

Environmental and Social Monitoring Report

Semestral Report
July–December 2016

BAN: Power System Expansion and Efficiency Improvement Investment Program (Tranche 3)

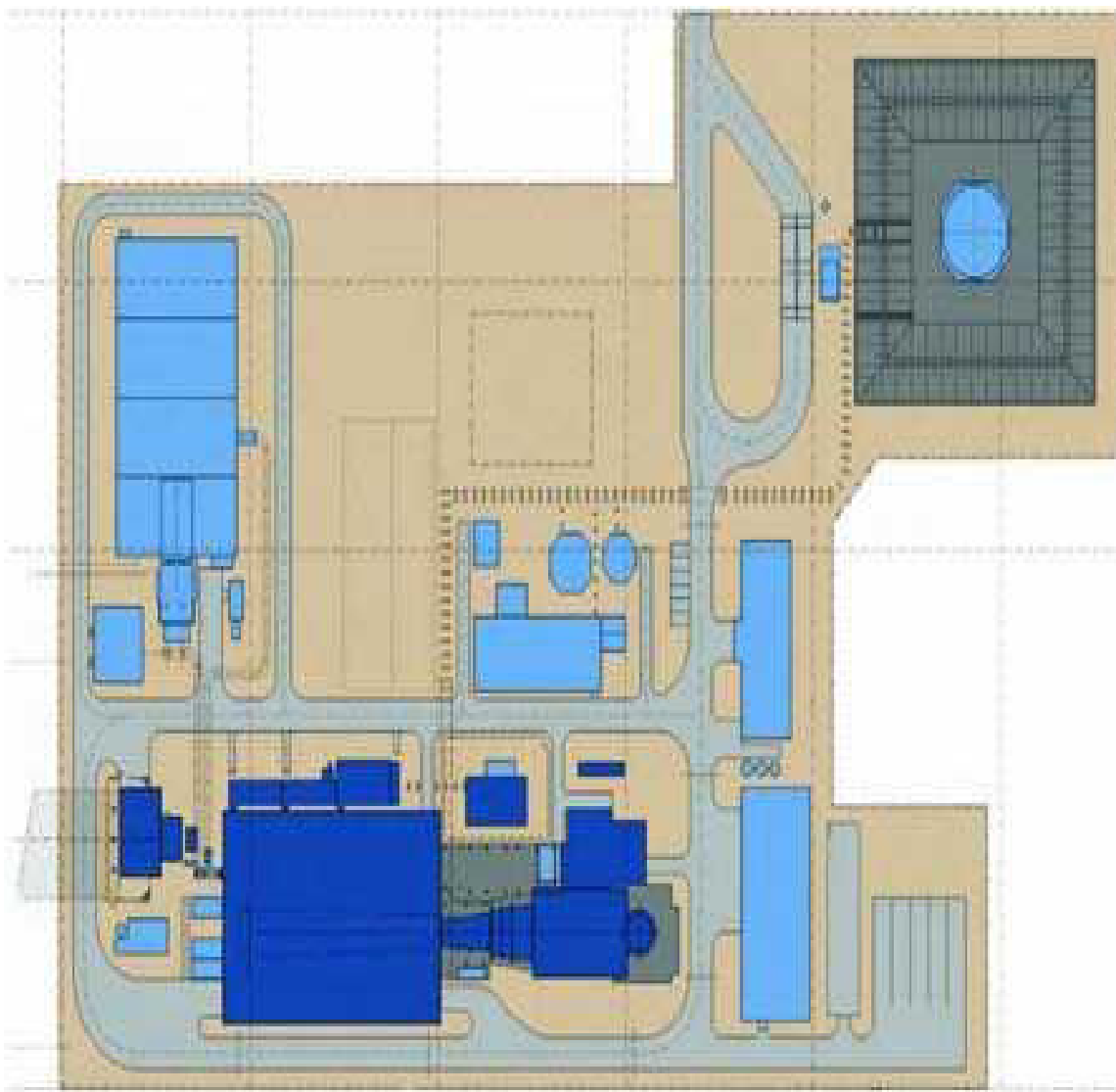
Prepared by Ashuganj Power Station Company Limited (APSCL) for the Asian Development Bank.

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Environmental and Social Safeguard Monitoring Report

2nd Semi Annual (July – December, 2016) Report



ASHUGANJ 400 MW (EAST) COMBINED CYCLE POWER PLANT PROJECT (CCPP)

At Ashuganj, Brahmanbaria



Ashuganj Power Station Company Limited (APSCCL)

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Semi Annual Monitoring Report
For ASHUGANJ 400 MW (EAST) COMBINED CYCLE POWER PLANT
PROJECT (CCPP)
(Ashuganj, Brahmanbaria)

Period: 2nd Semi-Annual (July-December, 2016)
Monitoring: Ambient Air, Water & Noise Quality

EXECUTIVE SUMMARY

The first stage Bid of Ashuganj 400 MW CCPP (East) project is in floating condition and commencement of project activities is not yet in the plan. So, there is no negative impact found till now on the environment due to this project. The new plant will be established on the existing site replacing an old combined cycle power plant for which no land acquisition and development activities will be required. So, environmental components like air, water and soil will not be hampered remarkably. The minimal disturbance to the environment during construction phase identified in EIA and other reports will be managed by proper environmental management system following suggestive and recommended measures in the EIA, ADB Environmental Safeguard Policy 2009, IFC/World Bank Thermal Power Plant Guideline 2008 and Department of Environment, Bangladesh guideline.

1.0 INTRODUCTION

The objective of the environmental safeguard management and monitoring is to record environmental impacts resulting from the project activities and to ensure implementation of the “mitigation measures” identified earlier in order to reduce adverse impacts and enhance positive impacts from specific project activities. Besides, it would also address any unexpected or unforeseen environmental impacts that may arise during construction and operation phases of the project.

The EMP (in the EIA) clearly lay out: (a) the measures to be taken during both construction and operation phases of the project to eliminate or offset adverse environmental impacts, or reduce them to acceptable levels; (b) the actions needed to implement these measures; and (c) a monitoring plan to assess the effectiveness of the mitigation measures employed. Environmental management and monitoring activities for the under-construction power plant project could be divided into management and monitoring: (a) during the construction phase, and (b) during the operation phase.

The application of this plan involved an environmental control and monitoring of the work by a technical team to verify compliance with all the indications, limitations or environmental restrictions set forth in the Environmental Management Plan (EMP), EIA and the Project, with the minimise damage caused by work on the environment.

The information obtained by the implementation of the Environmental Action Plan is required to define preventive measures or define corrective actions.

The information generated as a result of implementing the Environmental Action Plan must be duly forwarded to the Department of Environment (DoE).

1.1 Brief Project Description

A Combined Cycle Power Plant of Total net $400 \pm 5\%$ MW capacity at site condition (35°C , 1.013 bars, 98% R.H.) is intended to be set by Ashuganj Power Station Company Limited inside the existing premises. The Power Station will be connected with the Ashuganj 400 KV Gas Insulated Switchgear (GIS) Grid Sub-Station with necessary electrical equipment. The basic concept for the Ashuganj 400 MW CCGP (East) project shall be a CCGT Plant based on one Gas Turbine Generator unit (GTG), one Unfired Heat Recovery Steam Generator and one Steam Turbine Generator unit (STG). Water-steam cycle will be a three pressure levels (HP, IP and LP) with reheat. The Ashuganj 400 MW (East) Combined Cycle Power Plant Project complex is located on the Southern bank of Meghna river, just outside and to the East of Bhairab Bridge. The power plant is located in Ashuganj under Bhairab Upazila. The entire power plant is completely enclosed, covers an area of about 4.50 acres and is owned by the Ashuganj Power Station Company Limited (APSCL).

1.2 Project Progress Status and Implementation Schedule

The basic concept for the Ashuganj East project shall be a CCGT Plant based on one Gas Turbine Generator unit (GTG), one Unfired Heat Recovery Steam Generator and one Steam Turbine Generator unit (STG). Water-steam cycle will be a three pressure levels (HP, IP and LP) with reheat. General components of the proposed CCGT project include the following: (i) $400 \pm 5\%$ MW CCGT unit complete with necessary auxiliaries including air intake filtration facilities, inlet and exhaust silencers, control systems, main stack with delivery damper, gas fuel treatment system, (ii) Power generator for the gas turbine unit with all auxiliaries including cooling system, control system, excitation system; (iii) one Steam turbine unit complete with necessary auxiliaries including heater, pumps, steam turbine bypass, control systems; (iv) Power generator for the steam turbine unit with all auxiliaries including cooling system, control system; (v) Heat Recovery Steam Generating system with auxiliaries including deaerators, pumps, exhaust stack, control system; (vi) Gas booster compressor system with all auxiliaries and control system; (vii) Di-mineralized water system complete with pumps, tanks, control system (viii) Effluent treatment system with all auxiliaries including, chemical dosing systems, settling units, control system, pumps; (ix) Other essential plant equipment including air compressor, natural gas supply system with 2200 m gas pipeline, circulating water system, cooling water pond, raw water intake structure, condensate system; (x) Construction of internal roads. (xi) Switch room (xii) Emergency generator and transformer

A synopsis of work need to be undertaken during the construction period

According to environmental monitoring, during the construction phase and assignment, the main work will be to collect the ambient air samples to measure air pollutants and noise level data from the project area. For river water analysis the water sample will also be collected from the nearby Meghna River.

Description of Work	2 nd Semiannually (July– Decemebr 2016)	Frequency
Ambient Air Quality	No need to measure	Monthly
Noise Level	No need to measure	Monthly
Drinking water Level	No need to measure	Monthly
River water	No need to measure	Monthly
Groundwater Level	No need to measure	Monthly
Soil quality	No need to measure	Monthly
Process waste	No need to measure	Quarterly
Health checkup	No need to measure	Daily

Project Environmental key personnel, contact names and telephone numbers

Sl. No.	Project Key personnel	Name of Key personnel	Telephone No.
01	Manager (HSE), 400 MW (East) CCPP, APSCL	Md. Atiqur Rahman	01717462670
02	Executive Engineer (Electrical.)	Md. Imrose Islam	01711100873
03	Executive Engineer (Civil.)	Mohammad Asadujjaman	01712238642
04	Manager(Chemical)	Md. Ashraful Islam	01717650871
05	Assistant Manager(HSE)	A.K.M. Humayan Kabir Dewan	01730025431
06	Assistant Engineer (Electrical)	Aminul Islam	01739653761
07	Assistant Engineer (Civil)	Md. Talha Bin Sharif	01717256653
08	Assistant Manager(Chemical)	Md. Yasin Molla	01923606305
09	Operator (3 Nos.)	1. Milon Kanti Das 2. Md. Wasi Uddin 3. Ashiq Hasan	
10	Environmental Specialist	Yet not engaged	

2.0 COMPLIANCE OF NATIONAL REGULATIONS

2.1 Environmental Conservation Rules 1997

2.1.1 Regulatory Compliance progress:

Government of Bangladesh (GoB) Guidelines for Air and Noise Quality

For carrying out the production, the standard for air and noise quality of the environment shall be determined in accordance with the standard specified in Schedule 2 and Schedule 4 in the Environment Conservation Rules 1997, compiled by DoE, Ministry of Environment and Forest, GoB. Schedule 2 and 4 are presented in the Table 5.1 and Table 5.2 respectively. The revised National Ambient Air Quality Standards Published in the Bangladesh Gazette (19 July 2005) and Noise Level Standard Published in the Bangladesh Gazette (7 September 2006) is shown in Table 2.1 and Table 2.2 respectively.

The guidelines for acceptable noise level, especially outside plant boundary have been considered as levels recommended by internationally acclaimed standards. Bangladesh has categorized the noise by the following levels.

Table 2.1: Bangladesh Standards for Ambient Air

Location	Unit	SPM (Suspended particulate matters)	SO ₂ (Sulphur di-oxide)	NO _x (Oxide of Nitrogen)
Industrial and mixed area	mg/m ³	500	120	100
Commercial and mixed area	mg/m ³	400	100	100
Residential and Rural area	mg/m ³	200	80	80
Sensitive area	mg/m ³	100	30	30

*Source: (Schedule-2, Rule 12, Environment Conservation Rules 1997)

Notes:

- Sensitive area includes national monuments, health resorts, hospital, archaeological sites, educational institutions and other government designated area (If any).
- Any industrial unit located not in a designated industrial area will not discharge such pollutants, which may contribute exceed the ambient air quality above in the surrounding areas of residential and sensitive areas.
- Suspended particulate matters mean airborne particles of diameters of 10 micron or less.

Table 2.2: Bangladesh Standards for Noise

Location Category	Standards determined at dB(A) unit	
	Day	Night
Silent Zone	45	35
Residential Area	50	40
Mixed Area (basically residential and together used for commercial and Industrial purposes)	60	50
Commercial area	70	60
Industrial area	75	70

**Source: ECR Schedule 4, A Compilation of Environmental Laws, DoE*

Notes:

- Limits presented are one-hour energy equivalent sound exposure limits;
- 'Daytime' is 06.00 to 21.00 hours, 'nighttime' is 21.00 to 06.00 hour; and
- Sound exposure at a receptor resulting solely from the facility, irrespective of ambient sound levels, should not exceed the presented limits.

Table 2.3: Bangladesh Standards for Ambient Air (Revised 19th July in 2005)

Pollutant	Objective	Averaging Time
PM _{2.5}	15 µg /m ³	Annual (f)
	65 µg /m ³	24-hour (h)
PM ₁₀	50 µg /m ³	Annual (b)
	150 µg /m ³	24-hours(g)
SPM	200 µg /m ³	8-hours
SO ₂	80 µg / m ³ ; (0.03 ppm)	Annual
	365 µg / m ³ ; (0.14 ppm)	24-hour (a)
NO _x	100 µg /m ³ ; (0.053 ppm)	Annual
CO	10mg/m ³ ; (9 ppm) (a)	8-hours (a)
	40mg/m ³ ; (35 ppm) (a)	1-hour (a)
Lead	0.5 µg/m ³	Annual (i)
Ozone	157 µg /m ³ ; (0.08 ppm)	8-hour (e)
	235 µg /m ³ ; (0.12 ppm)	1-hour(d)

Notes:

- Not to be exceeded more than once per year
- The objective is attained when the annual arithmetic mean is less than or equal to 50µg/m³.
- The objective is attained when the expected number of days per calendar year with a 24-hour average of 150µg/m³ is equal to or less than 1.
- The objective is attained when the expected number of days per calendar year with the maximum hourly average of 0.12 ppm is equal to or less than 1.
- 3-year average of annual 4th highest concentration
- Spatially averaged over designated monitors
- From the 99th percentile.

- h) From the 98th percentile
- i) Annual arithmetic average based on lead analysis of TSP samples operated on an every 6th day schedule.

Table 2.4: Bangladesh Standards for Noise (Revised 7th September in 2006)

Schedule -1

Rules 5(2) (Area Based Noise level value)

Location Category	Standards determined at dB(A) Leq unit	
	Day	Night
Silent Zone	50	40
Residential Area	55	45
Mixed Area (basically residential and together used for commercial and Industrial purposes)	60	50
Commercial area	70	60
Industrial area	75	70

*Source: ECR Schedule 1 (Revised 7th September 2006), A Compilation of Environmental Laws, DoE

3.0 COMPLIANCE OF ENVIRONMENTAL COVENANTS FROM THE ADB LOAN AGREEMENT

3.1 Summary of environmental measures

All development projects must co-exist satisfactorily with its surrounding environment so as to reduce the environmental impact caused due to this activity. To control the adverse impacts on ambient air, water, noise and safe environmental management plan has to be implemented by the proponents.

So to see the adverse impacts of the developing projects or the activities the following parameters will be measured:

- (a) Ambient Air : SPM, PM₁₀, PM_{2.5}, NO_x, SO₂, CO
- (b) Ambient Noise Level
- (c) Drinking water : pH, Ammonia, Nitrate, Phosphate, As Fe, Mn, Total Coliform & Fecal coliforms
- (d) River water: Temperature, DO, BOD₅, COD, Oil and Grease, Chromium (Cr), Lead (Pb) & Cadmium (Cd).
- (e) Ground water: pH, Ammonia, Nitrate, Phosphate, As Fe, Mn, Total Coliform & Faecal Coliforms.

3.2 Enhancement measurement will be

- Construction of sanitary latrine and septic tank system (one latrine for 20 persons)
- Erecting “no litter” sign, provision of waste bins/cans, where appropriate
- Waste minimization, recycle and reuse
- Proper disposal of solid waste (in designated waste bins)
- Clean bill of health condition for employment
- Regular medical monitoring of workers
- Scheduling of deliveries during non-school hours and after regular working hours
- Protecting school going children from traffic hazard during construction phase, with installation of proper traffic sign and warnings

- Speed reduction to 10 km per hour within the Ashuganj plant complex
- Keeping vehicles under good condition, with regular checking of vehicle condition to ensure compliance with national standards
- Watering unpaved/dusty roads (at least twice a day; cost estimate provided)
- Sprinkling of water and covering stockpiles
- Covering top of trucks carrying materials to the site and carrying construction debris away from the site.
- Proper layout of WWTP and ETP
- Use of noise suppressors and mufflers in heavy equipment
- Avoiding, as much as possible, construction equipment producing excessive noise during school hours and also at night.
- Avoiding prolonged exposure to noise (produced by equipment) by workers.
- Not using equipment such as stone crushers at site, which produce significant amount of particulate matter.
- Keeping construction equipment and generators in good operating condition
- Using equipment, especially generators with high levels of emission control (e.g., TIER-4).
- Immediate use of construction spoils as filling materials.
- Immediate disposal/sale of excavated materials.
- Continuous watering of bare areas.
- Hauling of construction debris away from the site and their appropriate disposal in a sanitary landfill.
- Good house keeping
- Proper handling of lubricating oil and fuel
- Collection, proper treatment, and disposal of spills
- Local people employed in the project activities
- Using stack as specified in the bid document.
- Using low nitrogen oxide burners, as specified in the bid document.
- Installation of stack emission monitoring equipment for major pollutants
- Planting of trees around the project site, especially along the boundary of the residential areas located close to the project site
- Restrictions may also be imposed on installation of industries in the area that emit significant amount of particulate matter.
- Provision of silencers, canopy for generators and turbines
- Planting of trees around the project site
- Regular plant maintenance
- Regular noise monitoring, especially at the school and residential quarters located close by
- Use of ear-muffs and ear-plugs by plant personnel working in the generator and turbine facilities of the plant.
- Use of all required personal protective equipments by all persons engaged in plant construction activities.

4.0 COMPLIANCE TO ENVIRONMENTAL MANAGEMENT PLAN

4.1 Major environmental activities of the project

Major Environmental Activities of the project which will be during construction period are given below:

- Influx of workers
- Transportation of equipment, materials and personnel; storage of materials
- Construction activities, including operation of construction equipment

4.2 Semiannually assessment of construction impact on air, water, noise, construction waste and labor camp management

4.2.1 Impact on Air Quality

During the construction phase of the proposed power plant project, the important sources of emissions will include those from the operations of construction equipment and machineries, vehicles carrying construction materials to the site and taking construction debris out of the site. If construction equipment, such as stone (aggregate) crusher is used at the site, this may result in significant emission of particulate matter during its operation. But to control it, batching plant will be situated in an isolated place outside of project area which will have no impacts on the project and also its adjacent places.

Since construction of the proposed power plant project will most likely involve significant earthworks, increase in particulate matter in the air from wind-blown dust is also a concern, to the project site. Ambient Air Quality will be monitored from four different places at Ashuganj 400 MW (East) Combined Cycle power plant project such as East, West, North and south side of the plant. Test Results of Ambient Air Quality from these different places will be presented in Table.

The result for ambient air quality monitoring will show the SPM, PM₁₀, PM_{2.5}, concentrations of the ambient air. From the analysis it will be observed that the concentration of SPM, PM₁₀, and PM_{2.5} is within the allowable limit or not. So, the SPM and PM₁₀ may be found higher level during movement of vehicle, surrounding rice husk mills but after spraying of water the dust level will be reduced remarkably low. Having construction activities many diesel vehicles will move around and few cranes will also be under operation, so it can be thought that the NO_x level would be higher level. PM_{2.5} is composed of a mixture of primary and secondary particles, Primary particles are emitted directly into the atmosphere and include soil-related particles and carbon particles from fossil fuel combustion, and secondary particles are sulphate, nitrate, organic and elemental carbon, trace elements and ammonium. The upcoming project is at Ashuganj in Brahmanbaria district which will be in unplanned urban and planned industrial area, so the cumulative air pollution may be high in this area during the construction period.

Mitigation measures as outlined in **Section 4.3** will be adopted to minimize the possible adverse impacts of project activities on air quality.

4.2.2 Impact on Noise

During construction stage major source of noise is expected to stem from transport vehicles which include barges and trucks. Also noise is expected to be produced from plant construction activities. The construction phase may be broadly classified into two different groups:

- General Site and Plant Construction,
- Water and Effluent Treatment Plant construction, and
- Access Road Construction.

SN	Location	GPS Locations
01	L1	N 24° 02 '40.43 “ E 91°1'1.55”
02	L2	Will be selected during construction work
03	L3	Will be selected during construction work
04	L4	Will be selected during construction work

To assess the noise generated by different activities it is essential to identify the equipment to be used at various stages of the construction work. Therefore, an inventory of the probable equipment will be used and their reference noise generation data are of utmost importance. Measured noise level in the construction site will be summarized in table.

4.2.3 Impact on Water Quality

The drinking, surface and ground water sample will be collected from the supplied water, Meghna River and ground water. The tested results will be presented in Table respectively.

The Meghna River passes through from East to West direction near the project area and there are few industries at the right bank of this river. So the water of this river is less polluted that was also found from environmental monitoring. The DO level of this water is more than 6.5 mg/L which is within DoE standard level. The BOD₅ is also in lower level than DoE standards. These values are given in the EIA report as the baseline survey. During the project construction and operational phase it will be monitored to assess the deviation and effect of project activities on water quality.

4.2.4 Impact on waste and labor camp

Construction debris and wastes to be generated during the construction phases will be normally scrap iron, packing materials, steel, wooden frames, piping, and other solid wastes. Most of them will be generated toward the end of the construction phase during carrying out of the finishing works, while the site will be cleared of waste materials. The volume of such construction wastes will likely to be significant. Indiscriminate storage and disposal of these construction debris and wastes can create local water logging and ponding by blocking drainage lines and will be aesthetically displeasing. Proper disposal of these wastes will be described in Section 4.3.

Solid waste of domestic nature that will be generated in the temporary labor sheds at the construction site will not likely to be significant in volume. But indiscriminate disposal of such solid waste may create environmental pollution and unhealthy situation at the project site. These solid wastes will be disposed properly as outlined in Section 4.3.

Assessment of construction impact on air, water, noise, construction waste and labor camp management

Table 4.1 will summarize the effect of project activities on physico-chemical environmental parameters during construction phase of the project. The physico-chemical environmental parameters that can be affected by the project activities include water, air quality and noise level. As discussed above, water quality can be affected mainly by project activities such as mobilization of equipment and personnel (e.g., solid and liquid waste from labor sheds), and site preparation. Effects of solid and liquid wastes generated during construction phase would not be very significant, especially if mitigation measures as outlined in Section 4.3 are adopted.

The overall negative impact of such activities will likely to be “short-term (Sh)” and of “low” intensity.

Deterioration of air quality during construction phase may result from increased concentration of particulate matter in the air from construction activities such as vehicular movement and wind-blown dust. However, these adverse impacts will greatly minimized by adopting mitigation measures as outlined in Section 4.3.

The likely noise level to be generated for different construction activities and its impact on the surrounding environment will be assessed using a noise meter. Results of the assessment will be presented in table to show that how different construction activities will generate significant noise and can produce some adverse impacts.

Similarly, the cumulative noise caused by the heavy trucks and excavator simultaneously during the construction of the access road will also of some concern. The adverse effect of project activities on noise level will therefore be categorized as “short term (Sh)” and of “moderate” intensity.

Table 4.1: Possible Effect of project activities on physico-chemical environmental parameters during construction phase

Physico-chemical parameters	Environmental Examination						
	Positive Impact			No Impact	Negative Impact		
	Low	Moderate	High		Low	Moderate	High
Air Quality					X (Sh)		
Noise Level						X (Sh)	
Drinking Water Quality					X (Sh)		
River Water Quality					X (Sh)		
Ground Water Quality					X (Sh)		

Note: Sh=Short-term; Lo=Long-term

4.3 Mitigation measure

4.3.1 Air Quality

Construction materials at the site will be properly covered while hauled and stored, roads properly cleaned and water sprayed in order to minimize concentration of dust in air when dust increases. Vehicle movement to and from the site will be properly managed to ensure that it does not significantly aggravate the traffic problem and air pollution. Stone (aggregate) crushing activities will be properly done in fine tune batching plant which will be far away from the construction site and not allowed within the Ashuganj plant premises. Health status of all workers will be monitored regularly at the Health Center which will be established at the project site.

4.3.2 Water Quality

The human wastes from the labour camp will be appropriately disposed of through construction of sanitary latrines connected to appropriately designed septic tank system (consisting of septic tank and soakage pit). Wastewater generated from different construction activities will not likely to be significant in volume. Disposal of such wastewater will be carried out by draining them in shallow pits dug in the ground at appropriate locations, and filling them up with sand at the end of the construction phase. In all cases, the wastewater streams will be separated from the storm water stream, which will be disposed of separately utilizing the existing storm water disposal system at the Ashuganj complex.

4.3.3 Noise Level

- Will use “quiet” equipment (i.e., equipment designed with noise-control elements);
- Route truck traffic away from noise-sensitive areas, where feasible;
- Install sound barriers for pile driving activity, where practicable (e.g., use an acoustic curtain or blanket around the point of impact);
- Unnecessary vehicle movement will be avoided
- Switch off the engines while remain unused.

4.3.4 Solid Waste

The solid wastes of domestic nature generated mainly in the labor sheds will be collected and stored separately (i.e., without mixing it with construction wastes/debris) in appropriate containers within the construction site. The solid wastes will be disposed of away from the site (e.g., in a municipal landfill/waste dumping ground) outside the complex, at the responsibility of the Contractor & monitored by APSCL.

4.4 Progress of Work

Ambient air quality monitoring: Measurements of selected air quality parameters for PM_{2.5}, PM₁₀ and SPM will be carried out during the ongoing construction work. Air samples will be collected for measurements of selected air quality parameters for PM_{2.5}, PM₁₀ and SPM.

Drinking water monitoring: Drinking water sample will be collected from supply water in for analyzing pH, Ammonia, nitrate, phosphate, As, Fe, Mn, Fecal and total coliform. Test report will also be shown in the table.

River water monitoring: River water sample will be collected from Meghna River in for analyzing temperature, dissolved oxygen (DO) along with BOD₅, COD, Oil and Grease, and selected heavy metals (Cr, Cd, Pb). Test report will also be shown in the table.

Ground water monitoring: Ground water sample will be collected from supply water for analyzing pH, TDS, Ammonia, nitrate, phosphate, As, Fe, Mn, Fecal and Total coliform. Test report will also be shown in the table.

Noise level monitoring: Noise level monitoring is also necessary during construction period, because use of heavy construction equipment may increase the noise level at the work location. So, Noise level data will be collected from selected 4 locations.

Waste management and process waste monitoring: Disposal of construction debris away the site and their appropriate disposal sanitary landfill will be ensured. Hazardous waste and non-hazardous waste will also be disposed by proper way.

Trees cutting: The project site is in existing combined cycle power plant site. So, there is no scope of tree cutting. But tree plantation program and landscaping is going on for providing the better environment at the project site and APSCL area.

Others: There is no significant impact on the existing road network in the project area. Major transportation of plant and construction material will be done by the Meghna River with unloading of materials by crane owned by APSCL and at the jetty which is within the existing APSCL complex. All slopes will be protected and suitable erosion protection measures will be employed to reduce any impact from runoff during the monsoon rainy season.

Health and Safety: The general health and safety of workers will be safeguarded with the provision of medical and health facilities on-site, the provision of personal protective equipment (hard hats, safety belt, full body safety harness, ear plugs, ear muff, welding shield, grinding shield, safety shoe, safety goggle, welding apron, hand gloves, safety jacket, anti-dust masks, anti-gas masks etc. as required). There will be an emergency response system and workers and supervisors will receive training on any accident and immediate medical facility in its own round the clock medical center. There will be a full time emergency ambulance to provide immediate service if required. Safe drinking water and sanitation facilities will be established and provided to all project related employees (officer, staff and workers) at the site.

Set up of in-house monitoring system

APSCL is being set up of in-house monitoring system and require manpower with its own staffs. In-house environmental monitoring system with man power is as follows.

Manpower for Environmental Management Plan.

1. Manager (Health, Safety & Environment) – 1 nos.
2. Asst. Manager (Health, Safety & Environment), for ambient air, stacks emission and noise etc.-01 no's
3. Manager (Chemical) For ETP, WTP, etc. -1 nos.
4. Assistant Manager (Chemical) For ETP, WTP, etc. - 1 no's.
5. Operator – 3 Nos.

EIA approval Certificate /Environmental Clearance Certificate /Renewal of Environment Clearance:

APSCL received exemption of IEE and approval of Term of Reference (ToR) for EIA for Implementation of APSCL 400 MW CCPP (East) from DoE. APSCL also received the EIA approval letter from the DoE, Bangladesh on 08.10.2015.

Based on the EIA approval letter from DoE, APSCL has started bidding work and after successful completion of that construction activities will be started. After completion of construction work APSCL will apply for environmental clearance certificate for operation of the plant. DoE did not provide any environmental certificate or any condition in the EIA approval letter, hence no renewal issue is arises.

4.5 WORK SHOP AND TRAINING MEETING AND DISCUSSION

During the construction phase an environmental team headed by Md. Atiqur Rahman, Manager (Health, Safety & Environment of APSCL) will look after and overall supervise

the monitoring of 400 MW East CCPP environmental issues. Training will be conducted on environmental issues for APSCL personnel and EPC contractors.

A training program for capacity building program of APSCL personnel and EPC contractors will be arranged upon availability of require manpower. There will be environmental meeting performed in every month and will be discussed the overall performance of the environmental issues of under construction power plant.

5.0 SAFEGUARD MONITORING RESULTS AND UNANTICIPATED IMPACTS

5.1 Safety assurance of the project site

Personal Safety Equipment (PSE): Use of proper safety materials will be mandatory for all at project site. Workers will use appropriate personal protective equipment, such as safety boots, helmet, safety jacket, safety belt, safety harness, gloves, protective clothing, goggles, grinding shield, welding shield, anti-dust mask, anti-gas mask and ear protection etc. Daily toolbox meeting before starting of work will be a mandatory practice at the project site. So long as safety will not suffer due to this action. The target is that there will be no fatality and other casualty (Zero accident) and detail of safety issue will be described in the HSE Statistics chart.

5.2 OTHERS

5.2.1 Weather condition

The weather condition during the ambient air quality and noise monitoring will be described during the sampling.

5.2.2 Other factors which can affect the monitoring results

Air monitoring: Factors which can affect the air monitoring results including:

- Topography
- Congested Space
- Physical and chemical properties of pollutants
- Air Pressure
- Air Turbulence

Water monitoring: Factors which can affect the water monitoring results including:

- Soil erosion
- Waste discharge
- Surface runoff
- Large numbers of bottom feeders (such as carp), which stir up bottom sediments
- Excessive algal growth.

Noise Monitoring: Factors which can affect the noise monitoring results including:

- Type of source (point or line)
- Distance from source
- Atmospheric absorption
- Obstacles such as barriers and buildings
- Ground absorption
- Reflections
- Humidity

6.0 IMPLEMENTATION OF GRIEVANCE REDRESS MECHANISM AND COMPLAINTS RECEIVED FROM STAKEHOLDERS

There is a grievance redress mechanism developed in the project site. But till now there is not received any grievance to address.

7.0 CONCLUSION AND RECOMMENDATION

The environmental monitoring report consists of 1st Semiannually environmental monitoring reporting based on identified parameters in EIA during construction phase. But till now the project construction activities is not started. So, no negative impact was found on the environmental due to this project. During construction activities all of the mitigation measures will be taken following ADB Environmental Safeguard Policy 2009, IFC/World Bank Thermal Power Plant Guideline 2008 and DoE, Bangladesh guideline and suggestive and recommended measures in the EIA.

Finally it can be concluded that the project has no detrimental impact for short period on the environment in terms of ambient air, ambient noise and water during the period from July to December, 2016.


10.01.2017
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