and cultural identity, traditional authority, and potential for mutual help are diminished or lost. The policy includes safeguards to address and mitigate these impoverishment risks.

- In case of policy objectives, involuntary resettlement may cause severe long-term hardship, impoverishment and environmental damage unless appropriate measures

are carefully planned and carried out. For these reasons, the overall objectives of the Bank's policy on involuntary resettlement are the following:

(a) Involuntary resettlement should be avoided where feasible, or minimized, exploring all viable alternative project designs

(b) Where it is not feasible to avoid resettlement, resettlement should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs

(c) Displaced persons should be assisted in their efforts to improve their livelihoods and standards of living or at least to restore them, in real terms, to pre displacement levels prevailing prior to the beginning of project implementation, whichever is higher.

- For impacts covered, the involuntary taking of land resulting in (i) relocation or loss of shelter (ii) lost of assets or access to assets; or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location.

(a) For the above mentioned facts, the required measures are, the resettlement plan or resettlement policy framework which includes measures to ensure that the replaced persons are (i) informed about their options and rights pertaining to resettlement; (ii) consulted on, offered choices among the ones provided within the technically and economically feasible resettlement alternatives; and (iii) provided prompt and effective compensation at full replacement cost for losses of assets attributable directly to the project.

(b) If the impacts include physical relocation, the resettlement plan or resettlement policy framework includes measures to ensure that the displaced persons are: (i) provided assistance such as moving allowances) during relocation; and (ii) provided with residential housing, or housing sites, or as required, agriculture sites for which a combination of productive potential, location advantages and other factors are at least equivalent to the advantages of the old site.

(c) Displaced persons are (i) offered support after displacement, for transition period, based on a reasonable estimate of the time likely to be needed to restore their livelihood and standards of living; and (ii) Provided with the development assistance in addition to compensation measures such as credit facilities, tainting, or job opportunities.

- The process framework also includes a description of arrangements for implementing and monitoring the process Regarding vulnerable people bank policy, particular attention is paid to the needs of vulnerable groups among those displaced, especially

those below poverty line, the land less, the elderly, woman and children, indigenous people, ethnic minorities, or other displaced persons may not be protected through national land compensation legislation.

- In case of relocation, provision of compensation and of other assistance required for relocation, prior to replacement, and preparation and provision of resettlement sites with adequate facilities, where required. In particular, taking of land and related assets may take place only after compensation.

- Preference should be given to land-based resettlement strategies for displaced persons whose livelihood is land based.

- Replaced persons and their communities and any host community are provided with timely information, consulted on resettlement options and offered opportunities to participate in planning, implementing and monitoring resettlement. Appropriate and accessible grievance redress mechanisms are established. The host community's facilities and the cultural institutions of re-settlers and the host communities are also to be preserved.

- Relating to eligibility for benefits, it is essential to determine who will be eligible for assistance as well as to discourage inflow of ineligible ones for any assistance. Meaningful consultations with affected persons, community, local authorities and NGOs will have to be confirmed.

- Classifications and criteria of eligibility
  (a) those who have formal legal rights to land (including customary and traditional rights recognized under the laws of the country)
  (b) those who do not have legal rights to land at the time of beginning of census but have a claim to such land or assets provided that such claims are recognized under the laws of the country or become recognized through a process identified in the resettlement plan
  (c) those who have no recognizable legal right or claim to the land they are occupying.

- Persons covered under 15(a), (b), or (c) of OP 4.12 will be eligible for compensation. That is, they will be provided compensation for the land they lose and other assistance in accordance with the provisions of Section-6. Persons covered under Para 15(c) i.e. squatters are provided resettlement assistance.

- In lieu of compensation for the land they occupy and other assistance, as necessary, to achieve the objectives set out in the policy, if they are in the project area prior to the cutoff date established by the borrower and acceptable to the Bank, but the persons who encroach on the area after the cutoff date are not entitled to compensation or any other form of resettlement assistance. All persons included in Para 15(a), (b), or (c) are provided compensation for loss of assets other than land. (Section-16)

- Above mentioned statements are the major highlights of the World Bank‘s guidelines of OP 4.12 pertaining to Involuntary Resettlement.

3.2.5 World Bank’s Directives Regarding RAP

66. The World Bank’s OP 4.12 provides directives regarding the resettlement of project affected persons due to acquisition of land from them. Involuntary eviction of people from the acquired land consists of two closely related but distinct processes: displacing people and rebuilding their livelihood.

67. When people are displaced, production systems may be disturbed, kinships divided, and historical settlement disorganized. Many jobs and assets may be lost. The host population may not be friendly. Cultural and religious heritages may be lost. The cumulative effect can thus tear apart the social bindings, local economy and livelihood pattern.

68. The World Bank was the first international development agency to respond to this displacement consequences by adopting in 1980 a formal policy for resettlement. Bangladesh has, in the meantime, gone a long way with its resettlement activities according to the World Bank’s OP 4.12 in a good number of aided projects. A few of them are:

(i) River Bank Protection Project (Jamuna),

(ii) Coastal Embankment Rehabilitation Project-II (CERP-II),

(iii) Rural Road Maintenance Project (RRMP) etc. Besides these, Bangladesh has also implemented a resettlement program for the Jamuna Multi- purpose Bridge Project.

69. These projects have demonstrated the importance of resettlement GOB has assigned for the large national scale projects. Evaluations of those projects have found that resettlement action plans implemented for those projects have produced positive results among the affected persons, directly and indirectly.

3.2.6 Comparison between GoB Laws and WB Policies on Land Acquisition and Resettlement

70. In case of acquisition, only Cash and Compensation under a Law (CCL) includes 50% premium which is given to the legal owners of the land and actual prices are given to the legal owners for structures, tress and crops. No payment for the squatters and wage losers for regaining their economic condition is allowed in case of the owners of acquisition and requisition land.

71. But according to the World Bank resettlement policy 4.12, compensation is to be paid at replacement market value where no option for “land for land” is possible. Squatter, wage loser,

business loss, loss of indigenous people and women should be specially handled, so that their economic condition will not be deteriorated.

72. Wage losers should be given special training and support in regaining their previous socio-economic condition. Valuation of the standing crops is determined by Deputy Commissioner (DC) with the assistance from the Agriculture Marketing Extension Services.

73. The World Bank Involuntary Resettlement and Rehabilitation Policy requires that the displaced persons should be

(i) compensated for their losses at replacement costs;

(ii) assisted with the move, during the transition period at the relocation site; and

(iii) enabled to reconstruct a land-based productive existence; and

(iv) assisted in their efforts to improve their former level of living standards, income earning capacity, and productive levels, or at least to restore them. The absence of legal titles to land should not be a bar to compensation. In other words, all PAP should be benefited from the Project, irrespective of their legal status as landowners or users of project acquired land.

74. The Policy also requires that population displacement should be avoided or minimized whenever possible and that the PAP and host population should be involved in resettlement planning and implementation.

75. Consistent with the World Bank policy, this framework and resettlement procedural guidelines will apply for the concerned projects. This will ensure that persons affected by land acquisition will be eligible for appropriate compensation and rehabilitation assistance.

76. The framework reflects the government's land acquisition and regulation as well as World Bank policy for all types of losses (land, crops/trees, structures, business/employment, and workdays/wages).

77. If land for land is not a feasible option, the Affected Person (AP) will be compensated at full replacement costs. In addition, PAP will receive additional grants to match replacement cost for lost assets (land and houses), transaction costs such as documentary stamps and registration costs (in case of purchase of replacements land), other cash grants and resettlement assistance such as shifting allowances, compensation for loss of workdays/income due to dislocation. The differences between the Government and the World Bank policies are summarized in Table - 2.

Table - 2: Differences between Bangladeshi law and World Bank policy on land acquisition and resettlement

ISSUE	*1982 ORDINANCE*	*OP 4.12*
Coverage	Legal owners Share-croppers Tenants	All affected parties, including squatters and illegal occupants
Compensation	Based on market values over previous 12 months No provision for restoration of income streams	Replacement cost at current market price Requires livelihood restoration component.
Uses of material from dismantled structures	Material is to be auctioned after being compensated for it	Material can be taken and re-used by affected party
Minimization of impacts	Discourages unnecessary acquisition but no mechanisms to monitor	Alternative analysis required to justify avoidance and/or mitigation of impacts
Cut-off dates	Not addressed	Important to ensure that squatters are included in compensation and to prevent rent-seeking behavior of additional squatters settling onto project land
Consultation	No consultation required	Consultation as core issue in RAP preparation and implementation
Relocation assistance	No assistance provided	Relocation assistance required
Livelihood restoration	Not addressed	Livelihood restoration component and attention to post-resettlement required

78. Further, the female-headed households, indigenous peoples' households and other vulnerable households will be eligible for further cash assistance for relocation and house construction grants.

Mitigations procedures and their implementations

79. For mitigation, the following mitigable impacts/losses should be considered in preparing the RAP:

1. Land including man-made water bodies
2. Vested and non-resident properties
3. Houses and other structures on private land
4. Houses and other structures on public land
5. Trees and orchards
6. Fruits and other crops
7. Rental income
8. Temporary loss of business and wage income
9. Community facilities

10. Common property resources
11. Severely affected persons/households
12. Female headed households
13. Vulnerable households, squatters, tribal communities, etc

80. Socio-economic details including analysis of the loss of assets and otherwise of all these PAP should be done plot to plot survey and interview of all the homestead land, structure and tree owners. Questionnaire survey is needed for loss estimation as well as impact assessment in the area.

3.2.7 The World Bank's Disclosure Policy for EA

81. The Bank reaffirms its recognition and endorsement of the fundamental importance of transparency and accountability to the development process. Accordingly, it is Bank's policy to be open about its activities and to welcome and seek out opportunities to explain its work to the widest possible audience.

82. For all Category A and B projects proposed for IDA financing, during the EA process, the borrower consults project-affected groups and local Non-Government Organizations (NGOs) about the project's environmental aspects. For Category A projects, the borrower consults with these groups at least twice: (a) shortly after environmental screening (b) once a draft EA report is prepared.

83. The EA report is publicly available (a) after the borrower has made the draft EA report available at a public place accessible to project-affected groups and local NGOs in accordance with OP/BP 4.01, Environmental Assessment, and (b) after such EA report has been officially received by the Bank, but at least 120 days prior to the expected Board date. The Executive Summary of the Environmental Assessment for Category A projects also should be sent to the World Bank Board at least 120 days prior to the Board date. Here should be noted that once the borrower officially transmits the 'Category A' EA report to the Bank, the Bank distributes the summary (in English) to the Executive Directors (EDs) and makes the report available through the InfoShop.

3.2.8 The World Bank's Pollution Prevention and Abatement Handbook 1998

84. The Handbook is specially designed to be used in the context of the World Bank Group's environmental policies, as set out in Operational Policy (OP) 4.01, "Environmental Assessment", and related documents. The guidelines apply to all Bank Group-funded projects approved in principle on or after July 01, 1998. The handbook promotes the concepts of the sustainable development by focusing attention on the benefits-both environmental and economic-of pollution prevention, including cleaner production and good management techniques. The handbook provides different options for integrated wastewater management and effluent discharge requirements (Annex-B). The effluent of the CETP constructed under DEW project will fulfill the requirement as per the handbook.

3.2.9 The World Bank's Pollution Prevention and Abatement Handbook 1998

85. The World Bank Group Environmental, Health, and Safety Guidelines (known as the "EHS Guidelines") are technical reference documents with general and industry-specific examples of Good International Industry Practice (GIIP). This guidelines are initiated the International Finance Company (IFC), a World Bank Group member. The EHS Guidelines contain the performance levels and measures that are normally acceptable to the IFC and are generally considered to be achievable in new facilities at reasonable costs by existing technology. For IFC-financed projects, application of the EHS Guidelines to existing facilities may involve the establishment of site-specific targets with an appropriate timetable for achieving them. The environmental assessment process may recommend alternative (higher or lower) levels or measures, which, if acceptable to IFC, become project- or site-specific requirements. As a best practice, the DEW project will follow the guidelines during the environmental assessment of CETP and designing the environmental management plan.

3.2.10 Implications of the World Bank Policies on DEW Project

86. The project is classified as a Category A project, due to the complexity of environmental issues associated with pollution control and wastewater management. The environment assessment (OP/BP 4.01) policy has been triggered for the proposed operation. Although no impacts on natural habitats and physical cultural resources are expected, natural habitats (OP/BP 4.04) and physical cultural resources (OP/BP 4.11) are considered in the environmental and social framework preparation.

87. As the exact location of project site(s) is not known at this stage, project implementer(s) need to prepare a Limited Environmental & Social Assessment (ESA) and Environmental & Social Management Framework (ESMF). The limited ESA provides a broader analysis of the potential sites and the ESMF defines the policies and procedures to be followed during to the project implementation to adequately address the environmental and social issues. Detailed site specific environmental assessment will be required before execution of the subproject. Land Acquisition and Resettlement Policy Framework (RPF) is laying out the key principles of the World Bank's OP 4.12 and also a strategy to fulfill the policy's requirements that is mutually agreed upon. Specific Social Impact Assessments (SIA) and Resettlement Action Plans (RAP) if needed, will have to be prepared during project implementation for each component where the specific project sites can be identified.

88. The following activities will be put in place to inform affected citizens, raise their awareness of the issues, and engage them in the monitoring of water quality in the areas adjacent to the project sites:

- Information and awareness raising campaign to educate citizens and local institutions about the risks associated with heavy pollution loads discharged into the open, and direct risks posed to the local population in terms of health, safety, and cost-sharing for cleaning up. This can be done by intervening in local schools, as well as through a program of sensitization in the localities affected by industrial water waste.

- Collaborative (and third-party) monitoring of water quality where national universities work together with local NGOs or citizens groups to monitor the operation of effluent treatment plants, as well as the quality of discharged water. Participating industries should also be part of this tripartite monitoring to avoid possible conflicts and at the same time to promote their behavior of those who take action to clean up.
- Establishment of grievance procedure for parties affected by discharge of pollutants into the open. There should be a clear mechanism for addressing concerns of affected citizens and local institutions, so that grievances are addressed adequately and in a manner that leads to resolution of issues. The grievance redressing procedure should indicated where to lodge a complaint, the roles of all stakeholders in addressing the issues, the timing of the process, and the mechanisms for appeals at various levels in the process.
- Periodic dissemination of findings of water quality monitoring focusing on improvements and targets reached by industries that have improved their overall discharge loads. This will work as a "positive disincentive" for other less-compliant factories that would not appear on the list of best performing companies. Reports should be made available publicly and provided to buyers.
- National level debates on issues of industrial water pollution, engaging the media with op-ed pieces, visual reportages, and round-tables to bring out positive experiences emerging for the DEW project and at the same time to continue raising awareness among the public on the need for cleaner production processes in Dhaka and in Bangladesh.

4. Alternative Analysis

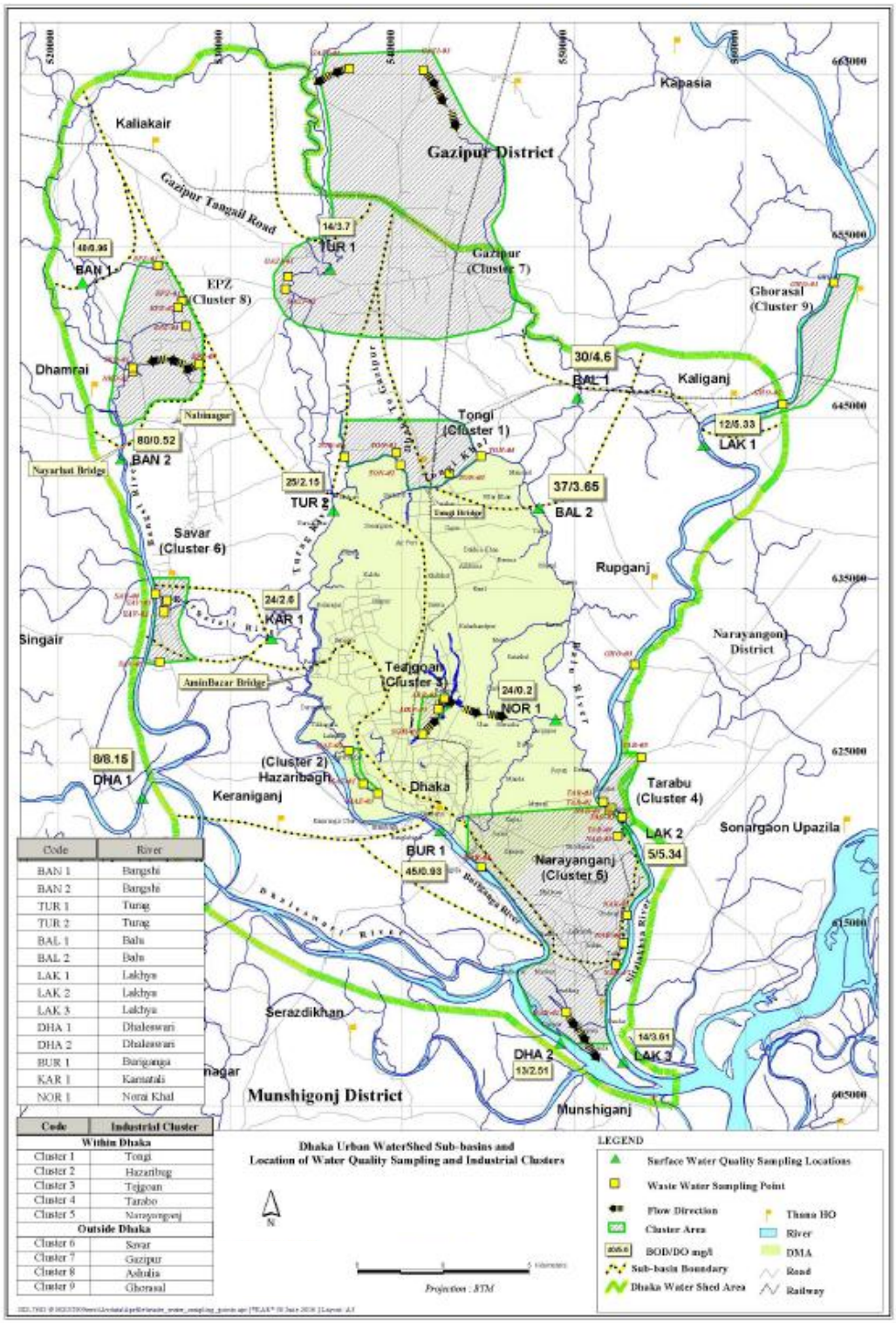
4.1 Alternative Site Analysis

89. As part of the project preparation, an industrial survey was carried out mainly to identify major pollution outfalls and to select the industries for auditing in 2006-07. The industrial survey comprised sampling and discharge measurement at important/major outfalls. Sampling of effluent was carried out at 41 major outfalls from the 9 industrial clusters[3]. The locations of the 9 clusters are shown in the Figure - 2 and a brief description of clusters with 41 outfalls position is provided in Annex-C. These 41 major outfalls, originating from the industrial clusters, also contain domestic wastes. The samples were tested, for the following 14 parameters, at the Environmental Engineering Laboratory of Bangladesh University of Engineering and Technology (BUET):

- Dissolved oxygen (DO)
- Biochemical oxygen demand (BOD_5 at 20^OC)
- Chemical oxygen demand (COD) [$K_2Cr_2O_7$ method]
- Chloride (Cl)
- Ammonia (NH_3-N)
- Ammonium (NH_4-N)
- Nitrate (NO_3-N)
- Chromium (Cr -Total)
- Cadmium (Cd)
- Lead (Pb)
- Total suspended solid (TSS)
- Total dissolved solid (TDS)
- Phosphate (PO_4-P)
- Sulfate (SO_4-S)

90. The test results of the 41 outfalls are presented in Annex-D. The test results showed that organic pollution is predominant. Out of the 41 samples collected, BOD concentrations in 34 samples have been found to exceed the EQS of 50 mg/l, and DO concentrations in 40 samples are below the lower limit (4.5 mg/l) of the EQS. In addition, Ammonia concentrations of 19 samples have exceeded the EQS of 5 mg/l. Concentration of Chromium in only one sample (from Hazaribagh cluster where tanneries are situated) have been found too high (30.67 mg/l) in contrast to the EQS of 0.5 mg/l. Concentrations of Cadmium in three samples are higher (almost double) than the EQS of 0.05 mg/l. The test results showed that heavy metal pollution was widespread in Dhaka watershed during the sample collection. However, it should be noted that the samples was collected in 41 outfalls and only one time. The project will carry out continuous water quality monitoring during project implementation.

[3] Tongi, Hazaribagh, Tejgaon, Tarabo, Narayanganj, Savar, Gazipur, Dhaka EPZ and Ghorashal



Code	River
BAN 1	Bangshi
BAN 2	Bangshi
TUR 1	Turag
TUR 2	Turag
BAL 1	Balu
BAL 2	Balu
LAK 1	Lakhya
LAK 2	Lakhya
LAK 3	Lakhya
DHA 1	Dhaleswari
DHA 2	Dhaleswari
BUR 1	Buriganga
KAR 1	Karnatali
NOR 1	Norai Khal

Code	Industrial Cluster
Within Dhaka	
Cluster 1	Tongi
Cluster 2	Hazaribag
Cluster 3	Tejgoan
Cluster 4	Tarabo
Cluster 5	Narayongonj
Outside Dhaka	
Cluster 6	Savar
Cluster 7	Gazipur
Cluster 8	Ashulia
Cluster 9	Ghorasal

Figure -2: Locations of 9 Clusters

91. The study also attempted to compute the BOD loadings from the industrial effluents and domestic effluents. The Table -3 shows the BOD loadings from nine clusters (for outfall specific information, please see Annex-E). Reviewing Table - 3, it is evident that concerning the pollution potential of organic pollutants (~BOD effluent load), total BOD load originating from industries is much higher than that of domestic origin: contribution of industrial effluent load is found to be about 84%. However, contribution of domestic effluent load increases from 16% to 39% when BOD effluent loads of the 13 domestic wastewater outfalls (Annex-E) are taken into consideration. Even then, the contribution of industrial effluent load is more than 60%, which is absolutely significant and deserves serious consideration for any planning to reduce pollution in the Dhaka watershed.

Table - 3: BOD Loadings from Nine Industrial Clusters

Cluster	Total Generated Load (kg/d)	Total flow from outfall (m3/d)	Total Effluent Load (kg/d)	Industrial Effluent (m3/d)	Industrial Effluent Load (kg/d)	Domestic Effluent (m3/d)	Domestic Effluent Load (kg/d)	Domestic Load Retained in situ (kg/d)
Tongi	12,555	35,158	7,159	21,708	3,797	13,450	3,362	5,396
Hazaribagh	66,664	87,184	55,773	49,489	46,349	37,695	9,424	10,891
Tejgaon	70,975	229,133	59,611	157,853	41,791	71,280	17,820	11,364
Tarabo	44,816	84,672	26,962	84,672	26,962	0	0	17,854
Narayanganj	74,957	494,946	43,025	456,225	33,344	38,721	9,681	31,932
Savar	8,291	9,114	1,757	7,738	1,413	1,376	344	6,534
Gazipur	19,965	192,845	18,922	192,845	18,922	0	0	1,043
DEPZ	48,113	314,755	31,042	314,755	31,042	0	0	17,071
Ghorashal	15,850	44,928	5,422	44,928	5,422	0	0	10,428
Total	**362,186**	**1,492,735**	**249,673**	**1,330,213**	**209,042**	**162,522**	**40,631**	**112,513**

92. Another study was carried out in 2009-10 to evaluate the PPP options for industrial wastewater treatment and reuse. The study also included a comparative analysis of clusters considered earlier. The following clusters were not considered:

Hazaribagh – The government has allocated a new industrial area to relocate the tanneries at Hazaribagh

Tejgaon – This cluster is located in central Dhaka and is undergoing a major shift from industrial to increasingly commercial activities (with many heavy industrial activities now relocating to sites on the city's fringes). Since this trend is expected to continue, it would not be appropriate to invest in future large-scale industrial wastewater treatment investments in this location.

DPEZ – BEPZA Authority has taken measures to set-up CETP through private investments.

93. The comparative analysis was carried out based on certain parameters which includes technical aspects including environmental and social issues. The parameters are: i) Delineation of area; ii) industry density; iii) water quality impacts; iv) other direct parameters; v)

homogeneity of effluent; vi) land for CETP; vii) options for pre-treatment; viii) types of drainage and distance from river; ix) history of conflict/disputes; x) resettlement issues; and xi) disruption during construction. The comparative analysis is shown in Annex-F. The study recommended the following sites for CETP construction.

- Konabari-Kashimpur under Gazipur district
- Fatullah under Narayanganj district (Narayanganj II)
- Enayetnagar under Narayanganj district (Narayanganj III)

94. The feasibility study currently on-going considered the above 3 clusters for the CETP site selection. The following criteria have been considered in feasibility study to finalize the locations.

- Development, Operation and Maintenance of CETP
- Industrial density
- Nature and type of industries
- Availability of land for the proposed pilot CETP
- Cost of land
- Existing drainage/sewerage pattern and storm water drainage facility
- Resettlement issues during land acquisition for the proposed CETP
- Access roads for the construction of CETP
- Water quality impacts
- Distance from the River to discharge the final effluent after proper treatment
- Domestic waste collection, treatment and discharge facility
- Population density within the area
- Separation of domestic waste and industrial waste facility

95. The feasibility study team identified the following positive aspects of the Konabari-Kashimpur cluster under Gazipur district.

- Present collection of industrial wastewater is in a planned manner leading to the River through natural khal &/or pipeline
- Land is available (open space without any structure) for the construction of proposed pilot CETP near the present wastewater outlets and comparatively cost of land is cheaper in comparison to other two clusters
- Access is good for the construction of the CETP, both road and river communication is good
- Piping cost for collection of wastewater will be relatively low
- Considerable number of industries will be benefited with the CETP
- Area is not densely Populated
- Domestic wastes and industrial wastes can easily be treated in the CETP, because the present population density is low
- If two CETP can be constructed within this cluster – one for the northern discharge and one for the southern discharges – it will become possible to arrange two different

treatment models. This in turn will enforce the Pilot project, as two different options for the future plants may be compared and evaluated

- A major constraint for both sites is the available limited area – 4 ha at each site. As a conclusion – this constraint limits the type of feasible technologies to types with a rather small foot print. Furthermore it will not be possible to handle the entire amounts of wastewater at these limited sites, even if compact plants are selected
- Some industries have their own ETP and thus pre-treatment may not be required in many industries
- Large number of medium to large scale industries and many small industries, largely dominated by textile industries
- The cluster is located upstream of the Turag River and thus River pollution will be reduced to a certain extent and thus health hazard would also be reduced
- Resettlement issue will be very low i.e. insignificant
- This cluster is not congested
- Other factors such as willingness to pay or ability to pay O&M cost and sharing of the capital investment cost are more or less equal to other clusters i.e., positive
- There is no major disadvantage for the construction of Pilot CETP

96. Contrary to the above advantages of the Konabari-Kashimpur cluster, the feasibility study team identified the following limitations of Fatullah and Enayatnagar clusters under Narayangonj district.

- Both clusters are densely populated
- Suitable land for the pilot CETP is not available and costs for land acquisition land are high
- Resettlement issues are very high, because suitable open space is not available
- There is no space available for pre-treatment within many of the industries
- Large quantities of domestic wastewater are combined with the industrial wastewater' which cannot be separated without both time consuming work and excessive costs
- It may become a considerable risk that if CETPs are constructed within the area, only marginal environmental improvement would be noticed
- Wastewater treatment process including both domestic and industrial waste water would be more appropriate solution for these two clusters
- An alternative – more suitable – option for these two clusters may be to connect with the existing Sewage Treatment Plant of DWASA at Pagla
- Other factors such as homogeneous wastewater quality, willingness to pay or ability to pay O&M cost and sharing of the capital investment cost, access for the construction of CETP etc. are more or less equal to Konabari-Kashimpur cluster under Gazipur district i.e., positive

Conclusions

97. The pollution prevention and pre-treatment activities under phase I will be made available to textile factories in all 3 clusters: Konabari-Kashimpur, Fatullah and Enayatnagar. Only one section/part of one of these existing three clusters will be eligible for CETP under Phase II under the current proposed financing (although the geographical scope may subsequently be expanded through additional financing).

98. Based on the preliminary technical assessment of the pre-feasibility study, certain parts of the Konabari-Kashimpur industrial cluster appear best suited, from a technical point of view, for the construction of medium sized CETP under phase II. It is therefore currently the front-running cluster. For this reason, this ESMF will now focus pre-dominantly on the Gazipur cluster. Table -4 shows results of industrial and domestic connection survey in Gazipur in 5 different sampling locations.

Table -4: Summary of Industry/Domestic Connection Survey

Sl No.	Sampling Location	Total Industry	Type			ETP Status		
			Large	Medium	Small	Yes	No	Not Provided
1	Katlakhali Khal, (GAZI-01)	7	3	3	1	4	3	0
2	Goranbar Konabari, (GAZI-02)	19	4	2	13	4	12	3
3	Baimail Konabar BSCIC (GAZI-03)	101	5	20	76	2	43	56
4	Nayapara Khal, (GAZI-04)	14	4	7	3	5	8	1
5	Kashimpur Khal, (GAZI-05)	2	2	0	0	2	0	0
6	Summary	143	18	32	93	17	66	60

99. Nevertheless, since the construction of CETPs ultimately need to be demand driven (based on willingness to pay demonstrated under Phase I of the project), the relative demand between and within the 3 clusters will need to be assessed before making the final assessment on both the design and location of the CETPs.

4.2 No Action Alternative

100. The No Action Alternative would see the continued release of untreated wastewater into the canals and rivers around Gazipur district, exacerbating the deterioration of the natural ecosystem and health hazard in the adjacent areas. In addition, the Greater Dhaka watershed demands innovative and sustainable model to improve the industrial production system and effluent discharge into the nature. Especially there are pressures from the international buyers of textile and readymade garments industries to treat their effluent.

4.3 Alternative Analysis- Individual vs. Common Effluent Treatment Plant

101. Alternative analysis was carried out between individual effluent treatment option vs. common effluent treatment options in terms of cost, environmental impacts and land availability. This has been done taking into consideration of the experience in other similar other cities in the region and also urban settings of Bangladesh. The following are the general advantages of CETPs over Individual ETP.

- facilitates 'economy of scale' in waste treatment, thereby reducing the cost of pollution abatement for individual SMEs
- addresses the 'lack of space' issue - CETP can be planned in advance to ensure that adequate space is available including plans for expansion in future
- homogenization of waste water
- relatively better hydraulic stability
- professional control over treatment can be affordable
- facilitates small scale units, which often cannot internalize the externalities due to control of pollution
- eliminates multiple discharges in the area, provides opportunity for better enforcement *i.e.,* proper treatment and disposal
- provides opportunity to improve the recycling and reuse possibilities
- facilitates better organization of treated effluent and sludge disposal *etc.*

102. ***Cost:*** Individual ETPs for medium to large textile factories in Dhaka typically cost between 1 and 3 million USD to build and between 9-10 Tk/m^3 to operate. It is anticipated that around 40 factories will be able to connect to a single CETP costing around 40 million USD. Due to conversion of scale, CETP will cost on an average 5-6 Tk/m^3 to run.

103. ***Environmental Impacts:*** A centrally operated CETP is more likely to yield positive environmental impacts. Due to intense monitoring requirements, and limited DOE capacity in terms of available technical staffs and logistics, it is much harder to effectively monitor the sound, continuous operation of many individual ETPs. There are also currently no provisions for the disposal of waste (including sludge) resulting in additional pollution risks. In contrast, a single CETP under the responsibility of a single operator reduces the monitoring burden of DOE. Moreover, the operator is much more likely to have greater operational know-how in terms of the sound management of a CETP, including health and safety and appropriate treatment processes. Finally, the construction process and final disposal of waste (including sludge) will be closely regulated by DOE, and will be done under the umbrella of a new CETP operations and sludge disposal guidelines (to be finalized during phase I of the project).

104. ***Land availability:*** Although land availability is a major constraint for CETPs, land availability is also a major constraint for individual factories, particularly smaller ones, who simply do not have the space and therefore cannot construct an ETP on their own premises. Moreover, it is important to note that many individual smaller textile factories simply do not have access to either the land (discussed above), or the financial resources or the managerial / technical know-how and time to invest in building and managing an ETP. In sum, for many textile factories, the choice is not necessarily an assessment of the cost-benefits of the ETP vs.

CETP option. For many of the smaller factories who face basic constraints mentioned above, CETPs may be the only option available to them in order to comply with national and international environmental standards and maintain export market share. However, it is not expected that the CETP will fully replace the ETP, rather it provides a complimentary solution, particularly appropriate for small and medium textile factories within close proximity of each cluster.

4.4 Alternative Pre-treatment Options

105. The CETP treatment options are being designed to minimize the need for extensive pre-treatment, since this is an expensive and complex process which is beyond the capacity of this project to implement. Rather, the onus will be on the CETP design to have a sufficiently resilient system. Around 80-90% of textile factories will therefore be able to discharge their effluent after basic pre-treatment only. While the project will help all participating factories incorporate basic pre-treatment, more extensive treatment options will be restricted to either very large textile factories or non-textile factories interested in taking part.

106. These pre-treatment options at various industries will be required for mainly i) to protect the CETP from disturbances by toxic or other hazardous components; ii) to safeguard that the effluent standard for the CETP can be complied with the national standard (this may require pre-treatment aiming at substances, which cannot be removed by CETP); and iii) to safeguard that the sludge from the CETP will have acceptable properties for a subsequent recycling. Three types of pre-treatment options are reviewed for project design. However, actual option available to individual factories will be decided during the first phase.

Basic Pre-Treatment

107. Some form of basic pre-treatment is likely to be required for all medium and large textile factories (but smaller ones may be exempt). This basic pre-treatment will include the some or all of the following steps:

- Screwing (rag removal by a grid)
- Oil separation (skimming of floating oil and grease and scum)
- Equalisation (to buffer incidental high loads of pollutants)
- Neutralization (to bring wastewater to a safe Ph of 6-8.5)
- Sedimentation (to remove sand and settleable matter)

108. In addition, combined flow metering and sampling box will be considered to measure effluent flow and the allow proper (flow proportional) sampling. These data from individual participating factories to be collected during phase I will be critical to enable the final calibration of the CETP design.

Pre - treatment 1

109. Pre-treatment 1 may be required for 10% participating factories. The following measures aim primarily at ***protecting the biological treatment or the sewer system from disturbances or damages***, but may also be required for ***complying with effluent standards,*** as well as ***safeguarding acceptable sludge qualities***, e.g. for recycling to agriculture.

- ***Extreme pH values*** (acid, pH<6 and alkaline, pH>8.5) have to be neutralized through the addition of alkali or acid, respectively, preferably in combination with an automatic pH control
- High concentrations of ***heavy metals*** have to be reduced, e.g. by some type of chemical treatment, or by suitable process changes/improvements within the industry. The latter would have the purpose of reducing the input of metals into or reducing the discharges of metals from the processes
- High concentrations of ***mineral oil*** may occur at workshops and similar establishments. Will have to be reduced, e.g. by some conventional type of oil separator, sometimes enhanced by chemical or other advanced methods.
- High concentrations of ***other toxic substances***, such as pesticides, have to be reduced, or rather eliminated. Possible methods may be internal process measures, or external treatment by chemical and/or biological methods. Choice of method is definitely depending on the individual case.
- High concentrations of ***sulphate***, which may be corrosive to concrete and create other problems (as mentioned above), can be reduced only by reducing the consumption or formation of sulphate within the industry.

Pre - treatment 2

110. Pre-treatment 2 may be required for 10% factories. The following measures aim primarily at ***protecting the WWTP from overloading***, with respect to organic matter (BOD, COD), suspended solids (TSS), or nitrogen (N) and phosphorus (P) compounds. This may also be required for complying with effluent standards:

- High ***TSS*** concentrations may have to be reduced by treatment in settling tanks, filters etc.
- High ***BOD*** and ***COD*** loads normally have to be reduced by biological pre-treatment, possibly in connection with chemical flocculation.
- The risk that high concentrations of ***nitrogen*** and ***phosphorus*** would lead to overloading is usually negligible. If pre-treatment would be required, biological and/or chemical methods could be applied.

111. The discharge of these components (BOD, COD, TSS, N and P) from industries may also – depending on the type of industry and the particular circumstances – be reduced by internal process changes.

112. There is a basic difference between the two groups of substances, the presence of which may lead to a requirement of pre-treatment, as described above. This can be summarized as follows:

- The ***toxic substances*** (heavy metals etc.) - or other substances with a ***damaging effect*** - have to be reduced down to the stipulated standards, if the operation of the sewer system and the CETP shall not be seriously jeopardized.
- The ***organic substances*** (BOD, COD), TSS, and possibly N and P compounds, can be supplied to the CETP up to such levels that the design loads are not exceeded. As long as *overload is not occurring*, effluent standards will be complied with, but the increased load will increase the operation costs. In case of *overload* there is a risk of exceeding effluent standards after treatment. These situations should normally be counteracted by the operator of the CETP by adopting discharge fees to be paid by the industries – e.g. as Taka/kg COD – which depends on the level of the discharge. For instance, above a critical discharge level the fee is significantly raised.

4.5 Alternative Treatment Options

113. A wide range of treatment technologies are found within the wastewater sector. The industrial cluster of Konabari-Kashimpur under Gazipur is polluted primarily with organic pollutants, which are usually measured as Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD).

114. The selection of a relevant treatment process for wastewater is a complex task, and a number of factors are to be involved. Principally the selection of treatment processes is very simple. There are basically only two models relevant for treatment, "Transformation" and "Separation". Virtually all biologic treatment methods are examples of transformation processes, where organic matter is converted and degraded from potentially polluting agents into water and gases, deemed harmless to the environment.

115. Separation takes place as settling, sieving, filtration or flotation. This is found at a number of different types of wastewater treatment processes, and normally in conjunction with biologic reactors. Separation also includes another important process feature at a treatment plant: Concentration, which is an indispensable part of the sludge management. Dewatering of sludge, which is a concentration process, is a prerequisite at most CETPs.

116. The treatment process selection is also dominated by the effluent standards, financial soundness and ease of operation under local environment. The feasibility study considered a number of treatment options for the Gazipur clusters. These are: (i) Extended aeration (oxidation Ditch); (ii) Sequencing Batch Reactors (SBR) systems; (iii) Dual power aerated lagoons; (iv) Anaerobic reactors + aerated lagoon; (v) Trickling filters + chemical precipitation; and (vi) Chemical precipitation systems. Comparative analysis of these 6 options are discussed in Annex-G.

117. A Sequencing Batch Reactor (SBR) system- a fill and draw activated sludge system is likely to be highly completive and replicable model in industrial clusters with large proportion of textile factories (and other with high organic content). It has small land foot-print, which means unoccupied sites can be identified in many of Dhaka's industrial pollution hotspots. This land may initially be acquired through government, but over time it is expected to also be purchased by privately. Both O&M and capital costs are competitive compared with only other pollution abatement option (individual chemical or biological treatment option).

5. Preliminary Environmental and Social Baseline

5.1 General

118. Gazipur district (coordinate 22°11'N90°20'E) with an area of 1,741.53 aq. km, is bounded by Mymensingh and Kishoreganj districts on the north, Dhaka Narayanganj and Narsingdi on the south, Narsingdi on the east, Dhaka and Tangail district on the west. The main rivers are Brahmaputra, Shitalakshya, Turag, Bangshi, Balu and Banar. The Figure -3 shows the map of Gazipur district. The primary identified sites for CETP is under Gazipur Sadar Upazilla. This chapter provides the generic baseline for the proposed project area. The detailed baseline information and analysis will be carried out during the sub-project specific environmental and social analysis.

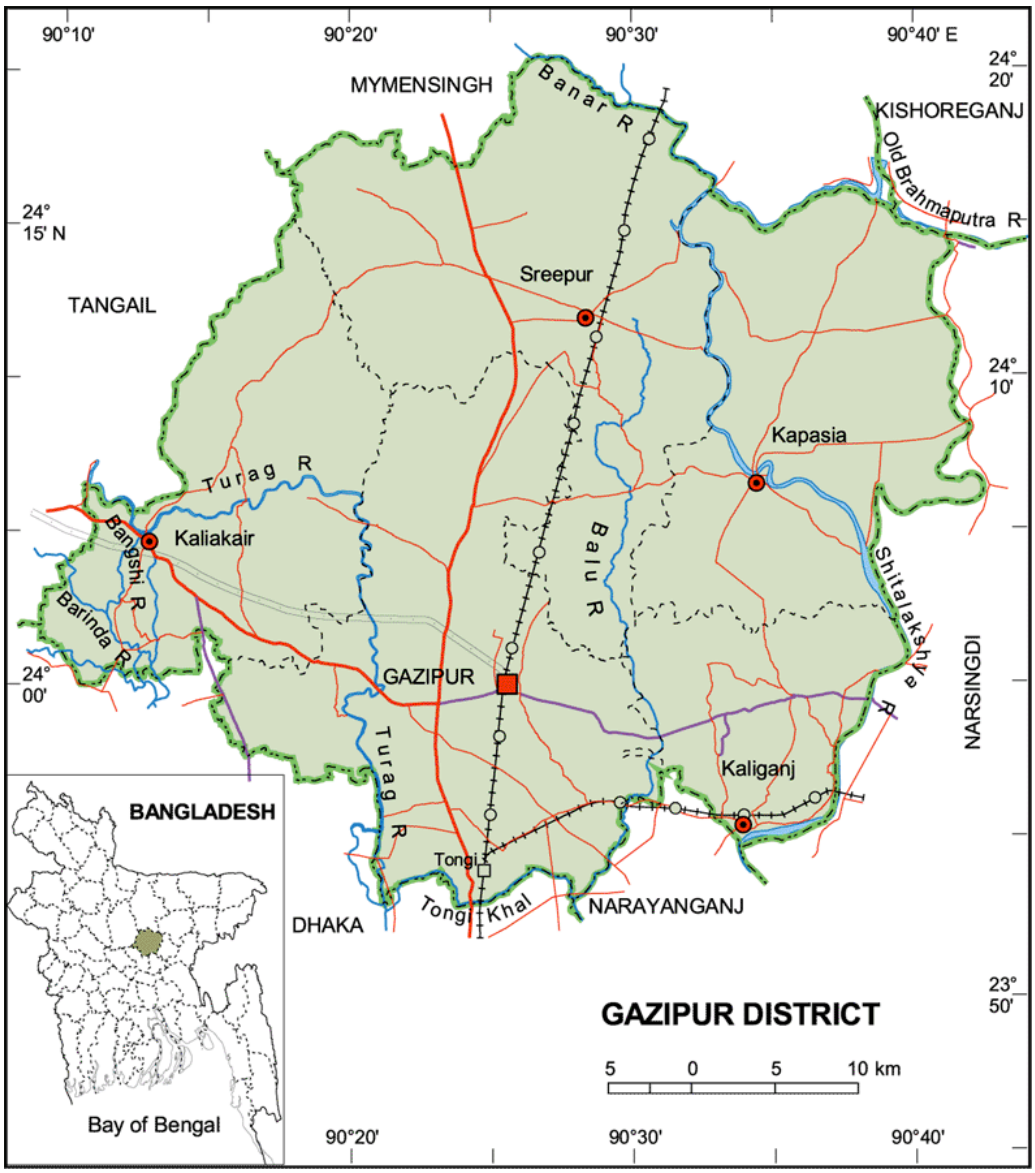


Figure – 3: Map of Gazipur District

119. The cluster enjoys all basic infrastructure facilities such as, electricity, gas, telecommunications, internal drainage etc. Some of the notable features of the surroundings are:

- Like other parts of Bangladesh, domestic animal and common birds are seen around the cluster;
- There are only a few high rise buildings (3-4 stories and above) and no monuments or features of historic interest on and around the cluster are found;
- Features of scientific interest on and around the cluster are absent;
- There is no development of scenic or recreation facility near the cluster.

5.2 Physical Environment

5.2.1 Topography

120. Topographically the cluster is almost flat, with many depressions, natural khals, bounded by the Turag River. There are many vacant low lands on the bank of the Turag River, where many brick manufacturing industries exist. The depressions and canals are dominated by organic clay and peats. The cluster lies on the Madhupur Clay with its average thickness of about 10 meters consists of over-consolidated clayey slit and is underlain by the Pleistocene Dupi Tila formation. Most depression and canals are tectonically controlled.

5.2.2 Climate

121. Gazipur has a humid sub-tropical climate with large variations between summer and winter temperatures. The cluster has a tropical monsoon climate. It has three main seasons.

- Summer/Pre-monsoon - March to May
- Rainy Season/monsoon - June to October
- Winter season - November to February

122. The rainy season is hot and humid having about 90 percent of the annual rainfall. The winter is predominately cool and dry. The summer is hot and dry interrupted by occasional heavy rainfall. The annual average temperature maximum 36^0C and minimum temperature is about 12.7^0C. Annual rainfall is about 2,376 mm.

5.2.3 Land use

123. Like other parts of Bangladesh agricultural crops dominate within the area and there are many “Brick fields” within the cluster. The main crops are rice, wheat, potatoes, garlic, chilli, onion and other vegetables. There are many industries located within the cluster including “Konabari BSCIC”. There are many seasonal fruits e.g. Jackfruit, mango, etc. The primary sites identified for the construction of CETP are khas lands and not used for any major economical activities. Some lands are used for seasonal cultivations.

5.2.4 Geology and Geomorphology

124. The Gazipur cluster lies on the southern corner of Madhupur Tract along the Old Brahmaputra, Turag, Bangshi and Sitolakkhya Rivers. This tract is made of sediments of Pleistocene age which is underlain by the Plio-Pleistocene Dupi Tila Formation. The Gazipur study area lies in the deep geosynclinals part. It is characterized by a huge sedimentary sequence of mostly tertiary age testified high tectonic instability or mobility. The stratigraphy of the deep basin including fore deep and fold belt to the southeast is characterized by an enormous thickness of tertiary sedimentary succession. The rocks encountered here are much younger in geologic age and ranges between Oligocene and Recent time. The basin has got the record of rapid subsidence and sedimentation.

125. Geological structure in Gazipur is delineated mainly based on geophysical survey named as Titas structure. This is an anticlinal fold, which has no surface geomorphic expression and is covered by Titas-Meghna River floodplain deposits. Titas anticline is a north-south elongated semi-domal structure influenced by tectonically positive element from the deep subsurface. Titas anticlinal closure is one of the largest (168 km) in Bangladesh. The structure is asymmetric in nature with steeper dip in the eastern flank and gentler slope in the western flank. There has been indication of faulting in the deeper level in the eastern flank, as shown by seismic reflection discontinuities.

5.2.5 Surface Water Resources

126. As other parts of the country, this cluster also receives sufficient amount of rainfall (average annual rainfall is 2376 mm). Turag River is the major surface water body in the Konabari-Kashimpur cluster under the Gazipur district. This river is used for local navigation and multipurpose uses during monsoon, carrying wastewater from the adjoining industries and to carry runoff water from adjoining agricultural lands, which might contain pesticides and residual fertilizers. These are also used for seasonal fishing purposes. Regarding pollution load concern, Turag River receives discharges from all the industries situated along the Joydebpur-Tangail road and Konabari-Kashimpur Industrial Zone, which include textiles, footwear, food, chemical, pharmaceutical, detergent, etc. Some of the industries have got their own effluent treatment plant (ETP) and many of them have got no ETP, as a result the surround surface water bodies are polluted, which is a major concern of environmental degradation of the cluster. There are many brick manufacturing industries around the bank of Turag River and the burnt brick are carried through boats along the Turag River. Many people use boats along the Turag River for their local transportation.

5.2.6 Ground Water Resources

127. There is a good availability of ground water that is being used by hand pumps for drinking and domestic purposes. Some industries are using deep tube wells within their premises to meet the requirement of quality water for various purposes. The scattered homesteads are using hand tube well (HTW) to meet their domestic demand. No data is presently available on pumping rate. Iron and arsenic are the major water quality concern for drinking purposes in Gazipur cluster.

5.3 Ecological Resources

128. The ecological settings of the cluster are mostly with wetland, homestead and roadside vegetation etc. The homestead vegetation has a positive effect on improvement of soil moisture through shading and mulching process. The trees growing at homesteads also ensure for easy access to the fuel wood, fodder and other products. A large number of multipurpose trees (fruit, timber, fodder, medicine) are grown in the cluster. The most common among them are jackfruit, mango, lemon, banana etc. Two major types of fauna viz., **terrestrial and aquatic fauna** have been identified in and around the cluster.

5.3.1 Flora

129. Wetland flora plays a vital role for biodiversity conservation. The wetland habitat is characterized by anaerobic conditions, which inhibits normal plant growth. The cluster supports two types of wetland e.g., (a) Permanent wetland and (b) Seasonal wetland. The permanent wetland includes rivers and perennial water bodies. This wetland provides refuge and shelter for the most of the aquatic flora. The seasonal wetland serves as the cultivated land. Aquatic flora in the cluster can be divided into communities based on a set of environmental conditions. The communities are as follows:

- Free-floating plants
- Sub merged floating plants
- Rooted floating plants
- Sedges and meadows
- Marginal vegetation

5.3.2 Forest and Protected Areas

130. Bhawal National Forest and Bhawal National Park is the biggest forest and protected area with the Gazipur district. These are far away from the proposed CETP sites and no negative environmental impacts are anticipated due to construction of CETPs.

5.3.3 Birds, Wildlife and Wetland Habitats

131. Leaving aside the common birds like crows, sparrows, shaliks, cuckoos etc. and some domestic cattle, no other wild animals inhabit the area. The wildlife that fully depends on the terrestrial land throughout their whole life, their existence, shelter, food, nesting, breeding and also producing own offspring is called terrestrial fauna. Core components of the terrestrial fauna are amphibian, reptile, birds and mammals.

5.3.4 Fisheries

132. Fresh water fish habitat such as river, pond and ditches exist in and around the cluster, which provide shelter, feeding, and spawning ground for different types of fresh water fish

species. Large-scale human intervention for catching fresh water fishes from their natural habitat/Turag River has been observed. The reproduction, breeding and multiplication of aquatic fishes are very finely tuned and adjusted to the rhythm and amplitude of monsoon flooding in and around the proposed cluster. There are many fishermen within the cluster whose income source is mainly fishing from the Turag River as well as natural canals.

5.4 Social and Cultural Profile

133. Social & cultural profile of this cluster is similar to other parts of Bangladesh. Muslims represent about 90% of the local population, Hindus & other religion represent about 10%. Muslims observe big festivals of End-all Azha & Eid-ul Fitre and Hindus observe Durga Puja, Kali Puja etc.

5.4.1 Population and Community Characteristics

134. The population of the district as per 2001 Census is 2,026,244 with male 51.77%, female 48.23%; Muslim (91.9%) is the dominant religion and other are Hindu (7.5%), Christian (0.4%) and Others (0.2%). Ethnic nationals are Rajbangshi (Koch), Garo and Mandi. The population of the areas where the CETP siting is proposed is about 62,772 in konabari and about 48,272 in Kashimpur, totaling 111,044.

5.4.2 Socio-Economic Conditions

135. The Average literacy is 36.25% (male 43.2% and female 29.3%). The major sources of income within the population of this cluster are agriculture, agricultural labour, wage labour, industrial labour, commerce, small shops, small shops in the markets, service, transport, construction, fisheries, hawker, house renting out, land renting out for the Brick field and others.

5.4.4 Physical Cultural Resources

136. There are many physical cultural resources within Gazipur District, e.g. Bhawal National Park, Bhawal National Forest, Bhawal Rajbari, Natural beauty of Pirojali, Shitalakkhya River, Turag River, Old Brahmaputra, Bangshi, Balu & Banar Rivers.

6. Possible Environmental Impacts

6.1 General

137. The operation and construction of any wastewater treatment plant and accompanying wastewater collection system may result in potential negative impacts including air, soil and water pollution associated with the following: (a) construction of CETPs; (b) treatment of wastewaters; (c) management of waste sludge from the treatment plants; (d) operations; and (e) decommissioning of CETPs. The following impacts are to be especially considered: odors, noise, spreading of insects, and potential health hazards in the vicinity of discharge, exploitation of the nearby water bodies, potential changes in flora and fauna due to the discharge of treated wastewaters, decline in land value, and disposal of sludge from the treatment plant. In general, the environmental impacts will be observed in 3 phases: i) site development phase; ii) construction phase; and iii) operation phase. This chapter describes the possible environmental impacts with general mitigation measures for CETPs.

6.2 Site Development Impacts

6.2.1 Loss of Natural Habitat and Biodiversity

138. The clearing of existing vegetation during construction and the development of the facility may result in the complete loss of associated ecological habitats and their fauna, within the footprint of the development. Noise, vibrations, and intrusive activities related to preparation and construction works may tend to scare away any animals remaining on the site after vegetation clearance. These are the environmental trade-offs for the anticipated improvement in the water quality and surrounding ecosystem of the clusters.

Common Mitigation Measures

139. The purpose of the wastewater treatment project is to reduce the current amounts of untreated sewage that enters into natural ecosystem, thereby allowing for recovery of the inherent natural productivity of the water bodies and restoration of the economic benefits to be derived from a healthy ecosystem. In addition, clearing and construction activity should be restricted to within the footprint of the development. There should be no side-tipping of excavated material or cleared vegetation unto areas outside the footprint.

6.2.2 Dust

140. It can be anticipated that a certain amount of air borne particulate matter (dust) will be generated by earth moving activities during site development and construction. This situation may be worse during the dry season. Air borne particulates may pose a hazard to residents in the vicinity or downwind of the construction site that suffer from upper respiratory tract problems. Otherwise it may only be a nuisance. The impact of dusting is short-term, lasting for the duration of the construction activity, but it may be severe if it causes significant health problems.

Common Mitigation Measures:

141. Access roads and exposed ground should be regularly wetted in a manner that effectively keeps down the dust. Stockpiles of fine materials should be wetted or covered with tarp especially during windy conditions. Workers on the site should be issued with dust masks during dry and windy conditions.

6.2.3 Noise

142. The use of heavy equipment and labor activities during site clearance, land filling and road construction works will inevitably generate noise. However, the proposed CETP sites are sufficiently far away as to not be affected. The remoteness of the site should help to ameliorate noises.

Common Mitigation Measures:

143. The communities that may be affected by noise should be consulted in advance to reduce degree of annoyances. No noise creating equipment should be used during night time. Workers operating equipment that generates noise should be equipped with noise protection gear. Workers operating equipment generating noise levels greater than 80 dBA continuously for 8 hours or more should use earmuffs. Workers experiencing prolonged noise levels of 70 – 80 dBA should wear earplugs.

6.3 Construction Impacts

6.3.1 Construction Material Sourcing

144. The construction materials such as sand and brick are normally obtained from the local vendors. Sand is collected from quarry operations to nearby rivers. Bricks are produced using clay and firing by coals. Conscious or unwitting purchase of these materials from unlicensed operations indirectly supports, encourages and promotes environmental degradation at the illegal quarry sites, creates air pollution from using energy inefficient technologies and causes medium to long-term negative impacts at source.

Common Mitigation Measures:

145. Construction materials must be obtained from officially licensed and approved quarries and brick fields. The copies of the relevant licenses made available for inspection at the site by the Contractor.

6.3.2 Transportation of Materials

146. The various materials required construction will be obtained from sources elsewhere and transported to the site. Transportation of these materials, typically in over-laden and sometimes uncovered trucks, usually results in undue road wear-and-tear. Special note is made here of the unpaved road surfaces in the area. In the case of fine earth materials, dusting and spillages occur on major roadways between source and site. Dusting degrades local air quality and material

spillages worsen driving conditions and increase the risk of road accidents. These occurrences represent indirect, short-term, reversible, negative impacts on public health and safety.

Common Mitigation Measures:

147. All fine earth materials must be enclosed during transportation to the site to prevent spillage and dusting. The cleanup of spilled earth and construction material on the main roads should be the responsibility of the Contractor and should be done in a timely manner (say within 2 hours) so as not to inconvenience or endanger other road users. These requirements should be included as clauses within the contracts made with relevant sub-contractors. The transportation of lubricants and fuel to the construction site should only be done in the appropriate vehicles and containers, i.e. fuel tankers and sealed drums. As far as possible, transport of construction materials should be scheduled for off-peak traffic hours. This will reduce the risk of traffic congestion and of road accidents on the access roads to the site. Appropriate traffic warning signs, informing road users of a construction site entrance ahead and instructing them to reduce speed, should be placed along the main road in the vicinity of the entrance and main Gazipur town. Flagmen should be employed to control traffic and assist construction vehicles as they attempt to enter and exit the project site.

6.3.3 Materials Storage

148. The improper sitting of stockpiles and storage of sand, gravel, cement, etc., at the construction site could lead to fine materials being washed away, during heavy rainfall events, into rivers and nearby agricultural lands. This would not only represent a waste of materials but would also contribute to turbidity and sedimentation with consequent negative impacts. Refueling and maintenance of large vehicles and earth moving equipment will take place at the construction site and therefore fuel and lubricants will have to be stored on the site. This will increase possibilities for accidental spills of hydrocarbons and contaminants could be washed into the river and adjacent areas.

Common Mitigation Measures:

149. The stockpiling of construction materials should be properly managed and controlled. Fine-grained materials (sand, marl, etc.) should be stockpiled away from surface drainage channels and features. Covering of open piles stored materials should be considered to prevent them from being washed away during rainfall. Safe storage areas should be identified and retaining structures put in place prior to the arrival and placement of material. Hazardous chemicals (e.g. fuels) should be properly stored in appropriate containers and these should be safely locked away. Conspicuous warning signs (e.g. 'No Smoking') should also be posted around hazardous waste storage and handling facilities.

6.3.4 Construction Waste Disposal

150. Solid waste generated during site preparation and construction work would include cutting of vegetation and typical construction waste (e.g. wasted concrete, steel, wooden scaffolding and forms, bags, waste earth materials, etc.). This waste would negatively impact the site and surrounding environment if not properly managed and disposed of at an approved

dumpsite. Cleared vegetation burnt onsite would generate smoke, possibly impacting negatively on ambient air quality and human health. Vegetation and solid waste, if allowed to accumulate in drainage ways, could cause localized pooling and flooding. Pooling of water, in turn, would create conditions conducive to the breeding of nuisance and health-threatening pests such as mosquitoes. Poor construction waste management constitutes a short-term negative impact.

Common Mitigation Measures:

151. A site waste management plan should be prepared by the contractor prior to commencement of construction works. This should include designation of appropriate waste storage areas, collection and removal schedule, identification of approved disposal site, and a system for supervision and monitoring. Preparation and implementation of the plan must be made the responsibility of the building contractor with the system being monitored independently. Vegetation and combustible waste must not be burned on the site. Reusable inorganic waste (e.g. excavated sand) should be stockpiled away from drainage features and used for in filling where necessary. Unusable construction waste, such as damaged pipes, formwork and other construction material, must be disposed of at an approved dumpsite.

6.3.5 Other Waste Management

152. Inadequate provision of toilets for workers can lead to ad hoc defecation in secluded areas on the site, thus creating unsanitary conditions and sources of odor and fly infestation. Improper disposal of food cartons and other domestic forms of construction camp garbage could lead to littering of the site and pollution of adjacent areas.

Common Mitigation Measures:

153. Sanitary latrine facilities with adequate water facilities should be constructed for the workers. Provisions should be made for waste bins/cans and erecting ‘no liter’ signs. Arrangements should be made for the regular collection of litter and for its disposal.

6.3.6 Drainage Congestion

154. CETP site development may lead to drainage congestion and water logging if the design does not consider the changes of drainage pattern in whole area.

Common Mitigation Measures:

155. Appropriate design of drainage facilities need to be designed and implemented.

6.4 Operation Impacts

6.4.1 Sludge Leachete

154. During the drying process of the sludge on the drying beds, there is high possibility for pollution of the groundwater due to infiltration of drying beds leachate. As the drying bed

generally covers a large area, the possible negative impact is also assessed (affecting a wider surface/groundwater aquifer area). There is high possibility for groundwater and soil pollution with substances due to leakages and infiltration of the leachate from the sludge with hazardous substances disposed on temporary storage at the WWTP site.

Common Mitigation Measures:

155. Proper treatment facilities for sludge should be recommended by analyzing alternatives for sludge treatment and reduction of the quantities of sludge and to propose optimal solution according to the local conditions. In addition, regular a ground water monitoring program should be designed.

6.4.2 Odor

156. Whereas one of the main sources causing odor is scum, overloading will also result in odor problems because the treatment capacity will have been exceeded. Wind action can also cause odors. The size of the plant may also result in some degree of wave action.

Common Mitigation Measures:

157. Odor is best controlled by proper design and the nuisance risk is reduced by proper alignment of the treatment plant. Proper sizing and alignment of the plant should be ensured. Scum needs to be appropriately disposed of or properly stabilized. It is also important that the effect of wave action be carefully considered in the design.

6.5 Summary of Typical Mitigation Measures

158. The summary of the typical mitigation measures in presented in Table -5a, 5b and 5c.

Table 5a: Mitigation measures for Site Development Impacts

Impacts	Mitigation Measures
Loss of natural habitat and biodiversity	Clearing and construction activities should be restricted within the footprint of the development. Compensatory measures for loss of habitat and biodiversity – create a conservation area, plantation of same species etc.
Dust pollution[4]	Wetting of roads and exposed ground Installation of windscreens to break-up the wind flow Burning of refuse on days when meteorological conditions provide for good mixing and dispersion
Noise pollution	Heavy duty muffler systems on heavy equipment Limit certain activities (fix timing in consultation with community)

[4] Dust and noise pollution mitigation measures also applicable for construction and operation phase.

Table 5b: Mitigation measures for Construction Impacts

Impacts	Mitigation Measures
Construction material sourcing- local environmental degradation due to illegal quarry sites, air pollution from energy inefficient kilns	Must be obtained from officially licensed and approved quarries and brick fields.
Transportation of Materials- road wear & tear, traffic congestion, risk of accidents, air pollution	Enclose fine earth materials during transportation. Necessary cleaning up of roads to avoid inconvenience to other users. Transportation should be scheduled in off-peak hours in consultation with local community Flagman to control traffic and assist construction vehicles
Material Storage – washed away during heavy rainfall and discharge to water bodies creating water pollution. Also pollution from lubricants etc.	Proper planning and management of stockpiling of construction materials Identification safe storage areas and covering of fine materials should be carried out. Special plan and management for hazardous waste materials Conspicuous warning sign (e.g. 'No Smoking') should also be posted.
Localized pollution due to poor waste management	A site waste management plan should be prepared by the contractor before commencement of construction works. This should include designated waste storage areas, collection and removal schedule, identification of approved disposal sites, and system of supervision and monitoring system. Vegetation and combustible waste must not be burned at the sites. Unusable construction waste must be disposed of at an approved dumpsite.
Inadequate provision of toilets for workers may lead to unsanitary conditions and be sources of odor and fly infestation	Sanitary latrines with adequate water facilities should be constructed for the workers Provision should be made for waste bins
Improper design and construction practice many lead to drainage congestion	Appropriate design of drainage facilities needs to be designed and implemented

Table 5c: Mitigation measures for Construction Impacts

Impacts	Mitigation Measures
Pollution of groundwater due to infiltration of drying beds leachate	Proper treatment facilities for sludge by analyzing the alternative options
Odor problem due to improper operation or overloading	Proper design of system and appropriate measure for correct alignment of treatment plan

7. Possible Social Impacts

7.1 Resettlement due to Land Acquisition Issues

159. Involuntary resettlement may occur because project activities such as the construction of common effluent treatment plants, can result in temporary or permanent loss of land, crops, and other means of income generation.

7.2 Social Dimensions of project Beyond Safeguards

160. Success of the project is, among other factors, also a function of public pressure on polluters to behave more responsibly. Educating citizens living in the areas affected by heavy pollution loads is critical to continue to put pressure on polluters. The same rationale is valid in educating local institutions and local government officials. Water pollution carries a heavy cost in terms of public and individual health – costs that are externalized by polluters but internalized by citizens (via their health) and public institutions (via the cost of maintaining public health and paying for damages).

161. To that effect, the project may produce significant positive impacts by improving the overall water quality in the selected areas, both in terms of access to water as well as in terms of reduction of water borne diseases (especially skin-related).

8. Environment and Social Management Framework

8.1 Objectives of ESMF

162. The purpose of the ESMF is to prepare a Framework for Environmental and Social Assessment and Management describing brief details of potential Environmental and Social issues typically associated with the planning, designing, implementation and post implementation activities envisaged under the DEW project and provide guidelines on how to carry out Initial Environmental Examinations (IEE), Environmental Impact Assessment (EIA) and prepare Environmental Management (Mitigation and Monitoring) Plan to mitigate project induced negative environmental impacts and enhance positive environmental and social impacts due to the project interventions.

163. An ESMF is needed because of the programmatic design of DEW (see earlier section on DEW design), which means that sub-project specific Environmental and Social impacts cannot be precisely identified upfront prior to the selection of the sites and subsequent detailed site investigations are carried out in order to frame proposals and prepare engineering designs for the proposed activities at the selected sites. The ESMF shall provide the necessary background for environmental and social consideration, a checklist of potential issues to be considered and incorporated into the design of the project so that environmentally and socially sustainable execution can be achieved.

164. The ESMF highlights the general polices, guidelines, codes of practice and procedure to be taken into consideration for integration of environmental and social aspects into the project design. Adhering to the principles and guidelines and using the potential environmental issues layout in ESMF will help the implementing agencies (viz. PMUs) to ensure compliance with the related Government Polices and associated rules regulations and also with the environmental and social safeguard polices of World Bank. Therefore, the proposed ESMF shall be used as the template and guideline in order to ensure successful environmental and social compliance of the planning, designing, implementation and post execution activities envisaged under DEW project. The ESMF is only applicable to Component 2 and 3 of DEW, as the other components ***do not*** require infrastructure interventions. It may be noted that the subprojects (cleaner production) under component 2 will be considered as individual category 'B' project and subprojects (CETP) under component 3 will be considered as individual category 'A' project. The subprojects of component 2 will require partial assessment (or IEE) and subprojects of component 3 will require full environmental assessment.

165. The objective of the ESMF is to ensure that DEW activities shall address the following issues:

- Minimize potential negative impacts as a result of either individual sub-projects or their cumulative effects;
- Enhance positive environmental outcomes;
- Provide a mechanism to consultation and disclosure of information;

- Ensure that environmental and related social issues are thoroughly evaluated and necessary interventions are incorporated in the planning, designing, implementation and post construction phase of project activities through sub-project specific environment and social assessment;
- Protect environmentally sensitive areas from additional disturbance from project activities;
- Protect human health; and
- Ensure compliance and due diligence with World Bank environmental and social safeguard policies as well as with related Government Polices, regulations, guidelines and procedures as applicable to the industrial waste water treatment plant and connected infrastructures of the project.

8.2 General principles of ESMF

166. The DEW project will have positive environmental benefits, as its objective is to abate water pollution, and contribute towards improving water quality (especially in the textile and RMG sector) through interventions such as environmental audits, cleaner production, waste water pre-treatment and investment into CETPs. However, some of the physical investments will have construction-related environmental and social issues that will impact the neighborhood. These impacts are not expected to be significant and irreversible. With appropriate management (mitigation and monitoring) measures, these impacts can be mitigated as set about in this ESMF. General principles are as follows:

- The respective Project Directors of the two executing agencies shall be responsible for the environmental and social compliance in their respective components and the Project Officer of PCMU will be responsible for monitoring and seeing oversight in order to ensure overall project environmental and social compliance.
- All the executing agencies and involved private sectors shall follow the related Government rules (laws, ordinances, acts, etc) and the World Bank operational policies and guidelines. This ESMF will serve as the basis for ensuring their compliance.
- Implementing agencies shall ensure the participation of local community in planning and execution of the sub-projects and document it.
- Implementing agencies shall be responsible for ensuring clearance from the DOE, local government agencies/ local committee as necessary.
- No project activities shall be carried in any disputed lands or land restricted for development.
- The project will ensure that environmental considerations are given sufficient attention, weight and influence over design decisions of CETPs. To this end, it will carry out Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) for all CETPs and pipe collection networks supporting the CETPs.
- The implementing agency will ensure that environmental and social screening/assessment of subprojects addresses all potential environmental and social direct and indirect impacts of the project (and any potential sub-project) throughout its life: pre-construction,

construction and operation stages and mitigation measures have been taken to mitigate negative consequences and enhance positive impacts.

- The environmental assessment of the subprojects under Component 2 & 3 will require Bank clearance before implementation.

9. Environmental Assessment

9.1 Steps for Environmental Assessment

167. The **Environmental Assessment (EA)** process makes sure that environmental issues are raised when a project or plan is first discussed and that all concerns are addressed as a project gains momentum through to implementation. It is essential that an environmental assessment is carried out to determine significant impacts early in the project cycle so that recommendations can be built into the design and cost-benefit analysis without causing major delays or increased design costs. Once implementation has commenced, the EA should lead to a mechanism whereby adequate monitoring is undertaken to realize environmental management. An important output from the EIA process should be the delineation of enabling mechanisms for such effective management. An EA is a process comprising a series of steps. The key steps for environmental assessment are:

- Environmental Screening and Initial Environmental Examination (IEE)
- Environmental Impact Assessment (EIA)
- Environmental Management (Mitigation and Monitoring) Plan

9.2 Environmental Screening and IEE

168. The purpose of the environmental screening is to get relevant concerns addressed early on before further design of a project and to ensure that actions to mitigate environmental impacts or enhance environmental opportunities are budgeted for. The environmental screening is about taking stock in time and to avoid losing later opportunities. The participation and consultation with local communities are important indentifying the potential impacts of the project interventions. Environmental screening is part of the Initial Environment Examination (IEE). IEE is considered as the first level of assessment applied project identification and pre-feasibility stage. The IEE addresses the issues at project (sub-project) identification and pre-feasibility planning stage. The main objective at this stage is to help define the project (sub-project) in terms of locations, components and designs. The main activities of are to:

- assess regional resources and the effects of past interventions;
- examine the likely project-environment interactions;
- establish an effective people's participation program;
- identify the key environmental issues and the range and potential severity of impacts;
- compare the environmental consequences of project alternatives;
- prepare an initial EMP[5]

[5] Projects with potential impacts will require environmental impact assessment as per DOE act and rules. Small projects or those with little impact will not require EIA.

9.3 Environmental Impact Assessment

169. EIA will be used by the implementing agencies as a decision-making tool to ensure that the project design and implementation of activities such as dredging are environmentally sound and sustainable. During the preparation phase, the objective of the EIA is to provide inputs to the feasibility study; preliminary and detailed design of the project including institutional capacity needs and barriers to be addressed. During the implementation phase, environmental management plans (developed as a part of the EIA during the preparation phase) serve as a framework for strengthening the mitigation, enhancement and environmental monitoring measures and system in the inland water transport sector. In the preparation phase, the EIA shall achieve the following objectives:

- To establish the environmental baseline in the study area, and to identify any significant environmental issue;
- To assess these impacts and provide for measures to address the adverse impacts by the provision of the requisite avoidance, mitigation and compensation measures;
- To integrate the environmental issues in the project planning and design;
- To develop appropriate management plans for implementing, monitoring and reporting of the environmental mitigation and enhancement measures suggested.

9.4 Environmental Management Plan

170. The Environment Management Plan (EMP) outlines the environmental management procedures that will be implemented during the project period and also in the operation & maintenance period to minimize the negative impacts and implementation of enhancement measures. An Environmental Management Plan (EMP) should be drawn up as part of the EA at both IEE and EIA stages, to deal with follow-up activities during subsequent stages of project development: detailed design, construction, implementation, maintenance and decommissioning. The level of detail in the EMP will vary according to the stage of project study and development:

- For Initial Environmental Examination (**IEE)** - identification of broad management requirements and constraints; and

- For Environmental Impact Assessment (**EIA)** - identification of specific management activities, staffing (including training needs) and schedules

171. The EMP should be developed with full people's participation, with the aim of achieving consensus between the EA practitioners, project design and planning engineers, local government agencies, NGOs and local communities. The main contents of an EMP are:

- Mitigation and enhancement measures
- Compensation arrangements
- Environmental protection and monitoring activities
- Peoples' participation
- Disaster management (contingency planning)

- Organizational and institutional arrangements
- Responsibility and reporting framework
- Cost estimates for all environmental management activities – including mitigation and enhancement measures

171. Once the impacts have been analyzed, their significance will be determined, i.e., whether they are acceptable, require mitigation, or are unacceptable. Subsequently, measures will be devised to mitigate anticipated environmental changes and consequential impacts during project implementation and operation, or further reduce the residual environmental changes inherent in the selected project design. They normally include technical, social, and institutional measures to be implemented as integral elements of the project.

172. The Environmental Management Plan (EMP) sets about the mitigation measures, and needs to not only include clear recommendations for action and the procedures for their implementation but must also define a program and costs. Different environmental impacts require mitigation measures and approaches. The same impact may require multiple mitigation measures and also mitigation measures of one activity can help to mitigate other activity. In designing the mitigation measures, the following factor should be taken into consideration:

> *The feasibility of mitigation measures should be evaluated in terms of practicality, manageability and cost. Cost effective structural mitigation activities should be incorporated in the design and should be estimated and both activities and associated technical specifications will be incorporated in the bidding document.*

173. Environmental management involves the implementation of environmental protection and mitigation measures and monitoring for significant environmental impacts. Environmental protection measures are taken to: (i) mitigate environmental impacts, (ii) provide in-kind compensation for lost environmental resources, or (iii) enhance environmental resources.

174. The frequency and level of sophistication of sampling depends in part on the size of the system and the nature of its treatment processes. Monitoring is expensive; it requires laboratory facilities, equipment, and technicians. As a general principle, measure only parameters necessary for managing the system, safeguarding its staff and equipment, and protecting the environment.

175. These measures are usually set out in a plan, which covers all phases of the project from preconstruction through decommissioning, and outlines mitigation and other measures that will be undertaken to ensure compliance with environmental regulations and reduce or eliminate adverse impacts. The basic implementation arrangements should be presented – taking account of the local conditions. Responsibilities for mitigation and monitoring shall be defined along with arrangements for information flow, and for coordination between agencies responsible for mitigation A plan should specifies who/which agency is responsible for undertaking the mitigating and monitoring measures, e.g., for enforcement of remedial actions, monitoring, training, and financing. A third party may be contracted in case the local authorities' capacity is limited. Institutional strengthening activities may be proposed, including establishment of appropriate organization arrangements; appointment of key staff and consultants; and arrangements for counterpart funding.

176. Environmental monitoring involves: (i) planning a survey and sampling program for systematic collection of data/information relevant to environmental assessment and project environmental management; (ii) conduct of the survey and sampling program; (iii) analysis of samples and data/information collected, and interpretation of data and information; and (iv) preparation of reports to support environmental management.

177. Environmental monitoring is normally carried out before and during planning to establish baseline data needed for Environmental assessment and evaluating environmental impacts during project implementation. It continues through project operation to detect changes in the key environmental quality parameters, which can be attributed to the project.

178. The results of the monitoring program are used to evaluate the following: (i) extent and severity of the environmental impacts against the predicted impacts; (ii) performance of the environmental protection measures or compliance with pertinent rules and regulations; (iii) trends in impacts; and (iv) overall effectiveness of the project environmental protection measures.

179. Environmental monitoring should have clear objectives, and the survey and sampling program custom-designed to focus on data/information actually required to meet the objectives. In addition, the design of the monitoring program has to take into account its practicability considering the technical, financial, and management capability of the institutions that will carry out the program and period of monitoring that will be needed to achieve the objectives (see list below). The monitoring program should include action or emergency plans so that appropriate action can be taken in the event of adverse monitoring results or trends. It should also be constantly reviewed to make sure that it is effective, and determine when it can be stopped.

9.5 Environmental Assessment in DEW Project

180. The environmental assessment of the subcomponents (cleaner production and CETPs) will require analysis of different environmental parameters. These are:

Physical Environment

Soil – Erosion risks, Soil quality/contamination
Resources – Fuels/Electricity, Construction materials – stone, bricks, aggregates, Land specially undeveloped and/or agricultural land
Water – Interpretation or alteration of river beds, alteration of aquifer, water quality/contamination
Air and Noise – Air quality, noise pollution

Biological Environment

***Terrestrial Fauna* –** Effect on grass and flower, trees and shrubs, farmland, endangered species, fragmentation of terrestrial habitats, disturbance of habitats by noise or vibration, reduction of biodiversity
***Aquatic biota* –** Habitat removal, contamination of habitats, reduction of aquatic biota

Social Environment

***Economy* –** Creation of new economic activities, commercial value of properties, generation of temporary and permanent jobs, effects on crops, reduction of farmland productivity, savings for consumers and private entrepreneurs, savings in foreign currency
***Occupational Health* –** Accidents, temporary health effects, chronic health effects, acute health effects
***Cultural* –** Land use, recreation, aesthetics and human interest

181. The above parameters will need to be analyzed for different activities in pre-construction, construction and Operation & Maintenance phase. The following are the key activities in the different phases of CETP construction.

Pre-construction Phase

Land Acquirement
Site clearance/leveling
Disposal/Burning of wastes, refuse and cleared vegetation

Construction Phase

Civil Works- building, temporary structures
Heavy equipment operations
Laying of pipelines for wastewater collection and disposal of treated wastewaters

Operation & Maintenance Phase

***Pipeline* –** Unauthorized disposal, leak, corrosion, break, maintenance/pump flow status/power supply
***Treatment* –** Adequacy of treatment units including holding tank capacity, better operating practicing & management system, storm water network, temporary storage and handling of sludge, laboratory operations, safety & health protection measures
***Disposal* –** Reuse/recycle, surface water bodies, land application, ground water level, sewer

Component 2

182. In-factory interventions could provide small scale pollution prevention and abatement measures targeting 200 factories across 3 industrial clusters where CETPS would be built. Under component 2, the international consulting firm will carry out environmental auditing of these factories. These factory audits will highlight areas for cleaner production options throughout the factory's production line. Considerable savings (up to 40%) can be made in the quantity of energy, water and chemicals needed – which simultaneously reduce operational and pollution abatement costs. Technical support will then be provided through matching grants to industries to make these low cost changes. The consulting firm will also screen/assess the environmental impacts of the cleaner production initiatives and proposed the mitigation and monitoring measures. The report prepared by the consultant in cooperation with the entrepreneurs/factory management. Then, it will be the responsibility of the individual factory management to get their own yearly Environmental Clearance Certificates from DOE to join in cleaner production process.

Component 3

183. This consideration regarding the location of CETP is quite complex and has to take into account a number of circumstances due to potential health hazards in the vicinity of the discharge, exploitation of nearby water bodies, potential changes in flora and fauna due to discharge of the treated waste water, decline in land value and disposal of sludge from the treatment plant. The design of collection network depends on quite a number of factors viz topography of the collection area, soil condition of area, location of CETP etc. and it may be necessary to install a pumping station. This component also deals with the sludge that will be produced in the CETP.

184. Since the CETP will be constructed and maintained by the Design, Build and Operation (DBO) contractor, environmental assessment will be carried out in 2 stages. In parallel to the 'Transaction Consultant' for the detail design of the Public Private Partnership (PPP) model, feasibility study and technical design, an International Firm will be hired to carry out detailed environmental assessment of the selected CETP options in potential sites and prepare the environmental management plan with costing. The DBO contractor will further carryout the environmental assessment on the selected option.

9.6 Review of Environmental Assessment and Monitoring in DEW Project

185. The review of environmental assessments (EAs) is essential to assess the adequacy of the EA for decision making on project proposals and to ensure that its conclusions and implications are taken forward into the implementation stage. The review will be carried out at 2 stages: first, at the implementing agency level i.e., Local Government Engineering Department (LGED) and second at the Department of Environment (DOE), the regulatory body. LGED management unit will hire the services of one National Environmental Specialist during the project period to review the detail design, environmental assessment, and adequacy of environmental management plan. In addition, an International Environmental Specialist will be recruited at LEGD to

independently review the EA carried out by DBO contractor and ensure that the environmental concerns are adequately addressed in the final design. The DOE, as the final environmental review authority for issue of Site and Environmental Clearance Certificates will review to confirm the screening categorization, to agree and approve the IEE and EIA (where applicable) conclusions and – if these are satisfactory - to issue the project site and Environmental Clearance Certificate. The management unit of the DOE will also supported by an Environmental Specialist. All the environmental assessment documents will require the World Bank's clearance before implementation.

186. The EA review should address, but not be limited to, four main themes in the EA and EA authors/editors should check that these are all adequately addressed:

(a) ***Quality –*** whether the EA is acceptable in terms of:

- adequacy and reliability of the baseline data – related to the project stage and the severity of impacts expected and to the practicalities of data collection
- degree of detail in the assessment – related to the project stage and the severity of impacts expected and the constraints on assessment activities
- adequacy of the people's participation exercise – related to the project stage and practicalities of organizing participation
- clarity of presentation
- correct choice of temporal and spatial bounds, communities, and important environmental components
- use of appropriate environmental impact assessment methods

(b) ***Content –*** whether the EA satisfactorily address and adequately quantifies the relevant environmental issues, taking into account constraints on the process:

- linkages, interactions, magnitude of impacts, priority and causal sequences
- risk assessment and disaster management;
- assessment of alternative actions and their relative impacts against the 'do nothing' alternative
- comparison of benefits, adverse effects and trade-offs, including issues of equity, gender, biodiversity and long-term sustainability;
- assessment of impacts on different ecological components, different communities and different parts of the study area;

(c) ***Environmental Management Plan –*** correct choice of components, which:

- make adequate provision for enhancement, mitigation and compensation
- include full people's participation;
- fully identify all major cumulative and residual impacts after EMP implementation;
- has sufficient budget and manpower to accomplish the stated environmental management objectives.

(d) ***Conclusions***

- clarity, conciseness and relevance of the summary, conclusions and recommendations
- adequacy of proposed management measures and monitoring plan and their cost estimates
- the extent of inclusion of environmental recommendations into the plans for project implementation
- the environmental significance of residual impacts

187. The monitoring of the implementation of the EMP will be carried out in different levels. The detailed program including parameters to be monitored will be designed and finalized during the Phase 1 of project implementation. The followings stakeholders will be involved in monitoring of cleaner production and CETPs.

Individual factory owners – Daily basis for cleaner production

DBO contractor –Daily basis for CETPs

LGED (including consultant) – Weekly basis for CETPs and monthly basis for Cleaner production

DOE (including consultant) – Quarter basis for both CETPs and Cleaner Production

Local Communities – Monthly basis for CETPs

Industry Association – Monthly basis for both CETPs and Cleaner Production

World Bank/Third Party – Half yearly basis for both CETPs and Cleaner Production

188. The Learning and Monitoring Unit (LMU) to be established at the Ministry of Environment and Forests (MOEF) will be responsible for coordinating the monitoring of EMP implementation and will review the findings of different stakeholders. LMU will recommend corrective measures to improve the operations of CETPS ad cleaner production.

189. The timeline of environmental assessment, review and monitoring is shown in Annex- H.

10. Social Assessment and Resettlement Policy Framework

10.1 General

190. Some of sub-project activities may require procurement of privately owned land and the displacement of land users, either with or without valid title. Although large scale acquisition of land and other assets is unlikely, even limited expropriation may produce economic and social disruption for the affected individuals and their families. Moreover economic impacts may arise in the form of loss of business income, on either a temporary or permanent basis. An assessment of these losses will be carried out for specific sub-projects and included in the RAPs and/or the Social Assessment Report, and appropriate measures devised under the terms of the entitlement framework to ensure that affected people are able to improve, or at least able to restore their livelihoods and income levels to pre-project levels. Mitigation measures for different types of losses and impacts would be guided by this RPF. RAPs will be prepared following the principles and provisions inscribed in this RPF (which are in line with requirements of World Bank OP 4.12) and will be reviewed and cleared by the World Bank before the start of the civil works.

191. The selection of sites for the construction of CETPs has not been determined yet, as it depends on a number of other variables that will become clearer during project implementation. However, the Government of Bangladesh is looking at some key sites located within the (highly polluting) Konabari-Kashimpur cluster of Gazipur district. Additional CETPs may late be built (through additional financing) in Fatullah cluster of Narayanganj district and Enayet Nagar cluster of Narayanganj district.

192. All of these are located in the two most polluted areas in Greater Dhaka. An inter-ministerial committee has been established to identify land availability in these areas. It is expected that the total footprint of a CETP will be between 5 and 10 acres of land.

193. It is agreed that this Environmental and Social Management Framework has been prepared in order to incorporate potential environmental and social issues typically associated with the planning, designing, implementation and post-implementation activities under DEW project. We have already discussed the Environmental Management Aspects in the previous section. This section of the framework serves as a complementary set of guidelines to assess the social impacts and develop Social Management Plans to mitigate adverse environmental and social aspects both in the design and implementation phases of the project.

10.2 National Policy and Regulatory Framework

Legal Context of Land Acquisition in Bangladesh

194. Currently the only legal framework that governs land acquisition in Bangladesh is the **Acquisition and Requisition of Immovable Property Ordinance, 1982.** However, its provisions are not adequate to address adverse impacts associated with land acquisition and involuntary displacement and do not fully satisfy the requirements of the Bank's Operational Policy (OP 4.12) on Involuntary Resettlement or that of the international practices. In essence,

the law is largely indifferent to the landowners' present socio-economic conditions, or the long-term adverse impacts on incomes and livelihood that the acquisition and displacement may cause on the affected people. Also, there are no other policies that complement the acquisition ordinance in ways to assess, mitigate and monitor adverse impacts that the affected people may suffer. Some of the salient gaps in the existing legal framework are summarized below:

- Avoiding/Minimizing Land Acquisition: The law only implicitly discourages unnecessary acquisition, as lands acquired for one purpose cannot be used for a different purpose, and lands that remain unused be returned to the original owners. However, there are no mechanisms to monitor if these conditions are actually adhered to.
- Eligibility for Compensation: The law stipulates compensation only for the persons who appears in the land administration records as the owners. It does not recognize the rights of those, such as squatters, who do not possess legal title to the lands they live in or make a living from. There is thus no provision to mitigate the adverse impacts they suffer.
- People who are impacted through loss of income are not recognized. The Land Acquisition Act provides for compensation for lands and other fixed assets built and grown on them (structures, trees and orchards, crops and any other developments like ponds, built amenities, etc.). However there is no provision to assess the impacts on peoples' incomes, livelihood, loss of employment and businesses for mitigation measures to restore loss of incomes and livelihood.
- Compensation Standards: Although the law stipulates payment of compensation at 'market prices' for acquired lands as the just compensation, the legal assessment procedures used almost always results in prices that are far below the actual market prices.
- Relocation of Displaced Persons. There is no provision in the existing laws for relocation of displaced families who are affected by the loss of their assets: land and/or structures.
- Ensuring Payment/Receipt of Compensation. The legal process to determine entitlements are too cumbersome and time consuming and do not ensure payment of compensation prior to their displacement. Lands are legally acquired and handed over to the project execution agency as soon as the authority identifies the owners (or 'awardees'), by examining the records, and sends a legal notice advising them to claim the compensation (or 'awards'). The onus is left on the affected land owners to prove, by producing an array of documents, that the acquired lands legally belong to them. As gathering these documents is a long, expensive and cumbersome process, many landowners may be unable to claim their awards. The project has meanwhile started to use the lands.
- Socio-economic Rehabilitation. Existing legal framework does not have any provisions to mitigate long-term impacts on peoples' livelihood caused by their displacement. Except for the compensation at the 'market price' for the loss of land, there are no other provisions, in the acquisition or other laws that require the government to mitigate the resultant adverse impacts caused by the acquisition. Socioeconomic rehabilitation of the involuntarily displaced persons is totally absent in the legal regime of the country.

10.3 World Bank's OP 4.12 Requirements

195. The primary objective of the World Bank policy on 'Involuntary Resettlement' is to explore all alternatives to avoid or at least minimize involuntary resettlement. Where resettlement is unavoidable, the resettlement activities should be conceived and executed as sustainable development programs, providing sufficient resources to enable affected persons to share in project benefits and assisted in their efforts to improve their livelihood and standard of living, or at least to restore them to pre-project level. The policy also requires that affected people are meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs. The policy applies to the taking of land and other assets when involuntary resettlement results in the loss of shelter, the loss of all or part of productive assets, or access to them, and the loss of income sources or means of livelihood, with or without physical displacement. Measures required to ensure that resettlement has a positive outcome include:

- Providing Project-affected persons with options;
- Permitting their participation in planning and selecting these options;
- Prompt compensation at full replacement cost for losses;
- Choosing relocation sites that provide, at a minimum, the same benefits as the sites they replace;
- Providing allowances and other assistance to make a smooth transition after displacement;
- Identifying vulnerable groups and providing and special assistance to these groups; and,
- Implementing an institutional structure that supports the process to a successful end.

196. Bank's policy on Involuntary Resettlement requires payment of compensation and other assistance to project affected people before they are displaced from their existing locations. Further the policy requires income rehabilitation assistance to those affected severely due to the loss of their productive assets or loss of incomes and livelihood.

197. Absence of legal title does not exclude individuals from the eligibility to receive compensation and/or other assistance. The displaced or affected population eligible for compensation for losses include: those who have formal legal rights to land or other assets, and those who initially do not have formal legal rights to land or other assets but have a claim to legal rights based upon the laws of the country. The Policy also requires that those without legal title should be given assistance to meet the objectives of the policy. The genesis of these rights may come from continued possession of public land where the government has not sought their eviction. Bank's policy also recognizes that stakeholders who illegally occupy project-affected areas after established cut-off-date for any components are not eligible for compensation and other assistance provided that adequate measures are taken for information dissemination to people.

198. The gaps in the existing legal framework of Bangladesh and the objectives and requirements of the World Bank and other multilateral agencies are well recognized. Therefore,

institutional or project specific policies such as the RPF are prepared to address these gaps and to meet the World Bank Social safeguards requirements.

10.4 Objectives of the Resettlement Policy Framework (RFP)

199. This Resettlement Policy Framework (RPF) seeks to address the inadequacy of the existing legal provisions to meet the requirements of the project funded by the World Bank as discussed in the previous section. This RPF will only be applicable to World Bank funded projects .This policy is based on the philosophy that development projects must serve the needs of society and ensure that project affected persons (PAPs) are not made worse off by development projects. Thus, the project will not penalize any one person in order to benefit many other persons. Resettlement Policy Framework is supported by the detailed Implementation Guidelines[6] that will be prepared by the design consultants. *DOE will be responsible for full and proper implementation of this policy framework*.

200. In response to above philosophy, involuntary resettlement should be an important consideration in project identification. Three important elements of involuntary resettlement are: (i) compensation for loss of assets, loss of livelihood and income, (ii) assistance for relocation, including provision of relocation sites with appropriate facilities and services, and (iii) assistance for rehabilitation to achieve at least the same level of well being with the project as without it. This can be ensured through the following basic objectives:

(i) Avoid involuntary resettlement where feasible and minimize resettlement where population displacement is unavoidable,
(ii) Ensure that displaced people receive compensation, assistance and rehabilitation so that they would be at least as well off as they would have been in the absence of the project,
(iii) PAPs will benefit from the project, and
(iv) Project stakeholders, including PAPs are consulted and given the opportunity to participate, as practicable, in the design, implementation, and operation of the project.
(v) Additional assistance should be provided to vulnerable groups.

Land Acquisition/ Resettlement

201. The land required for the CETP, primarily depends on the selection of the site and the area will depend on the type of treatment. Similar situation arises for the sludge treatment facilities. The target shall be to acquire *khas* land (Government land) so as to avoid the acquisition of private land by the Deputy Commissioner of the district concerned. In case private land is required for the construction of the CETP, the Ministry of Environment and Forests will act as the requiring body for the acquisition of such lands. Once acquired, the plots will be transferred to the appropriate LGI. Finally, LGED will be responsible for implementing, if needed, resettlement procedures as part of the implementation of Component 3 (see para 219) and forward for additional details).

202. The land issue shall be based on the effluent load and its type, technology, extent of treatment etc, size of land required to be acquired and requisitioned. However, in keeping with the resettlement objectives, the project will use the following principles to avoid or minimize land acquisition and displacement:

- ☞ Alternative design will be considered to avoid or minimize land acquisition in general, and particular attention will be given to use minimum amount of private land and as much of public land as possible;
- ☞ Alternative designs will be considered to avoid or minimize displacement from homesteads
- ☞ Wherever feasible, construction will be designed to use lands that are of lower value in terms of uses and productivity;
- ☞ Efforts will be made to avoid or minimize displacement from buildings/structures that are used for permanent business/commercial uses
- ☞ The lands that are *khas* or under the ownership of other public entities will be procured through the inter-ministerial negotiation process'
- ☞ More options to avoid /minimize displacement will be explored during the social screening and social impact assessment of the specific project locations where the project components will be implemented. The impact due to land acquisition for permanent use can only be determined after the selection of the site for CETP depending on the land whether it is a *khas* land (state owned) or a private land. During construction work of either CETP or collection net-work land may be required temporally and there may be some disturbance to the neighborhood which is not considerable.

Potential Issues:

Traffic

203. During the construction stage there will be some disruption of the traffic movement and as well as the local people may find some difficulty in their normal day to–day movement and other activities.

Impact

204. The impact due to traffic congestion is rather a normal phenomena in case of any industrial waste treatment project, particularly the collection network infrastructure, laying through narrow roads /lanes/ by-lanes,

Waste Disposal (Construction Works)

205. It is obvious that during the construction period due to the excavation substantial quantity of the soil (solid waste) will be produced also other solid wastes due to human (working personnel) activities.

Impact

206. The impact due to waste disposal may be considerable in a waste water treatment plant during the construction period. The impact due to waste produced (soil) during laying of the collection net-work will produce considerable impact in the neighborhood.

Change of River Regime and Environment

207. The effluent discharge from the CETP to the receiving body of the water (river/khal) may cause potential health hazards in the vicinity of the discharge, exploitation of the receiving water, potential change in the flora and fauna and also cause decline in the land value.

Impact

208. The discharge from a waste water treatment plant be it a industrial waste or municipal waste may cause potential health hazards in the vicinity of the discharge, exploitation of the receiving water, potential change in the flora and fauna of the water body and may cause decline of the land value.

Water pollution due to sludge discharge

209. The sludge produced (depending on the type of treatment) and discharged either on a water body/ land will cause health hazard and also may cause decline of the land value. Discharge on land may cause contamination of the ground water aquifer, particularly the shallow aquifer

Impact

210. The sludge produced in waste water treatment plant is highly toxic depending on the type of treatment and type of waste (industrial/ municipal) and shall cause health hazards and may cause decline of the land value if discharged on the land untreated.

Noise/ vibration

211. During the construction works heavy earth moving machineries and other related machineries shall cause noise and vibration which will cause disturbance for the locality. Even after completion of the project the operating machineries may cause disturbance in the neighborhood particularly during the night time.

Impact

212. Noise and vibration due to construction machinery may exceed the standard prescribed by EQSB of DoE and may cause undesirable environment for the neighborhood. Besides this, noise of the hydraulic horn of the automobiles shall cause public annoyance.

Air Pollution

213. Due to the operation of the heavy earth moving machineries and other related machineries, the exhaust gases are likely to cause air pollution. Generation of dust during construction also pollutes the air.

Impact

214. Dust and exhaust gases are the main source of air pollution in a construction site. The neighborhood and pedestrians are the worst sufferers of such environmental pollution.

Definitions

215. For purposes of this framework, the following definitions will be applicable:

- **Project Affected Persons (PAP)** includes any person or persons, households, a firm, or private or public institution who, in the context of acquisition of assets and change in land usage, as of the cut-off date, on account of the execution of the project, or any of its subcomponents or part, would have their:

  - Standard of living adversely affected;
  - Right, title, or interest in any house, land (including residential, commercial, agricultural and grazing land) or any other moveable or fixed assets acquired or possessed, in full or in part, permanently or temporarily adversely affected; or
  - Business, occupation, places of work or residence or habitat adversely affected, with or without displacement.

- **PAP** means persons or affected household and consists of all members of a household residing under one roof and operating as a single economic unit, who are adversely affected by a project or any of its components. For resettlement purposes, affected persons will be considered as members of affected households.

- **'Household (HH**)': A household is a group of persons who commonly live together and would take their meals from a common kitchen.

- '**Replacement Cost**': means and include an amount needed to replace an asset at current value including depreciation and overhead expenses of the transaction, including stamp duty and registration charges, as follows:

  - Agricultural land based on its productive potential;
  - Residential land based on market value;
  - Houses and other related structures based on current market prices of building materials and labor, without depreciation and deductions for salvaged building materials, plus transaction costs (such as administrative charges, registration and titling costs), etc.;

- Trees, crops and plants on current market value; and;
- Other productive assets like shops and commercial assets based on market value of similar location attribute i.e. premium etc;

- **'Cut-off date'**: is the date prior to which the occupation or use of the project area makes residents/users of the project area eligible to be categorized as affected persons. In many projects, the cut-off date coincides with the commencement of the census of affected persons within the project area boundaries. Persons not covered in the census will not be eligible for compensation and other entitlements. *For PAPs with legal titles the cut-off date would be the date of issue of legal notice under the Land acquisition act. For those without titles, the cut-off-date will be the date of commencement of census.*

- **'Land'**: The term land refers to land acquired under the Land Acquisition Act or through private transactions.

- **'Squatters'**: are persons who occupy / possess an asset without legal title.

- **'Encroachers'**: are those owners of land adjacent to public property, who have illegally extended their land holdings or structures into the public land.

- **'Vulnerable groups'**: These are distinct groups of people who might suffer disproportionately or face the risk of being marginalized from the effects of resettlement and specifically include: (i) female headed households with dependents, (ii) disabled household heads, (iii) households falling under the generally accepted indicator for poverty, (iv) elderly households with no means of support and landlessness, and (v) indigenous people or ethnic minorities.

- **'Severely Affected households'**: These are households that will be affected by any one of the following : (i) Significant loss of income (> 50%), (ii) Loss of residential premises, (iii) Loss of land holdings > 20% of pre-project status, (iv) Loss of accesses to common property resources for those whose livelihoods depends on these.

Categories of Impacts

216. In order to provide a framework for the R&R process in projects where World Bank financing is involved, a detailed Social Entitlement Framework is required. Following basic categories of issues/impacts are foreseen under this entitlement framework:

- Loss of land;
- Loss of structure;
- Loss of source of livelihood;
- Loss of access to common resources and facilities;
- Loss of standing crops, trees and perennial trees; and
- Loss of public infrastructure.

Impacts and Entitlement Framework

217. Entitlements for compensation and rehabilitation assistance to different categories of PAPs are described in the following sub-sections and presented in the Entitlement Matrix in Table -6.

A. PAPs losing Agricultural Land

(a) When the portion of the land to be lost represents 20% or less of the total area of the land-holding, cash compensation at full replacement value, will be provided to the PAP. Where significantly large or entire land holding is affected by the project, the general mechanism for compensation of lost agricultural land will be through provision of "land for land" arrangements of equivalent productivity and at location acceptable to the PAP. In case suitable replacement land is not available, at the PAPs request cash compensation at replacement cost will be provided. In cases where only partial land is affected but the remaining land becomes economically unviable, the PAP will be entitled to compensation for entire holding at full replacement value or land-for-land option.
(b) The replacement agricultural land will be provided to the PAP free of any tax, transfer costs, registration fee or charges.
(c) PAPs whose land is temporarily taken by the works under the Project will be compensated at replacement cost for their net loss of income, damaged assets, crops and trees, as the case may be.
(d) Affected tenants *and leaseholders* on the agricultural land will be compensated for the market value of the gross harvest for one year's production or the remaining period of the tenancy agreement/lease, whichever is greater.
(e) Affected agriculture labor will be compensated for the loss of income and will be paid compensation equivalent to the six months salary and assisted in getting alternative employment.
(f) Squatters and encroachers will not be entitled to compensation for affected land;

B. PAPs losing Residential or Commercial Land

(a) Where the portion of the land to be lost represents 20% or less of the total area of the land holding, PAPs will be entitled to cash compensation at full replacement value for the affected portion of the holding. Where significantly large or entire land-holding is affected by the project, the general mechanism for compensation of lost residential land will be through provision of "land for land" arrangements of equal size and at location acceptable to the PAP. In case, suitable land is not available, cash compensation at replacement cost will be provided. However, where only partial land is affected but the remaining land becomes either unviable or in area less than the minimum required under the prevailing zoning laws, the PAP will be entitled to compensation for entire holding at full replacement value, or land-for-land option. In case of loss of business premises, PAPs be entitled to alternative business site of equal size and location with good accessibility to customers and satisfactory to the PAP, or cash compensation at full replacement value, if suitable replacement land is not available.
(b) The replacement land for resettlement will be provided in fixed plot sizes according to the prevailing zoning laws and planning practices. However, if the lost land of PAP is in size larger than the plot sizes for relocation, a cash compensation to cover the difference of the area will be given to the PAP.
(c) The replacement land will be provided to the PAP free of any tax, transfer costs, registration fee or charges at the time of transfer.

(d) Squatters and encroachers will not be entitled to compensation for affected land;
(e) Affected tenants and leaseholders on the commercial/residential land will be compensated in cash equivalent to the three months of rent or the remaining period of the tenancy/lease agreement, whichever is greater.

(f) PAPs, whose land is temporarily taken by the works under the Project, will be compensated at replacement cost for their net loss of income and damaged assets, as the case may be.

C. PAPs losing Houses/Structures

(a) The mechanism for compensating loss of residential and other structures will be cash compensation reflecting full replacement cost of the structures, without depreciation.
(b) If the house or structure is only partially being affected by the Project, the PAP will be entitled to cash compensation for the affected portion of the structure and a repair allowance (minimum of 20% of compensation) for restoration of the remaining structure for its continued use. However, if the remaining structure is rendered unviable or in area less than the minimum house size under the prevailing zoning laws, the PAP will be entitled to compensation for entire structure at full replacement cost without depreciation.
(c) Tenants, who have leased a house / structures for residential or other purposes and affected by the project, will be provided with a cash grant equivalent to three months rental allowance, and will be assisted in identifying alternative rental accommodation.
(d) Affected households will also be entitled to a transfer/shifting allowance; and a transition allowance for three months. Vulnerable squatters will also be provided with relocation assistance through viable options and assistance packages to choose from

D. Loss of Business/Income or employment

Affected PAPs would be provided with opportunities for employment in reconstructed business enterprise. Alternatively, income rehabilitation package would be provided to the PAPs for re-employment, training in other trades and skills, agricultural inputs and extension services support, or for starting a new business depending upon their needs and priorities. The type and level of assistance required will be decided in consultation with the PAPs. Furthermore parties that will be temporarily affected will not be eligible for cash compensation but will be consulted to have a minimization of impacts.

E. Loss of standing crops and trees:

PAPs will be entitled to cash compensation equivalent to market value of crops and trees *based on the type, age and productive value of affected trees.*

- *Compensation for all types of affected assets will be provided at replacement cost.*

- PAPs will be provided with compensation at full replacement cost, without depreciation for any other fixed assets affected in part or in full by the project, such as water wells, electric and water connections.

- All PAPs severely affected by the project due to the loss of productive assets, incomes and employment will be entitled to the income rehabilitation assistance including income restoration programs, training to improve skills or other assistance for self-employment

depending upon the needs and priority of the affected PAPs. These rehabilitation measures would specifically focus severely affected (displaced) PAPs, vulnerable groups, itinerant workers, small businesses and those who are either below the poverty line or those severely affected by the project due to the loss of productive assets or are likely to fall below the poverty line. Detailed baseline survey and socio-economic data and consultation with local community will identify such vulnerable groups, and the scope and need for specific rehabilitation measure will be assessed during the project implementation stage in consultation with the PAPs. At least 30% of such rehabilitation assistance measures will be reserved for women.

- In cases where community infrastructure such as schools, factories, water resources, roads, sewage system or electrical supply is damaged, project developers will ensure that these would be restored or repaired as the case may be, at no cost to the community. Furthermore alternative routes will be identified.

- PAPs without any legal title or ownership right to the land they occupy will be compensated for all their lost assets such as house/structure, fixed assets, shop/kiosk at full replacement cost and provided assistance in finding suitable relocation site. The relocation site would, as for as possible, contain the access to facilities and services better than or at least equivalent to the one lost and provided with tenure security.

- PAPs entitled for relocation will be provided transport allowance or full assistance for transportation, and re-establishment of their house or business structures.

- Transition allowances will be equivalent to the monthly incomes/wages of affected PAPs.

- *Except for the long-term income rehabilitation assistance, payment of compensation and other allowances, and relocation assistance for a project component, phase or part thereof, will be completed prior to award of civil works contracts.*

- In case of other unforeseen impacts not covered above, appropriate measures would be determined keeping in mind the overall objective of this policy.

Social Implications of the Project Activities

218. **Mitigating adverse impacts**: Before taking possession of acquired lands and structures and before the start of civil works construction, PAPs will be paid compensation and other assistance in full. Where PAPs are entitled to relocation, the relocation site will be fully developed before the PAPs are displaced. LGED will ensure that the standard of living of all affected persons is restored to the level enjoyed before the commencement of the project, and, if possible, improved.

219. **Public involvement**: The implementation of the project along with its various sub components including the implementation of the RAP and EIA will be conducted in a participatory fashion. All the relevant stakeholders such as the local businesses, local residents,

NGOs etc will be involved in the decision making process. The project is also concentrating resources on a third party water monitoring system that will attempt to raise citizens awareness about the hazards of pollution and thereby having an induced affect on business to cut back on pollution. The NRDC is working closely with the implementing agency to implement best practices and practices that provide polluting factories incentives (via cleaner production, energy efficiency etc) to reduce pollution. In general the project realizes the importance of participatory approach and any issue that may arise will be extensively discussed with both the polluters and affected population.

Procedures for land acquisition:

220. Required private land for the sub-projects will be acquired following the provisions of the **Acquisition and Requisition of Immovable Property Ordinance, 1982 and World Bank Safeguard Policies**.

221. **Compensation at Replacement Cost:** All acquisition of land would be under Land Acquisition Act 1982, and following the provisions of this policy framework which provides compensation for properties to be acquired and support to be extended for meeting replacement value of the property. Under the Land Acquisition Act compensation is assessed, and paid, by DC office to PAPs for each mouza where his/her assets are located. However, despite the 50% premium, Compensation under Law (CUL) does not fully meet the replacement cost value required by World Bank OP 4.12 policy. LGED will top-up these amounts to make up for the balance so that the total amounts paid to PAPs are at replacement cost.

222. To estimate top-up amounts, LGED will *engage an independent institution to* carry out market studies at the time of baseline surveys to determine market rates for different types of assets. Estimated resettlement costs to be included in the Resettlement Plans would be based on the market surveys. The amount of top-up due to a PAP will be calculated by comparing the total amount of CUL paid by the DCs for all acquired lands and other assets with the total replacement costs/market prices thereof. *In case of unusual delays in implementation after the market surveys are completed, there may be a need for revaluation of market rates at the time of implementation and finalization of top-up amounts.* Procedures to conduct market surveys for the valuation of affected assets will be described in the Implementation Guidelines.

223. **Entitlements to affected people without legal rights to land**: Lack of ownership does not imply ineligibility for compensation rights. The presence of squatters poses particular challenge to LGED. The lack of legal tenure to land or assets will not be regarded as a criterion for withholding financial compensation or assistance in relocation in the project. LGED will strive to provide suitable alternatives to resettle displaced squatter communities. The affected squatters will be carefully screened to ensure that resettlement and rehabilitation assistance is provided only to vulnerable families and not to powerful encroachers *and musclemen (mastaans)* are screened out.

224. **Measures to avoid illegal occupation of cleared land.** The preparation of a Resettlement Action Plan will require that an early cut-off date, preferably at the time of the baseline survey, is established. LGED will ensure that the information on cut-off date and

eligibility are provided to the people with the clear understanding that anyone illegally occupying the land after the cut-off date will not be entitled to any compensation and/or assistance. LGED will also take appropriate measures to ensure that all lands that are cleared for the project remains clear of squatters.

225. **Relocation of displaced squatters**: The displacement of squatters poses particular challenges to LGED. LGED will explore all possible housing options to relocate severely affected/displaced squatters to minimize long-term social and economic impacts of displacement and to enable them to restore their livelihood and incomes levels within least possible time. In order to minimize disruption of existing social ties and sources of incomes and employment, *particularly for vulnerable affected persons, the priority will be to relocate them as* close as possible to the existing locations with access to facilities and services better than, or at least similar to, those lost. *Affected households will be provided with viable options for relocation to choose from that may include, among others: self-relocation; special package for transfer to the place of origin; and relocation to a suitable resettlement site either on available WASA land or other public land or at other locations within the city. Where attempts to find suitable relocation sites are not successful or the locations of identified sites are not acceptable to the PAPs, other options will be considered in consultation with the World Bank.*

Table – 6: Entitlement Matrix

No	Type of Loss	Application	Entitled Person	Compensation
1.	Arable land	Less than 20 percent of land holding[7] lost, the remaining land economically viable	Title holder	-Cash compensation for lost land at replacement cost.
		More than 20 percent of land holding lost OR where less than 20% holding lost but the remaining land becomes economically unviable	Title holder	-Land for land or compensation in cash. Compensation by receiving a new parcel of land of equivalent size and crop productivity and free of taxes, registration and transfer cost; at location acceptable to PAP; and with long-term security of tenure of better or equivalent nature to that affected. -Compensation for preparation of replacement land -Transition allowance for three months -Transfer/shifting allowance -PAPs will be entitled to income rehabilitation assistance

[7] Land holding refers to the land plot directly impacted by the project and does not include any other land holdings that a PAP may own at other locations.

No	Type of Loss	Application	Entitled Person	Compensation
			Tenant/lease holder	-Cash compensation equivalent to the replacement value of gross harvest for one year or for the remaining period of tenancy agreement, whichever is greater.
			Agricultural labor	-Cash compensation equivalent to 6 months salary and assistance in getting alternative employment.
			Squatters	*Any squatters/encroachers affected by taking of agricultural land will not be entitled to compensation for land. Affected vulnerable squatters will however, be provided with relocation assistance.*
2.	Residential / commercial land	Less than 20% of land holding lost and remaining land viable for present use	Title holder	-Compensation in cash at market value. Any squatters/encroachers affected by taking of residential land will not be entitled to compensation for land. For vulnerable squatters see entitlements for affected structures.
		More than 20% holding affected OR where less than 20% holding affected but the remaining area becomes smaller than minimally accepted under the zoning laws and unviable for continued use	Title holder	-Land for land or cash compensation. Replacement land of minimum plot of acceptable size under the zoning laws or a plot of equivalent size**,** whichever is larger, in an area with adequate physical and social infrastructure. In the case of loss of commercial land the replacement land of sufficient size for business continuation in market are or at location comparable to previous site. -Replacement land to be free from taxes, registration and transfer costs. -Transition Allowance for three months -Transfer/shifting allowance. Any squatters/encroachers affected by taking of residential land will not be entitled to compensation for land. *Vulnerable squatters will however, be provided with relocation assistance.*
			Tenant/Leaseholders	*-Cash compensation equivalent to the three months of rent or for the remaining period of tenancy/lease agreement, whichever is greater.*

No	Type of Loss	Application	Entitled Person	Compensation
3.	Structures	Structures partially affected but the remaining structure viable for continued use.	*Owner including those without title to land*	-Compensation in cash for affected portion of the structure and other fixed assets at replacement cost, and -Assistance in restoration of the remaining structure (Repair Allowance, minimum 20% of compensation)
		Entire structure affected OR where structures partially affected such that the remaining structure is unviable for continued use.	Owner with valid title to land	-Compensation in cash for entire affected structure and other fixed assets (wells, electric and water connections etc.) at replacement cost, without depreciation. -Transfer/shifting allowance. -Transition allowance for three months.
			Tenant	-Cash compensation equivalent to 3 months' rental allowance -Transfer/shifting allowance -Assistance in alternate rental accommodation.
			Squatters	All affected squatters will be entitled to: -Compensation in cash for affected structure -Transfer/Shifting allowance -Transition allowance for three months Additionally, vulnerable squatters will be *provided with relocation assistance and offered viable options to choose from.*
4.	Loss of business / incomes or employment	Temporary or permanent loss of business/ incomes/ employment	Affected individuals	-Employment in reconstructed enterprise or package for re-employment or starting a business -Transition allowance for the permanent loss of business, incomes & wages equivalent to the loss of income/wages for a period of 6 months for each affected members of households. -In case of temporary loss of business of incomes / businesses, compensation will be wages equivalent to closure period. Compensation rates will be agreed with the business owners and daily laborers and calculated on the basis of local surveys.

No	Type of Loss	Application	Entitled Person	Compensation
				-Priority will be given to PAPs when staff would be hired for the project
5.	Standing crops	Crops affected by land acquisition or temporary acquisition/easement	*Owner of affected crops*	-Compensation in cash at market value.
6.	Trees	Trees lost	*Owner of affected trees*	-Compensation in cash calculated on the basis of type, age and productive value of affected trees.
7.	Loss of public infrastructure	Infrastructure (electric water supply, sewerage & telephone lines; public health center; public water tanks)	Relevant agencies.	-Compensation in cash at replacement cost to respective agencies *or restoration of affected assets.*
8.	Unforeseen Losses	As identified	As identified	Appropriate mitigation measures as determined to meet the objectives of this policy framework

10.5 Survey and Documentation

Preliminary Screening

226. During the identification and preliminary stages of any sub-project preparation, LGED will undertake a preliminary Social / Land Acquisition Assessment to identify the types, degree and scale of potential social impacts of the sub-project. To correctly identify the relevant social issues and to assess the type and level of information required during subsequent field investigations, particular attention will be paid to adverse impacts to the affected community, such as loss of land and other fixed assets and the number of persons marginally or severely affected and the types of vulnerable groups affected. The information collected during the preliminary social / land acquisition assessment will provide the basis for determining severity of impacts and the level and depth of subsequent field surveys, investigations and documentation. In cases, where the preliminary assessment indicates that the potential impact of the proposed project will be significant, appropriate preparation will be done for extensive field surveys and consultation with key stakeholders.

Project Preparation

227. LGED will be responsible for carrying out all necessary surveys, field studies and investigations, as identified during the screening. Prior to undertaking the survey LGED will conduct a public information campaign to describe the project components, types of impacts, content and schedule for the census and inventory or other background surveys to the key stakeholders.

228. At least three basic types of surveys will be needed: a census; an inventory of affected assets and other losses; and a socio-economic baseline survey. The census and the inventory of affected assets will cover all PAPs, regardless of entitlement or land ownership. Criteria for vulnerability of PAPs should be paid particular attention in order to provide additional assistance. Baseline survey should cover at least 30% of severely affected/displaced PAPs and will include information on socioeconomic characteristics of potentially affected households. The baseline data will be used for post-implementation evaluation to determine whether or not affected peoples have been able to restore their livelihood. All data should be maintained on computerized data management system to facilitate analysis. *It is recommended that field surveys and investigations for census, inventory of assets and baseline data are carried out in an integrated manner to maximize use of available resources and to avoid repeated field visits.*

229. Expropriation, is likely to produce economic loss and social and psychological disruption for the affected individuals and their families, and may include the loss of business income, on either a temporary or permanent basis. An analysis of these losses must be included in the RAP and/or the Social Assessment Report and appropriate measures devised under the terms of the entitlement framework to ensure that livelihoods are restored.

Resettlement Plan (RP)

230. Based on the census and inventory of data and field investigations, RP will be prepared in sufficient details depending upon the degree and scale of impacts in a project. For the RP preparation process to begin, the exact ground locations of the required lands and right of way of the assets (CETPs) need be identified and demarcated. As such, the social safeguard and the engineering consultants jointly with LGED will carry out detailed engineering surveys and design the rehabilitation and improvement works and lay them on the mouza maps. Where private land is to be acquired, these mauza maps will also provide the basis to prepare the land acquisition proposals (LAPs) which are to be approved by the Ministry of Local Government Rural Dev. & Co operatives (MOLGRD). The LAPs will be prepared for each scheme and will include plot schedules, (with dag or plot numbers), the amount of land to be acquisitioned from each plot, and the ownership status, such as private and public lands. Land acquisition Proposals together with information on affected plot schedules and ownership status will be used as the basis by the DC office to determine CUL. Where private land acquisition will not be necessary, these mauza maps will help in identification of LGED and other land boundaries for design purposes. Where surplus LGED or other public land parcels can be identified these can be considered for relocation of displaced squatters.

231. The process to comply with World Bank policy includes identifying all categories of PAPs and this usually takes place before the DC office gets involved. The DC's office involvement, however, relates only to the identification of legal owners of land with demonstrable title to their lands. As the 1982 Ordinance does not recognize any other category of impacted people, all other PAPs will be identified and compensated according to World Bank OP 4.12.

Abbreviated (Summary) Resettlement Plan:

232. *In cases where the impacts of the sub-project on the entire displaced population are minor, or fewer than 200 persons (about 40-50 families) are affected without any large scale displacement, or where the impacts are minor, although more than 200 persons may be affected, an abbreviated RP should be prepared. It should provide a census survey of displaced persons and valuation of assets, description of compensation and other resettlement assistance to be provided, consultations with displaced people about acceptable alternatives, institutional responsibility for implementation and procedures for grievance redress, arrangements for monitoring and implementation, and a timetable and budget(Please refer to World Bank OP 4.12 Annex A para 22)* .

Detailed RP:

233. In cases where the project affects and/or displaces more than 200 people (40-50 families), a time-bound Resettlement Plan (RP) for the project will be prepared in accordance with the provisions of this Framework. *The threshold of 200 PAPs should apply to all sub-projects put together for which one single standalone RP will be required*. Resettlement plans should be built around a development strategy, and compensation, resettlement, and rehabilitation packages should be designed to improve or at least restore the social and economic base of those severely affected. Preference should be given to resettling vulnerable people dislocated from their existing settings by providing opportunities for sustainable income generation in similar settings. Where a project is likely to adversely affect households belonging to poverty groups, the resettlement plans should specify measures, additional to the compensation entitlements, aimed to improve status of the poor to bring them up to an acceptable level above the poverty line.

234. The RP will include: (i) project description and brief description of impacts; (ii) specific measures taken to minimize adverse impacts; (iii) socio-economic survey; (iv) detailed description of impacts and category of PAPs; (v) entitlement for different types of losses; (vi) specific measures provided to vulnerable groups and for income rehabilitation assistance; (vii) public consultation and participation; (viii) estimated resettlement cost; (ix) monitoring and evaluation procedures; (x) organizational responsibilities and implementation procedures including valuation of lost assets; identification of alternative relocation sites; provisions for shelter, infrastructure and social services; and procedures for landownership, acquisition and transfer; and (xi) implementation schedule.

235. LGED will share the RAPs with the Bank for review and approval, before the sub-project civil works begin. During implementation, LGED will ensure that all compensations/ entitlements due to the PAPs are paid in full, before the civil works begin on the acquired lands, including the public lands repossessed from private uses.

10.5 Public Consultation and Participation

236. Preparation of appropriate documents and planning and implementation for the acquisition of land and other assets will be carried out in consultation with the PAPs. The PAPs

will receive prior information of the compensation, relocation and other assistance available to them. LGED will be responsible to carry out continued consultation with and information dissemination to the key stakeholders regarding:

- The relevant details of the project;
- The resettlement plan and various degrees of project impact;
- Details of entitlements under the resettlement plan and what is required of PAPs in order to claim their entitlements *(a copy of the entitlement matrix should be provided to the PAPs);*
- Compensation process and compensation rates;
- Relocation and resettlement site development operation in order to obtain agreement and support of affected people in participating in these operations; and
- Implementation schedule with a timetable for the delivery of entitlements.

237. LGED shall also provide a detailed explanation of the grievance process and enlist the help of community leaders and other influential community officials in encouraging the participation of the PAPs in resettlement activities. Finally, LGED shall attempt to ensure that all vulnerable groups and indigenous peoples/ethnic minorities understand the process and that their needs are specifically taken into consideration. Public participation will be performed and information will be made available during preparation and implementation of the resettlement plan and at the minimum includes community meetings and focus-group discussions.

10.7 Grievance Redress Mechanism

238. Despite best efforts to arrive at fair rewards in project involving involuntary resettlement, there shall always be a few unsatisfied citizens. The LGED will make efforts at project level to resolve grievances through negotiations *involving community leaders and PAP's representatives.*

239. Grievance Resolution Committee: In case dispute is not resolved at local level, the matter will be placed before a Grievance Resolution Committee. Grievance Resolution Committee (GRC) shall be constituted consisting of a panel of three Members, one of whom shall be its LGED Project Coordinator, to be selected by LGED. Other members will include a representative from the residents of the project area, who would be publicly known to be a person of integrity, good judgment and commands respect. Other persons would be representative from local NGO/CBO.

- The Project Coordinator shall:
  1. Convene meetings of the committee as necessary at such place or places in the project area as he considers appropriate; and
  2. Conduct the proceedings in an informal manner as he considers appropriate with the object to bring an amicable settlement between the parties;

- The report of the members shall be recorded in writing and attested copies thereof shall be provided to the parties.

- In case of continuing differences and notwithstanding the provisions of Land Acquisition Act, the GRC can take a decision regarding entitlement and compensation. The decision taken during negotiations and GRC meetings shall be formally recorded for future reference and presentation in the court, if necessary.
- All expenses incurred in arranging grievance negotiations and meetings of GRC as well as logistics required, shall be arranged by project-executing agency.

- Right of Complaint: The aggrieved PAP, if not satisfied with the decision of Grievance Resolution Committee, has the right to refer his / her petition to court of law.

10.8 Supervision and Monitoring

240. **LGED *will appoint adequate full time staff, supported by a social safeguards specialist consultant, to monitor the process of resettlement.*** In order to assist with this monitoring, LGED shall obtain and maintain appropriate baseline data prior to the resettlement impacts. The monitoring staff will prepare periodic progress reports for submission to the Project Director. The main objective of the monitoring reports is to determine whether the resettlement is effective and to make the needed recommendations for change. The monitor should be present in the field as well as at every meeting related to resettlement. The consultants preparing the RAPs will establish appropriate monitoring indicators (process, output and outcome that will be used to monitor the progress of resettlement implementation. Monitoring should include both internal and external monitoring components.

241. After resettlement is completed, LGED will carry out post implementation evaluation to evaluate the impact of resettlement on PAPs and to determine whether or not the PAPs have been able to restore their incomes and living standards, by comparing with the baseline data collected in the preparation stage. In case the PAPs are not able to achieve the stated objectives of this policy LGED will provide additional support as necessary.

10.9 Arrangement for Land Acquisition

Land Acquisition Procedure

242. Upon receipt of the LAPs, the DCs will register the cases and organize a physical verification of the information provided in the documents. The project authority can appoint an officer to tackle land issue with the concerned district administration. The officer, with support from the Directorate of Land and Revenue (DLR) will answer to any queries from the DC offices and assist to resolve any issues and problems with the LAPs. The following steps are needed:

- The DCs will issue the legal Notice-3 (under Section 3 of the law), which will contain the plot numbers from which lands will be acquired. The notice will be displayed in public places. As per this notice 15 days time is given to the landowners to lodge objections to the proposed acquisition. Thirty days time is provided to them for hearing by DCs.

- Upon resolution of the objections, if any, the DCs will then submit the LAPs/LA cases to the District Land Acquisition Committee (DLAC) for review and approval.

- During the approval phase, an on-site inventory and verification will be carried out by the acquisition officials and the project authority staff/ officer, in the presence of the concerned PAPs, to classify and document the assets that will be acquired and compensated for.

243. The compensation for the land, and other assets such as houses and other structures, trees, standing crops, etc will be assessed by GoB departments, such as Public Works, Agriculture, Forestry, etc by using departmental standards. The compensation so determined is the compensation under law or CUL which may or may not be the replacement values/current market prices of the acquired assets.

- Upon receipt of approval and completion of the joint on-site inventory and verification, the DCs will issue Notice-6 to the individual property owners stating that the inventoried assets will be acquired and taken possession of and that all claims for compensation will be made to the concerned DCs.
- Once valuation of all assets is completed, the DCs will prepare the 'compensation assessment rolls' or compensation budget for the individual LAPs/LA cases and submit them to the project authority requesting the funds within a maximum of 60 days. After review the project authority will send money to the DCs
- Upon receipt of money, the DCs will issue Notice-7 indicating the amount of compensation and advice them to make compensation claims, with evidence that they are the legal owners or have an interest in the lands. For evidence, Record of Rights (RoR) or *Porcha*, Rent Receipt (RR) or *Dakhila*, are needed.
- The claims for compensation are accepted if the owners' evidences are found satisfactory. The CUL is then paid by checks drawn on the GoB treasury at the district headquarters.

244. If replacement cost of land and other assets is greater than the CUL, the project will be responsible to pay such compensation to affected parties. Similarly, categories of affected people that are not covered by the 1982 Ordinance (for example squatters) will be compensated directly by the project and not by the Deputy Commissioner's office. The Entitlement Matrix in this ESMF illustrates how compensation will be paid to each category of affected people.

Census of Project Affected Persons/ Households

245. PAP census will begin as soon as the exact locations of the required lands are demarcated on the ground. The census would provide an estimate of the would-be affected land owners and squatters and establish the cut-off dates as to who and what assets would qualify for compensation. It will also identify the landowners and squatters including those with usufruct rights to any private and public lands by name and location and list of assets they have created on the lands targeted for acquisition at each site. These data will be used to determine the loss categories and, if needed, to adopt new measures to mitigate any impacts unique to any particular site as well as to prepare the site specific resettlement budget.

Consultation and Information Dissemination

246. As per the OP 4.12, Consultation and Communication are the cornerstones of RAP building, and must be started from the time of project identification itself. The consultation and participation process may include four phases: (i) data collection, (ii) preparation of planning and operations, (iii) implementation of operations and (iv) monitoring and evaluation.

247. The data collection phase will include consultations with PAPs and other relevant stakeholders. The data collected will serve as instruments for the monitoring of the social mitigation measures applied. PAPs will be consulted to participate in the data collection phase by providing socio-economic information about their livelihoods. Also PAPs will be consulted through meetings and FGDs to discuss the social impacts of project operations and the mitigation measures suggested. The contributions of the PAPs will be integrated into the implementation process from planning to evaluation.

248. A communication and consultation strategy with detailed methodologies must be prepared for the purpose of each site specific RAP. The proceedings of these consultation sessions and communication activities must be recorded and duly reported.

- **Proposed Locations:**

249. The CETPs will be constructed in Konabari-Kashimpur cluster of Gazipur distract, a sub-area of one of the most polluted areas in Greater Dhaka. It is agreed that an Environmental and Social Management Framework will be prepared in order to incorporate potential environmental and social issues typically associated with the planning, designing, implementation and post-implementation activities under DEW project. This would include, among others, issues related to land acquisition and related relocation of people and resultant loss and /or disruption of livelihoods of the affected people in the project areas. The Framework will therefore serve as separate set of guidelines to assess the environment and social impacts and develop Environmental Management Plans and Social Management Plans to mitigate adverse environmental and social aspects both in the design and implementation phases of the project.

- **Socio-economic Baseline Survey:**

250. In order to understand the existing socio-economic conditions of the affected area, a social assessment shall be carried out at the outset to develop benchmark situation. This survey will describe the income, expenditure, employment, occupation, education, living standards, disease and health care situation, water supply and sanitation, fisheries and livestock, local power structures, other social and cultural aspects. This survey will help assess social impact.

- **Census of Affected Persons:**

251. For land acquisition and subsequently for resettlement purpose a census of project affected persons shall be carried out. The census will include name and address of affected persons, number of affected plots, size of affected land, number of households, loss of land, loss of houses and other structures, loss of crops and trees, business and income losses, etc. This will be carried out under the guidance of social and resettlement specialist.

- **Grievance Redress:**

252. A grievance redress procedure will be established to deal with various non-legal issues that may arise during preparation and implementation of the resettlement activities. Such issues more often involve PAPs or affected assets that have been missed by census/baseline surveys. There may also arise minor disputes concerning co-ownership, co-inheritance, etc. of the affected properties, which the Grievance Redress Committees (GRCs) will try to resolve amicably by bringing together the contestants. The GRCs will however not provide legal advice to the contestants. Decisions made by using this mechanism will be binding on the project authority.

11. Institutional Arrangement for Environmental and Social Management of DEW

11.1 Environmental Capacity Assessment and Staffing Needs

252. **Department of Environment (DOE)** is the government regulatory agency assigned for ensuring environmental sustainability in industries and development projects. DOE's responsibilities include review of the environmental assessment report, provide the environmental clearance to the industry/project for a period of 1 year (only in case of green industry, clearance is given for 3 years) and monitor compliance of environmental standards. DOE operates through 6 divisional offices and one head office. Although the industrial development has increased in manifolds in recent years, the institutional expansion and development of DOE did not take place at the same pace. The project will provide technical assistance to develop institutional capacity building of DOE in managing pollution control and enforcing environmental compliance as per existing rules and regulations. DOE will also recruit an Environmental Specialist (national) having experience on industrial processing and wastewater treatment to monitor the activities under component 2 & 3.

253. **Local Government Engineering Department (LGED)** is one of the leading government agencies who have incorporated environmental assessment to their project planning. LGED has prepared the 'Environmental Assessment Guidelines for LGED Projects' with the support of the IDA funded Rural Transport Improvement Project (RTIP) in late 2008. The guidelines, prepared in collaboration with RTIP, aimed to provide the framework EIA for different sector projects undertaken by LGED for planning, implementation and subsequent operation. The guidelines constitute simple procedures and formats to undertake IEE and EIA of proposed projects and subprojects to identify potential negative impacts and draw up an EMP where necessary. LGED has implemented several IDA funded projects and familiar with Bank safeguard policies.

254. Since it is category 'A' project and LGED has not previous experience on wastewater treatment facilities, a full time national environmental specialist having sound professional experience and academic background will be hired in the project management unit of LGED. An international environmental specialist having sufficient experience in dealing the environmental issues of the CETP in the developing countries (preferably in South Asia) will be hired for 12 months (distributed over design, construction and initial operation period of CETPs) at LGED.

255. Moreover, it should be noted that the CP consultant firm hired under component 2 by LGED to deliver cleaner production audits and implement basic pre-treatment systems in factories, will require an environmental specialist on their teams.

256. Similarly, the CETP operator under the DBO contract will be required to hire environmental specialist as part of their core team.

11.2 Social Safeguard- Capacity Building and Staffing Needs

257. The Involuntary Resettlement (OP/BP 4.12) Policy will be triggered by the proposed project because project activities such as construction of water treatment plants can result in temporary or permanent loss of land, crops, and other means of income generation. As the exact location of project site(s) is not known at this stage, project implementer(s) will need to prepare a Land Acquisition and Resettlement Policy Framework (RPF) laying out the key principles of the World Bank's OP 4.12 and a strategy to fulfill the policy's requirement that is mutually agreed upon. Specific Social Impact Assessments (SIA) and Resettlement Action Plans (RAP) if needed, will have to be prepared during project implementation for each component where the specific project site can be identified. Similar to environment, CP consulting firm and BDO contractor will have separate Social/Resettlement specialist to conduct the assessment as per ESMF.

258. LGED has also participated in capacity building and training activities organized during the last 2 years by SASDI in Dhaka under the NLTA program on land acquisition and resettlement. Under an existing NLTA program managed by SASDI, continuing training for social safeguards will be provided by the SASDI team in the Dhaka office. Periodic training sessions on specific aspects of social safeguards compliance (SIA methodologies, RAP methodologies, consultation, grievance, etc.) will be offered to GOB officials and their consultants in the respective PMUs and officials from DOE and LGED will be invited to attend.

259. In particular, officers in charge of compliance with social safeguards as well as consultants recruited to fulfill those functions can take advantage of the Post –Graduate Certificate Course on Management of Land Acquisition, Resettlement and Rehabilitation (MLARR) being offered at BRAC University every year during the Summer Semester.

11.3 The Project Management

260. DOE and LGED will establish a Project Management Unit (PMU). Implementation of the ESMF will be the responsibility of this PMU and its monitoring would be the responsibility of the ESC of the project

261. Key responsibilities of PMU for ESMF will include the following:

- To ensure implementation of ESMF
- To expedite the Land Acquisition process and provide compensation to the Project Affected Persons (PAPs) and implementation of Resettlement Action Plan (RAP)
- To liaise with the ministries / planning commissions and other institutions / agencies / ministries etc., if required.
- To make timely and efficient disbursements to all the parties working on the project.
- To prepare Implementation Completion Report (ICR) and Operational Plan (OP).

262. In addition, MOEF will be responsible for the overall coordination of the project. A Project Learning and Monitoring Unit (LMU) will be created at MOEF and headed by a Joint-Secretary. The two Project Directors, along with the LMU, will be jointly responsible for the timely monitoring and supervision of the project. All aspects of component 3 will be reviewed by technical committee (comprising of technical staff from LGD, DOE, LGED, BUET, BKMEA, and BGMEA) who will advise the project National Steering Committee. Because external stakeholders are included (including those representing industry interests) less likely to be co-opted. Similarly, all EAs etc will be reviewed by Bank safeguards team.

11.4 Community Participation

263. Community Participation is both an essential criteria and important strategy for an integrated environmental and social analysis process, the project design and its implementation. Views of the project affected people and NGOs should be fully taken into account during the project preparation and continue to form as a basis for further design and implementation of the sub-project throughout the implementation period of the all the components and sub components. Where it will not be possible due to some practical reasons, the specific reasons should be identified and communicated to the concerned stakeholders including the affected people. During the project preparation stage extensive consultation should be arranged during the conduct of the sample case studies. Such consultations will continue to be ensured during further design and implementation stag of the project. These will be undertaken at a minimum, at selection of the sub-projects, during environmental screening, and assessment, if undertaken, and while formulating the EMPs. Consultation requirements as set out in Social Management chapter must be followed. A comprehensive framework for the participatory consultation including an effective feedback mechanism and information disclosure should be developed and incorporated for implementation during the entire duration of the project. The community will also be involved in the monthly monitoring of the CETPs.

264. Success of the project is, among other factors, also a function of public pressure on polluters to behave more responsibly. Educating citizens living in the areas affected by heavy pollution loads is critical to continue to put pressure on polluters. The same rationale is valid in educating local institutions and local government officials. Water pollution carries a heavy cost in terms of public and individual health – costs that are externalized by polluters but internalized by citizens (via their health) and public institutions (via the cost of maintaining public health and paying for damages).

265. The following activities will be put in place to inform affected citizens, raise their awareness of the issues, and engage them in the monitoring of water quality in the areas adjacent to the project sites:

- *Information and awareness raising campaign* to educate citizens and local institutions about the risks associated with heavy pollution loads discharged into the open, and direct risks posed to the local population in terms of health, safety, and cost-sharing for cleaning up. This can be done by intervening in local schools, as well as through a program of sensitization in the localities affected by industrial water waste.

- *Collaborative (and third-party) monitoring of water quality* where national universities work together with local NGOs or citizens groups to monitor the operation of effluent treatment plants, as well as the quality of discharged water. Participating industries should also be part of this tripartite monitoring to avoid possible conflicts and at the same time to promote their behavior of those who take action to clean up.
- *Establishment of grievance procedure* for parties affected by discharge of pollutants into the open. There should be a clear mechanism for addressing concerns of affected citizens and local institutions, so that grievances are addressed adequately and in a manner that leads to resolution of issues. The grievance redressing procedure should indicated where to lodge a complaint, the roles of all stakeholders in addressing the issues, the timing of the process, and the mechanisms for appeals at various levels in the process.
- *Periodic dissemination of findings of water quality monitoring* focusing on improvements and targets reached by industries that have improved their overall discharge loads. This will work as a "positive disincentive" for other less-compliant factories that would not appear on the list of best performing companies. Reports should be made available publicly and provided to buyers.
- National level debates on issues of industrial water pollution, engaging the media with op-ed pieces, visual reportages, and round-tables to bring out positive experiences emerging for the DEW project and at the same time to continue raising awareness among the public on the need for cleaner production processes in Dhaka and in Bangladesh.

11.5 Funds for Environmental and Social Assessment, Implementation and Monitoring

265. The project will fund the environmental assessment, implementation of EMP, planning and implementing a Resettlement Plan, related capacity building and staffs/consultants. The project will also provide for all costs related to mitigating adverse social impacts based on budgetary requirements established in the RAP. All of these costs are to be a part of the total project cost. The project have specifically provided for (i) the Social Safeguards Specialist consultant to support the DOE's staff, (ii) a consulting firm to be retained to support the development and implementation of RAPs, (iii) a significant amount of funds for involuntary resettlement compensation, and (iv) social safeguards training and capacity building for LGED. Similar fund will also be provided for environment. Each RAP will detail cost estimates for compensation and relocation (if applicable) of PAPs, particularly vulnerable squatters, with a breakdown by category of PAPs and by type of asset affected, such as agricultural, residential, and commercial land; affected house, structures and other fixed assets; and type of assistances, such as transport/shifting allowance, transition allowance, etc. The costs estimate will make adequate provisions for contingencies.

266. In case of overruns due to unforeseen circumstances or delays, LGED will allocate additional funds as necessary. The project has also provisioned for unallocated funds which could be utilized for this purpose.

12. Consultations and Disclosure

12.1 Consultations and Disclosure

267. The limited ESA and ESMF has been prepared in consultation with the relevant stakeholders i.e., different government agencies, local government bodies, industry association, individual factory owners and management, ETP/CETP experts and operators, local communities, quality assurance companies, NGOs and other development partners etc. This document will be posted in the website of DOE and LGED and hard copies will be kept in the local offices of LGED for further comments and inputs from non-governmental organization, civil society and general public. A summary document in Bangla will also be posted in website and be available in local offices. It will be disclosed in English by World Bank and it will also be made available at the World Bank's Info Shop.

268. The environmental and social screening/assessment to be carried out during phase I will also be available in the LGED and DOE websites. All these documents will require at least 2 times consultation with affected people, local community and other stakeholders.