

Environmental and Social Safeguards Report

Semestral Report
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Power System Efficiency Improvement Project

Prepared by Ashuganj Power Distribution Company Ltd. for the People's Republic of Bangladesh and the Asian Development Bank.

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ABBREVIATIONS

APSCL	-	Ashuganj Power Station Company Ltd
AoI	-	Area of Influence
AEL	-	Atlanta Enterprise Limited
BPDB	-	Bangladesh Power Development Board
CCPP	-	Combined Cycle Power Plant
DoE	-	Department of Environment
EIA	-	Environmental Impact Assessment
EMP	-	Environmental Management Plan
FGD	-	Focus Group Discussion
GoB	-	Government of Bangladesh
GDP	-	Gross Domestic Product
IEE	-	Initial Environmental Examination
IEC	-	Important Environmental Component
KII	-	Key Informants Interview
MoFE	-	Ministry of Forest and Environment
PRA	-	Participatory Rural Appraisal
RRA	-	Rapid Rural Appraisal
DO	-	Dissolved Oxygen

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1. INTRODUCTION

1.1 Overview

This Environmental Impact Assessment (EIA) has been prepared as part of the feasibility study for 450 MW Combined Cycle Power Plant project proposed for construction at Ashuganj Power Station Complex owned by Ashuganj Power Station Company Limited (APSCL). The project proponent is the APSCL of the Ministry of Power, Energy and Mineral Resources. The objective of the study is to help APSCL prepare a power generation project suitable for GoB financing. The Project aims to improve power supply by replacing the old unreliable 146MW combined cycle power plant and 2x64 MW steam power plant resulting in reducing load shedding and ensuring stable power supply.

This study has been based on field investigations, coordination with APSCL, requirement of law Department of Environment (DoE), and stakeholder consultations. This report covers the description of existing environmental conditions, assessment of environmental impacts of the power station operation, recommended mitigation measures and environmental monitoring plan. The environmental impact was considered for activities during pre-construction, construction and operation phases of the project to satisfy the Department of Environment that it meets with the requirement of law.

1.2 Background

To alleviate poverty in the face of resource limitations and high population density, Bangladesh requires an economic growth rate of 6-7% p.a. to provide employment to its rapidly growing labor force that cannot be absorbed by agriculture. In order to achieve this growth rate, availability of a reasonably priced and reliable source of electricity is a prerequisite. Starting from a small base, the power sector in Bangladesh has grown significantly. The installed generation capacity has increased to 5202 MW (BPDB annual report 2008) in the utility service (as of June 2008) from a meager 88 MW in 1960. Electricity generation grew at about 7% p.a. during last ten years, compared with average annual GDP growth rate of about 5.5%. Notwithstanding the progress made to date, Bangladesh's per capita electricity generation of 170 kWh p.a. is still among the lowest in the world. About 35% of the population has access to electricity, which is also low compared to many developing countries.

Currently there is acute shortage of generation capacity in the country and addition of generation capacity is, therefore, considered essential to cope with the consumers' demand and to provide reliable power in and around Ashuganj and to the national grid of Bangladesh as a whole. As per latest assessment, there is a generation shortfall in the country to the order of as compared to peak power demand estimated for 2009. This will continue to widen as the progress in hand and progress of implementation is much behind the forecast for future years up to 2014. In order to overcome this situation, Bangladesh Power Development Board (BPDB) has been considering various options of electric power sources development.

Ashuganj Power Station Company Ltd. (APSCL) is the second largest power station in Bangladesh. The installed capacity by its 8 units is 724 MW and present de-rated capacity is 678MW. Ashuganj Power Station fulfills about 15% of power requirements of the country. It is situated near Titas Gas Field and on the left bank of the river Meghna. So it is the most favorable place for power station because of availability of natural resources for power

generation. For this purpose about 311 acre lands at the 1 kilometer north-east away from the Meghna Railway Bridge was acquired. In the same year with the financial assistance of German Government the establishment work of two units each of 64 MW (Unit 1 & Unit 2) started. These two units were commissioned in July 1970. To face the growing requirements for power in the country- Government of Bangladesh decided to setup another two units (Unit 3 & Unit 4) each of 150 MW capacities in Ashuganj. IDA, KfW (Germany), ADB, Kuwait and OPEC provided the financial assistance for this project. After the implementation of Unit 3 & 4 started, the government found that another unit of 150 MW can be established from the savings out of funds provided by the donors. The work for installation of Unit 3 & 4 was started in 1984 and Unit 5 in 1985. Unit 3, Unit 4 and Unit 5 were commissioned in December 1986, May 1987 and March 1988 respectively. During the planning for installation of Unit 3 & 4 it was decided to install a Combined Cycle Power Plant by financial assistance of British Government. Accordingly, works of 90MW Ashuganj combined cycle project [gas turbine unit GT1 of 56 MW capacity and one steam turbine unit of capacity 34 MW (with waste heat recovery boiler)] had been started; and these were commissioned in 1982 and 1984 respectively. A second gas turbine GT2 of 56MW capacity was installed and commissioned in 1986 bringing the capacity up to 146 MW.

The combined cycle power plant, the GT-2 and 2x64MW units have been operating for many years and their condition has deteriorated much, with resultant deterioration of performance. The design and models are out-dated and no more in production. So, procurement of spares has been difficult in the recent years. Therefore, APSCCL recently has decided to replacethese power plants with a new 450MW combined cycle plant.

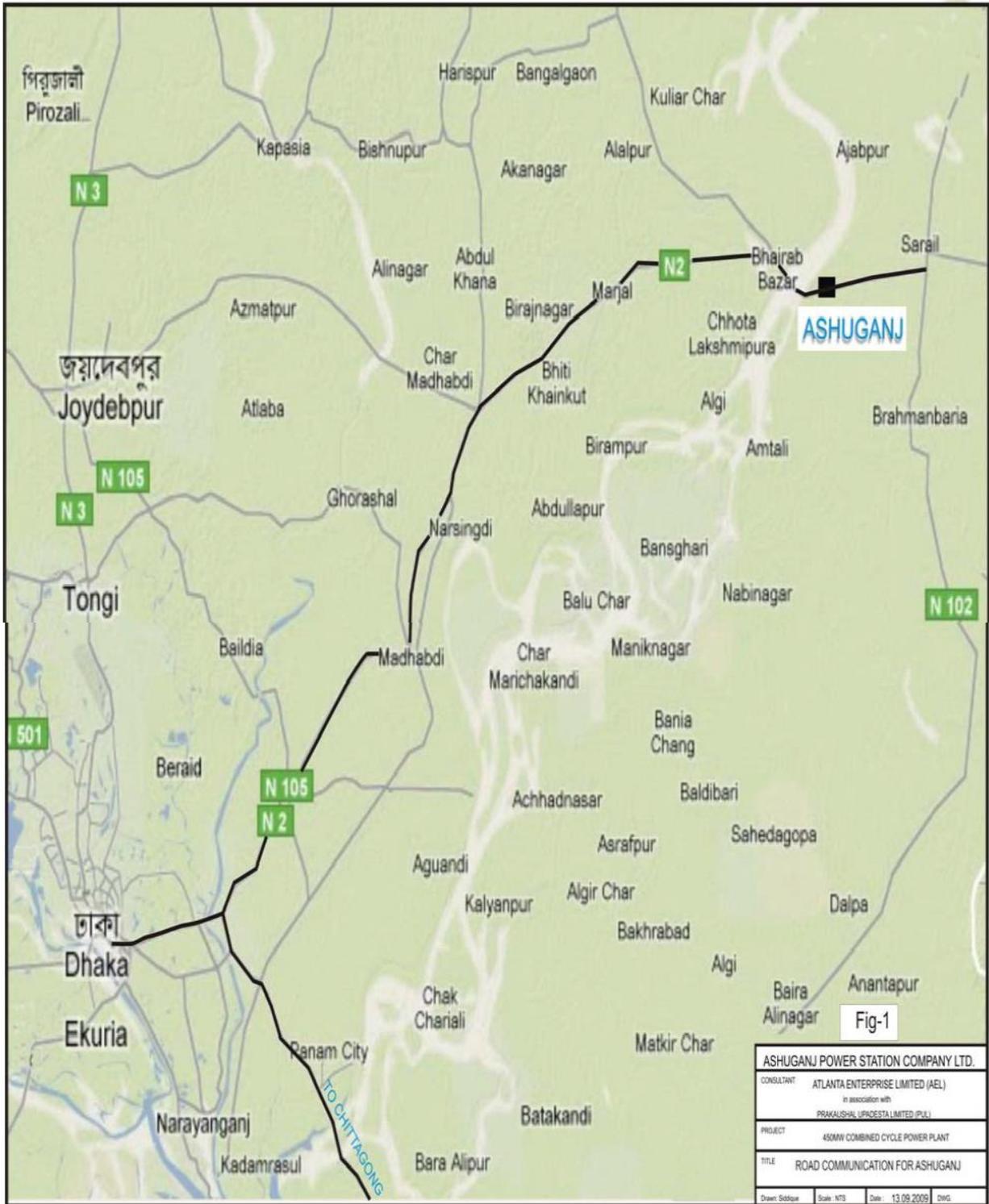
1.3 Objectives of the Project

The main objective of the proposed study is to construct a 450 MW combined cycle power plant to replace the existing 146MW combined cycle power plant and 2x64MW steam power plants at Ashuganj power station complex. These steam units were commissioned in 1970 and this CCPP has commissioned about 27 years ago and a steam turbine installed about 25 years ago. These are inefficient and outdated and too old to continue in service. The proposed 450 MW combined cycle power plant will run on natural gas as fuel. The proposed combined cycle power plant will reduce gas consumption from 11.94 cubic ft/kWh in the existing units to about 6.4 cubic ft/kWh. The proposed power plant will not need any acquisition of land and emit only lesser effluent than the existing plants.

1.3.1 The Site and Gas Pipe Line

APSCCL is approximately 75 km North East of Dhaka City (Fig-1). The proposed 450 MW Combined Cycle Power Plant will be located in the existing Ashuganj Power station premises on the left bank of the River Meghna (Fig-4.1). The combined cycle power plant will be installed in APSCCL's vacant land located at the Southwest extremity of the APSCCL complex (site-4). A map of the project site is furnished at Figure-3.1. It is intended that gas turbine unit will be fired continuously with natural gas. It is anticipated that gas will be supplied by Titas Gas Transmission and Distribution Co. Stand-by fuel such as distillate oil shall be provided and this contingency has been considered.

Figure – 1: Location Map of Ashuganj Power Station Company Limited (APSCl)



1.4 Need for Environmental and Social Impact Assessment Study

As power projects are identified as having the potential for environmental impact, the Bangladesh Department of the Environment (DoE) has categorized them as being the “Red Category” of industrial processes. As such, an Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) are required. However, the Director General of DoE can exempt IEE and allow the project proponent to go for EIA. The Managing Director of APSCCL accordingly made an application to the Director General, DoE, vide Me1mo No. APSCCL/MD/ Project-150/450MW/2009/870 dated 14-07-09 requesting the approval of the Terms of Reference for EIA and exemption from IEE. The Director General kindly approved this request vide No. DoE/Clearance/4049/2009/274 dated 12 August 2009.

1.5 Scope of Services for the EIA and SIA Study

This Environmental Impact Assessment (EIA) is a part of the feasibility study for the proposed 450 MW Combined Cycle Power Plant. The objective of the study is to help APSCCL prepare a power generation project suitable for GoB financing. The study is to verify the impact of the proposed project on environment and on people. The Terms of Reference (ToR) for the consultants are, but not limited to the following:

1.5.1 TERMS OF REFERENCE (TOR)

1.5.1.1 APSCCL intend to keep in operation the existing 146 MW combined cycle power plants till the completion of proposed new combined cycle power plant. In view of APSCCL’s intention, the consultant will determine the suitable location for the proposed plant layout considering layout of the existing plant and future development. APSCCL on the other option (Additional CCPP) include to keep in operation the existing 146MW CCPP as well as 2x64MW steam power plant till completion of the additional combined cycle power plant.

1.5.1.2 The consultant will study the economic life of existing 146MW CCPP and will prepare recommendation for its future use.

1.5.1.3 The Consultant will study and determine the best technological option, plant arrangement and maximum unit capacity on the available place.

1.5.1.4 The consultant shall study the total gas fuel availability for Ashuganj Power Station the requirement of alternative fuel for the proposed plant; and the maximum capacity of combined cycle power plant that can be sustained with total quantity of gas allocated for the existing 146 MW CCPP and 2x64MW steam power plant. Provision for dual fuel shall have to be considered.

1.5.1.5 The consultant will prepare specification for turbine, boiler, generator, electrical and mechanical auxiliary equipments for power evacuation, and will prepare proposal to renovate the water treatment plant and construction or utilization of existing circulating pump station.

1.5.1.6 The consultant will study the existing intake and discharge channel of circulating water system considering the navigability of the river and will prepare recommendations in this regard.

1.5.1.7 The consultant will prepare detail cost estimate including detail cost breakdown mentioning foreign and local cost components along with list of equipment and bill of quantities of for the proposed plant.

1.5.1.8 The consultant will prepare detail project implementation schedule and tentative disbursement schedule and carry out financial analysis.

1.5.1.9 The consultant will analyze detail project risks and will prepare proposal to mitigate it.

1.5.1.10 The consultant will prepare detail Project Feasibility Report and will submit the report to the Managing Director, APSCCL on the basis of the above studies & investigation that should include all relevant features of site, site investigations, site layouts; design criteria, conceptual design of the plant, plant performance, specifications, quantity of materials; item wise cost estimate both in local & foreign currency; project implementation plan, construction schedule, budget; financial analysis, benefit/cost ratio, training program etc.

1.5.1.11 The consultant will carry out Social and Environment Impact Assessment Study which shall cover the following items:

- a) Policy, legal and administrative framework
- b) Project description
- 3) Baseline data
- d) Environmental Impact Assessment and Mitigation
- e) Environmental Management Plan
- f) Analysis of alternatives
- g) Recommended Environmental Protection Measures, Environmental Management Plan and Environmental Monitoring Plan
- h) Prepare a Social Impact Assessment
- i) The consultants are to conduct detailed environmental study; to assess the biophysical and socio-environmental impact; to prepare report on Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) and to obtain environmental clearance/ permission from the Department of Environment (DoE) for the implementation of the above projects.

1.6 Methodology

A team of multidisciplinary specialists has been employed to prepare the EIA Report. Both secondary and primary data were used in the preparation of the EIA Report. The EIA study has been conducted and the present report prepared based on the information provided by APSCCL as well as all possible secondary information and data collected from all relevant sources and from the field through observation, primary data collection, public consultation, survey and certain degree of field validation. During this process, the following steps have been followed:

(i) A map of the area surrounding the proposed Ashuganj Combined Cycle Power Plant Project has been prepared. This is furnished at Fig-1. Keeping the CC power plant in the centre, two imaginary circles have been drawn with 1 km and 5 km radii. These areas are the bases for collecting relevant information and data needed for EIA Study. Four (4) field

enumerators have been engaged for carrying out extensive survey in the designated area and for collecting relevant data as per designed Questionnaire Formats.

While the field survey was gaining momentum, several Focus Group Discussions (FGD) were held comprising the members of the public, representing different professions, NGOs and CBOs. In these FGD meetings, the participants were listed and their opinion/comments were recorded in well designed Formats. Finally, all these data have been entered into a computer to form a data base and analyzed.

- (ii) Review the already conducted EIA for completed projects and identify areas to focus during the EIA;
- (iii) Collection of information relating to the study from BPDB, APSCL and other organizations;
- (iv) Detailed understanding of the scope of the assignment, activities involved and for the intervention areas and their surrounding environment;
- (v) Engage resource persons / field staff keeping in mind the limited time available for the assignment; arrange mobilization and necessary orientation;
- (vi) Collect all possible data on the environmental, social and natural resource components and parameters of necessity;
- (vii) Collection and review of pertinent reports and other references. *This particularly included DoE EIA Guidelines for industries 1997, Environmental policies, strategies and acts.*
- (viii) Meet concerned agencies and gather information from various government and other agencies of concern (*Local Union Councils, Upazilla Councils, BPDB, DOE, BWDB, etc*);
- (ix) Develop and utilize different information gathering tools, as necessary or deemed appropriate;
- (x) Undertake field visits and field surveys including public hearing process;
- (xi) Conduct a representative survey using prepared questionnaire covering a wide cross-section of people in the study area;
- xii) Collect samples, as necessary (air, water, noise) from predetermined points and areas within the study area and analyze relevant parameters;
- (xiii) Identification of environmental, biological and social impacts and evaluation of their significance and consequences;
- (xiv) Consult the people / stakeholders in the intervention areas through a public consultation process;
- (xv) Presentation of an outline of a management plan for future to handle the environmental and social management issues;
- (xvi) Prepare the draft EIA and SIA report;
- (xvii) Receive feedback on the draft and obtain quality check; and
- (xviii) Prepare the Final EIA and SIA Report incorporating the observations from APSCL and DoE and submit the same to APSCL.

In the process of preparing the EIA, EIA Guidelines of DoE for industries have been specially consulted and considered.

1.7 Report Structure

This report will specifically discuss about the social safeguards of the project, while the Environment Safeguards part is discussed in details in the Environment Monitoring Report prepared for meeting the requirements of ADB, APSCL as well as the Bangladesh DoE. The outline of the report structure is given below:

- Chapter-1 presents the “introduction” which will deal with the “background” and other aspects of the study.
- Chapter-2 describes the “socio-economic survey”.
- Chapter-3 deals with “public consultation” and extent of Involuntary Resettlement.
- Chapter-4 deals with “conclusions and recommendations”

1.8 Acknowledgement

AEL has prepared this Social Monitoring Report on behalf of APSCL. The Project proponent had been extremely positive in providing necessary information and documents and also in providing necessary guidance during undertaking of the study and preparation of the report. The Consultant gratefully acknowledges the help, advice and information provided by the Ashuganj Power Station Company Limited (APSCL), Bangladesh Power Development Board (BPDB), as well as the support and interest shown by local people, government and non-government organizations.

2 SOCIAL AND ECONOMIC ENVIRONMENT

2.1 INTRODUCTION

The project area designated for the construction of 450MW CCPP is a part of Ashuganj Upazila under Brahmanbaria district and Bhairab upazila under Kisoreganj district. The main objective of the proposed study is to construct 450MW combined cycle power plant to meet the growing demand of BPDB’s power system. The report of the SIA study is as follows. This section discusses socio economic condition of the project area. Both primary and secondary sources data are utilized for understanding of the socio economic condition of the project area.

2.2. SOCIO ECONOMIC SURVEY

For collecting latest social information, four skilled Investigators under the guidance of Sociologist were engaged in constructing primary data using structured questionnaire, a copy of which is attached hereto at Annexure – 3

2.3 METHODOLOGY

For benchmark socio economic analysis, a survey was carried out on both the banks of the river Meghna. This has been done on the basis of Participatory Rural Appraisal (PRA) and Rapid Rural Appraisal (RRA). One FGD meeting was held at Upazila level and 5 Focus Group discussions (FGD) were organized in the union level with about 100 stakeholders of different social strata representing the project area. There was a checklist and structured questionnaire for discussion in the FGD, Key Informants Interview (KII), for primary and secondary data collection. The union/ pourashava were selected on the basis of strategic location and distance. In the west bank of the river 2 FGD were organized and 3 FGD were organized from the east bank of the river Meghna. One FGD from the project union within one km radius, two from 2 to 3 km radius and two from 4 to 5 km radius. In addition to that Ashuganj and Bhairab Upazila government officers, Local government public representatives and KII were taken. As secondary sources, Bangladesh Bureau of Statistics (BBS), Upazila, Union and Pourashava records, Banglapedia, concerned books and periodicals were consulted. The socio economic information has been taken from both

upstream and downstream areas of the river Meghna. The survey area is roughly of 5 km radius around the proposed Ashuganj CAPP project site.

Considering the Union/Pourashava coverage, a total of- 7 unions/Pourashava are in the project site around five km radius of which, on the east bank 4 are in Ashuganj. viz.Char Charchartala, Ashuganj, Araishida, Durgapur(Dakshin Panisar) and 2 unions and one Pourashava are in Bhairab Upazila, These are Bhairab Pourashava, Srinagar (part of previous Sadekpur) and Simulkandi. Structured questionnaires and Checklist were used for data collection. Socio economic, environmental, demographic questions were included in the structured questionnaires.

2.4 SOCIO ECONOMIC CONDITION OF THE STUDY AREA

The project area is an industrial site beside and adjacent to the Dhaka Sylhet highway and locates in the eastern bank of mighty river Meghna. Economically the area is very active. The River Meghna is the main navigation route near the project site which connects Dhaka with north eastern region of the country via Bhairab and Ashuganj river ports .Different types of commodities including quarry, cement, fertilizer and paddy etc are carried through the river route. So cargo vessel is seen frequently in the river. Other than the industrial site rest areas are low lying agricultural land. West part of the project site across the Meghna River is under Bhairab Upazila of Kisoreganj district and east part is under Ashuganj Upazila of B.Barua district. The project locates in Sonaram Mouza of Ashuganj upazila. Bangladesh UK Friendship Bridge across the river Meghna (Meghna Bridge), connects both the banks of Bhairab and Ashuganj. The Bridge lies on the Dhaka Sylhet Highway. The project site locates in the North West direction of the highway. Location of Bhairab Rail Bridge is in the south west direction of the Bhairab bridge. Within 1km distance of project site, Ashuganj fertilizer factory is located. Beside the rail line on the east bank Ashuganj rail station is situated and a Silo is located in the eastern bank. In the western bank Bhairab rail station is located. On both banks there are residential areas. During monsoon low lying paddy field is submerged by the flood water. Boro crop is the main crop in the dry season.

2.5. Population and Demography

Population and demographic characteristics of the Zila, 4 Upazilas and 1 Paurashavas (Bhairab) in the study area have been presented in **Table 2.1 & 2.2**. The table shows that the population density per/sq. km. varies significantly among the different Pourashavas, Upazilas and Zila/districts. Population and demographic profiles of the concerned unions have been presented Union and Upazila wise in **Tables -2.1 and Table 2.2. and Table 2.3**, respectively.

Table 2.1: Population and demographic characteristics surrounding the project area (Zila, Upazilas and Paurashavas)

SI	Population Characteristics	B.Baria District	B.baria Sadar Upazila	Sarail Upazila	Ashuganj Upazila	Kishoreganj District	Bhairab Upazila
1	Total Area (Sq. km.)	1927.11	440.55	227.22	67.59	2731.21	139.2
2	Total Household	429390	109369	48822	26,709	534770	46634
3	Total Population	2398254	625484	271101	-145,828	2594954	247166
	- Male	1205552	318579	136240	-74,191	1320117	125621
	- Female	1192702	306905	134861	-71,637	1274837	121545
5	Household Size						5.3
	-Rural	5.58	5.7	5.5	5.5	4.9	5.3
	-Urban	5.59	5.7	5.6	5.5	4.8	5.3
		5.52	5.7	5.3	5.3	5.0	
6	Literacy Rate % (7 years+)						
	-Male	39.46	44.3	32.9	46.2	38.3	40.7
	-Female	42.26	46.2	36.2	47.7	41.3	44.8
		36.69	42.4	29.7	42.7	35.1	36.6
7	Sex Ratio	101	104	101	104	104	103
8	Total Mouza/ Mohallah	1024 97	320 34	76 -	30 -	953 147	32 26
9	Total Village	1331	375	140	38	1794	84
10	Total Union	98	21	9	7	105	6
11	Total Upazila	8	1	1	1	13	1
12	Pourashava Paura Ward	4 39	1 12	- -	- -	4 39	1 12

Source: Population Census 2001, Community series, Zila:B.Baria and Kishoreganj, BBS, August, 2006

Table 2.2: Population and demographic characteristics surrounding the project area unions of Ashuganj Upazila

Ashuganj Upazila								
Sl	Population Characteristics	*Ashuganj	*Araisidha	Charchartala	*Dakshin Panisar(Durgapur)	Lalpur	Pacchim Talshahar	Sharifpur
1	Total Area (Acres)	2799	1469	1572	3038	1818	2813	3193
2	Total Household	5958	2701	4092	4550	2817	3155	3436
3	Total Population	30282	15482	23555	26831	14201	17954	17523
	-Male	16054	7740	12500	13691	7069	8971	8166
	-Female	14228	7742	11055	13140	7132	8983	9357
4	Total Household	5548	2690	3990	4519	2803	3117	3423
5	Household Size	5.46	5.76	5.90	5.94	5.07	5.76	5.12
6	Literacy Rate % (7 years +)	50.06	47.18	56.35	45.64	35.45	38.25	41.99

Source: Population Census 2001, Community series, Zila: B.Barua, BBS, January, 2007 and National Series, Volume-2, Union Statics, March 2007

Table 2.3: Population and demographic characteristics surrounding the project area Pourashava Unions of Bhairab Upazilas

Sl	Population Characteristics	Bhairab Upazila						
		*Bhairab Pourashava	Aganagar	Gazaria	Kalika prashad	Sadekpur	*Shimulkandi	Shibpur
1	Total Area (in acres.)	3784	6331	4737	3241	5903	2866	1669
2	Total Household	17692	4872	4510	5246	5594	4721	3999
3	Total Population	-93254	-27306		--26906	-29914	-25567	-21091
	- Male	-48764	-13964	-23128	-13435	-14674	-12973	-10400
	- Female	-44490	-13342	-11411	-13471	-15240	-12594	-10691
				-11717				
6	Literacy Rate % (7 years +)	53.57	23.54	32.85	-32.23	33.75	37.14	35.26

Source: Population Census 2001, Community series, Kishoreganj, BBS, February, 2007

2.5.1. Population

As per Population Census 2001, population and other relevant information are as follows (Table 2.4).

Table 2.4 Population of the Project Upazila

Upazila	Area (km ²)	Total Household (No)	Population (No)	Male (No)	Female (No)	Literacy7+ (%)	Population 18+ (No)
Ashuganj	67.59	26709	1,45,828	74,191	71,637	46.2	72,332
Bhairab	139.32	46,634	2,47,166	1,25,621	1,21,545	40.7	1,24,941

The above Table shows that there are (103.5) males compared to 100 females. Sex Ratio (2001, BBS) in the Dhaka district is 109.5. But the ratio is different in the urban area, namely, 121.9 and the same in the rural area it is 103.6.

Family Size: average family size in district (Census, 2001) is, In the district of Kishoreganj hh size is 4.9 and in Bramanbaria is 5.6. Family size of Ashuganj is 5.5 and Bhairab 5.3 in the urban area and 5.52 and 5.39 in the rural area respectively. Density of population of Brahmanbaria district is 1244 per sq km.

2.6 Findings of Socio-Economic Survey

Following findings have been obtained from the socio economic survey. Data is mainly from secondary sources but some data have been collected from FGD meeting and KII based on PRA and RRA method. The secondary sources are Union Parishad, Upazila Parishad and BBS. And some records are collected from concerned key stakeholders viz associations and public representatives.

2.6.1 Religion

Religious feature of the manpower are presented in Table 2.5. The community is predominantly Muslim.

Table 2.5 Type of Religion of the sample households Bhairab Upazila

Upazila	Total H.H	Muslim	Hindu	Buddists	Christian	Trbal	Others
Ashugnj	26709	25,599	1088	11	1	1	10
Bhairab	46,634	44,448	2,173	4	1	1	8

Source: BBS, community series, Kisoreganj and B.Barria census 2001

From the above Upazila records shows that in Ashuganj 95.84% are Muslim and rest are mainly Hindu communities. And 95.31% is Muslim in the Bhairab upazila. Project area's condition is also same. In the sample area mainly Muslims are residing. Hindu communities are very minor.

2.6.2 Land Ownership and Homestead Land

In the study area, it is found that more than 30% of the households do not possess any land. That means, majority of the people in the area are involved in profession other than agriculture (Table 2.6).

Table 2.6 Land holdings and Ownership of Land at Ashuganj Upazila

	Ashuganj	Bhairab Upazila
Agricultural Land in decimal	(%) of Total	(%) of Total
0	30	30
1-50	40	15
51-100	10	20
101-150	10	20
151-250	5	5
251-500	5	10
Total	100	100

Source: Upazila Statistical Department, Ashuganj and Field survey

About 15-40% have land size of 50 decimal and 10-20% has land size of 101-150 decimal and 5% have land size of 151 to 250 decimal respectively. The price of the land is increasing rapidly as proportionately with urbanization and development.

2.6.3 Housing Pattern and ownership

In the project area maximum people live on their own houses but a few in rented houses. As more urbanization more households will reside in the rented house in future. The area is a semi urban area; moreover, it has also a rural character. Most people live in inherited land. Table-7 below shows the pattern of the ownership of residence.

2.6.4 Access to Health Facilities

There are government Health complex in both the Upazilas. Two government hospitals are giving services, one owned by Ashuganj power plant and another is owned by Zia Fertilizer factory in Asuganj Upazla. Two Clinics are in Ashuganj union near the project area. Also one diabetic Centre is rendering services for diabetic patients. In Bhairab, there is a 50 beds government hospital and a private hospital in the Pourashava. People normally contacts medicine shop and quack doctor primarily. But solvents go to private Clinic. Normally the poods go to government hospital. Zia fertilizer and power plant hospital is mainly for staff treatment but in emergency case, limited service is provided for the common people. In Ashuganj the following health facilities are available. These are Upazila Health Complex- 01, Community Health Centre- 06, Hospital (non-govt.)- 02, Private Clinic- 02, Diabetics Centre- 01, and Veterinary Hospital- 01. In Bhairab available health facilities are Upazila Health Complex- 01 (50 Bedded), Upazila Community Health Centre- 02 (Shemulkandi, Bhairab), Community Clinic-07, Health and Family Welfare Centre-05, Hospital (non-govt.)- 06, Private Clinic- 02, EPI Vaccination Centre- 170, X-Ray Machine- 01. Main diseases are waterborne diseases viz diarrhea, dysentery, typhoid and sexually transmitted disease (STD). Also Acute Respiratory Infection (ARI) is predominantly seen in the area. The STD is of abundance due to migratory people and workers in the area and in the boiler based rice husking mills. In the area lot of women workers work in these husking mills locally known as 'Chatal'. Approximately there are 250 Chatals in the project area.

2.6.5 Source of Drinking Water and Sanitation

As reported by DPHE, Ashuganj Upazila has attained 100% sanitation coverage. Total sanitary latrine is 1722. No of total TW is 1539. On average 17.35 households fetch water from a single Tube well. There is no water supply system in the study site. The people are dependent on tube well water for drinking purpose. Sanitation practice is very important for a community. It is a part of social behavior to use soap after toilet use. Earlier it is mentioned that the area has both urban and rural character. Table-9.2 and 9.3 above shows the sanitation coverage in Ashuganj and Bhairab Upazila. Sanitary latrine coverage was 44.89% of the households in Ashuganj and 39.74 % hold in Bhairab upazila. But present situation has been drastically improved. Ashuganj is at present under 100% and Bhairab is under 90% sanitation coverage.

2.6.6 Fuel Source

In the study area, most of the households have natural gas connection (40%) for cooking purpose. Others depend on fuel wood.. Fuel wood is a costly item. Survey shows that households using natural gas for cooking as well as those using fuel woods are almost same (35% each) and 5% depend on leaves (Table 2.7).

**Table
Fuel****2.7:****Cooking**

	Ashuganj Upazila	Bhairab Upazila
Type of Cooking Fuel	(%) of Total	
Natural Gas connection	40%	50%
Leaves	5%	5%
Cow dung	20%	15%
Wood / Straw	35%	30%
Total	100%	100%

Source: Field Survey and FGD meeting

2.6.7 Literacy

Education rate is rapidly increasing in the project area. According to the Upazila education office, about 90% enrollments are in the Ashuganj Upazila. Current year, 20,000 students have been new enrollment in the primary schools excluding kindergarten School. The Number of household in the upazila is 26,709(Census2001), that means almost from each family one student is enrolled in the primary classes except ultra poor family of the upazila. According to BBS 2001 census in Ashuganj Upazila the literacy rate for both sex is 46.2%, for male is 47.7% and for female is 42.7%. According to BBS 2001 literacy rate of 7+ populations is 50.06% in Ashuganj and is 49.05 % in Arashida. So it is assumed that near plant site education rate is high to some extent, roughly 65%. From FGD meeting at Dakshin Panishar it is found that the education rate is now 60% approximately. Education rate is also increasing among the female.

Table: 2.8 Rate of literacy for male and Female

Upazila	Both	Male	Female
Ashuganj	46.2	47.7	42.7%
Bhairab	40.7	44.8	36.6%

Source: BBS,Census 2001

The above Table 2.8 shows that, literacy rate is 46.2% in the project area for 7+ populations in Ashuganj upazila whereas it is 40.7% in Bhairab Upazila.

2.6.8 Electricity Facility

Currently in the project area about 70% to 80% households have electricity connection. At Ashuganj union it is about 80%. Dakshin Panishar and Simulkandi unions of Bhaiab Upazila have 80% & 70% electricity coverage respectively. In the project area nearly 99% the households have electricity connection. The area may be considered as largely dependent on electricity due to growing business in the area .Table 2.9 verifies this statement.

Table 2.9 Electricity Facility

Area (Upozilla Basis)	Electricity Facility Available in Household (No)
Ashuganj	57.75%
Bhairab	51.31%

Source : BBS, 2001 census

However all the unions are under rural electrification program in both the upazilas. Details of Social Environment are provided in Volume 3

3 PUBLIC CONSULTATION AND RESETTLEMENT IMPACT

3.1 Public Consultation

3.1.1 Information Dissemination Process

On behalf of APSCL, the consultant arranged several consultation meetings with the local stakeholders for information dissemination and community participation with the concerned NGO, and other relevant persons. The consultant and their employed enumerators investigated all the relevant matters regarding the project by arranging meetings, and group discussions for people's awareness. Information campaigns were carried out in presence of the clients of the project. The consultant addressed in a Focus Group Meeting in the community. In these meetings all classes of public including businessmen, farmers, school teachers, religious leaders, NGO and Members and Chairman of the Union Council were present. It is important to note that the project will be constructed in the existing APSCL's land. No acquisition of land is needed for the proposed project. 4 to 6 new tower is needed to be installed for transmission of the power to the national grid line. For which no permanent acquisition of land and consequent resettlement will be required. Some noise, air pollution may occur, but it will be minimized using proper methods. The consultant has carefully studied all types of impacts in the locality likely to be caused by the proposed plant. Information dissemination and consultation will continue throughout the project implementation period.

3.1.2 Key Stakeholder's View

Consultation with the key stakeholders was held at the time of field survey. It is a continuous process till the completion of the project. During the survey period, school teachers, village leaders and Members and Chairman of the local bodies and others were contacted in groups and individually with particular importance to female headed households. The concerns and suggestions are given below. Local people at Ashuganj think that:

- a) Sound pollution should be restricted;
- b) He claims that plant authority should arrange meeting with local public representative
- c) before finalization of detailed lay out plan with the concerned person of power plant.
- d) Height of the chimney should be 50 meter.
- e) Water temperature is to be maintained minimum but the plant authority repeatedly confirms that it should not exceed DoE (Department of Environment) regulation and in no way hampers the environment.

Mr. .MD. Rezaul Maksud Jahidi, UNO, Ashuganj Upazila suggested that:

- a) Proposed plant will have positive impact on over-all socio-economic condition. No impact on environment. Precautionary Safety measures should be taken in the flow of artificial outfall into the cooling water canal.
- b) Ensure social welfare from the plant by providing job and technical education etc.Ch-8-2
- c) Develop the area as tourist site by creating recreational facilities and beautification.

3.1.3 Summary of Consultation

Consultations with the key stakeholders which is a continuous process were held at the time of field survey. Schoolteachers, village leaders and local government's Members and Chairman were contacted in group and individually. Some important highlights of public consultation are given below:

Summary of focus Group Discussion (FGD):

- Local people should be given employment opportunity during construction of the project.
- Electricity facilities to be extended to the villagers
- Local unemployed youths to be given training and employment opportunity as far as practicable.

Summary Report of Key Informant Interview (KII):

- To take care of the public safety as well as to provide security in critical locations. In order to remove any fear of explosion, the authority should exercise adequate care in construction & maintenance work, particularly of gas pipe line.
- Works should be completed as quickly as possible in order to reduce the constructional impacts.
- The electricity should be made available to the people at the earliest possible opportunity.
- To ensure quality of material & best workmanship for safe and durable power plant and to provide uninterrupted supply to the consumers.
- Prompt placement of fund by the authority for quick completion of the plant.
- The executing agency should follow all rules, regulations and standards in the construction of the project.
- Care should be taken for ensuring the least possible damage to local infrastructure viz. roads & structures during construction of the project including gas pipe line.
- Contingency plan should be taken to meet any eventual accident.

3.2 Suggestion from the Local People

- (a) Local people urged to accommodate in all sorts of employment opportunity both temporary and permanent.
- (b) Facilitate stable electricity connection for the local area
- (c) Noise pollution should be avoided.

3.2.1 Resettlement

The project does not need any resettlement as no permanent acquisition of land is envisaged. However, there are improvised structures and abandoned building at the site of the proposed project. These will be removed when the construction of the Power Plant will start.

The proposed project is unlikely to affect any fishery in the AoI. Overall, socio economic condition of the common people is expected to improve.

4 CONCLUSIONS AND RECOMMENDATIONS

4.1 General

There is acute shortage of generation capacity in the country and addition of generation capacity is, therefore, considered essential to cope with the consumers' demand and to provide reliable power in and around Ashugnaj and Bangladesh as a whole. As power projects are identified as having the potential for environmental impact, the Bangladesh Department of the Environment (DoE) has categorized them as being the "Red Category" of industrial processes. As such, an Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) are required. However, the Director General of DoE has exempted IEE and allowed the project proponent to go for EIA for which the project proponent prepared this report through AEL.

4.2 Conclusions

The EIA has identified a range of potential impacts and determined suitable mitigation measures together with a monitoring program. The potential negative environmental impacts associated with the construction activities are relatively minor in comparison to the significant environmental and economic benefits resulting from project operation. Implementation of the proposed mitigation measures and the monitoring program will reduce the impacts to significant levels. Although the project was categorized as "A" for Involuntary Resettlement (IR), the IR safeguards did not trigger for this component as no physical or economic displacement of any people was envisaged.

During construction, the contractor will implement the mitigation measures identified in the EIA, while project consultants will conduct regular monitoring to ensure contractor's compliance with applicable provisions of the EMP. The project consultant will also assist the APSCCL in preparing contractual documents so that bidding documents; bills of quantity and other contractual obligations of the contractor clearly identify environmental responsibilities and describe penalties for non-compliance. The local communities expressed support for immediate implementation of the project, during the consultations as they clearly realized the benefit of the project during the consultation.

Finally, the Project will result in positive environmental and economic beneficial impacts and will have minor negative impacts during construction period which will be carefully monitored and adequately mitigated. The completion of this EIA fully meets the GoB standards. After completion of the project, a post project evaluation would be useful for sustainability and ensuring environmental safeguards of the project.

4.3 Recommendations

Based on the environmental assessment (EIA) conducted for the project following recommendations is suggested:

- Implementation of the proposed 450 MW CCPP project should go ahead as soon as possible considering the environmental Acts/Rules of the Government of Bangladesh.

As stated in the foregoing, it can be safely said that the environmental impacts of the proposed 450 MW Combined Cycle Power Plant at APSCL's premises will be minimized to an acceptable level in order to meet the Bangladesh Environmental Standards. Further socio-economic benefits derived from the project implementation are expected to be high. It may be stated that there is no need for permanent acquisition of land for project implementation and that no resettlement will be required. In consideration of the foregoing findings, the proposed 450 MW Combined Cycle Power Plant at Ashuganj may be accepted for implementation after DoE issues the environmental clearance.