INTEGRATED SAFEGUARDS DATA SHEET
APPRAISAL STAGE

Report No.: ISDSA14588

Date ISDS Prepared/Updated: 04-Sep-2015

Date ISDS Approved/Disclosed: 21-Sep-2015

I. BASIC INFORMATION

1. Basic Project Data

Country:	Bangladesh	**Project ID:**	P128012
Project Name:	Bangladesh Ghorashal Unit 4 Repowering Project (P128012)		
Task Team Leader(s):	Mohammad Anis,Ashok Sarkar		
Estimated Appraisal Date:	11-Aug-2015	**Estimated Board Date:**	17-Dec-2015
Managing Unit:	GEE06	**Lending Instrument:**	Specific Investment Loan
Sector(s):	Energy efficiency in Heat and Power (50%), Thermal Power Generation (50%)		
Theme(s):	Infrastructure services for private sector development (100%)		
Is this project processed under OP 8.50 (Emergency Recovery) or OP 8.00 (Rapid Response to Crises and Emergencies)?	No		

Financing (In USD Million)

Total Project Cost:	310.00	Total Bank Financing:	235.00
Financing Gap:	0.00		

Financing Source	Amount
BORROWER/RECIPIENT	75.00
International Development Association (IDA)	235.00
Total	310.00

Environmental Category:	A - Full Assessment
Is this a Repeater project?	No

2. Project Development Objective(s)

The proposed development objective of the Project is to increase generation capacity and efficiency of the targeted power plant;

3. Project Description

The proposed Project would repower one of the four 210 MW gas-fired steam units Ghorashal power stations by adding one gas turbine & generator (GTG) and a heat recovery steam generator

(HRSG) to the existing steam turbine (ST) unit for an upgraded capacity of about 400 MW. The existing boiler will be dismantled. The targeted unit for repowering has been identified through a feasibility study (completed in July 2012 by a consulting firm engaged through a Bank TA). This unit is currently generating 170MW and the overall efficiency of the unit is around 31% using 49 mmcfd of gas. As it came out of the feasibility study, the Project would increase the plant efficiency of the identified unit to 54% and the generation will be more than doubled with only 18% increase in gas requirement. Consequently, fuel consumption (per GWh) would be reduced by 43%. The proposed Project will also be designed to operate the new gas turbine and existing steam plant independently from each other through a bypass stack allowing operational flexibility for BPDB. To minimize disruption in power availability, the existing ST will be shut down only after the installation and commissioning of the GTG and HRSG so that the plant can run on simple cycle mode.

The project consists of two components: (a) Re-powering of the Unit-4 of Ghorashal power station, and (b) TA for Institutional Strengthening Support focused on institutional and capacity building of BPDB.

Component 1: Re-powering of the Target Unit ($225 million): This component would finance all the required plant equipment and auxiliaries, design and installations services for the full repowering of unit 4. The major plant equipment include a new Gas Turbine and Generator, a Heat Recovery Steam Generator (HRSG), Distributed Control System (DCS), gas booster compressor, main stack, bypass stack and all other associated ancillary equipment. The works would also include complete overhauling of the existing ST generator, replacement and modernization of the existing auxiliaries and dismantling of existing boiler. The scope will not cover works on the existing steam turbine as it is undergoing major maintenance works and the key parts are already being replaced/repaired. Detailed scope of works is in the Annex 2.

At the concept stage, the project included a new substation and transmission lines also which have now been dropped. The proposed project will not require to invest in the enhanced transmission capacity requirement for this project as the ADB consortium funded national transmission network development project (to be implemented by PGCB) would cover the requirement. No gas transmission pipeline will also be required. However, a Regulatory Metering Station (RMS) within the GPS boundary will be constructed under this project.

Component 2: Technical Assistance for Institutional Strengthening Support ($10 million): This component would finance an Owner's Engineer (implementation support consultant) for the Project to bolster project governance while ensuring effective management of the construction and initial operation of the repowered plant. This component would also focus on capacity building and institutional support to operate the plant effectively and efficiently as well as support BPDB to help strengthen its technical and managerial capacity to plan, develop and operate its generation portfolio. The TA will also be used to hire individual consultants to support PMU and GPS that would include areas of environmental and financial management and other areas as needed.

4. Project location and salient physical characteristics relevant to the safeguard analysis (if known)

The proposed project will be implemented in the existing Power Plant Complex at Ghorashal (Location coordinates are: Latitude = 23.9797, Longitude = 90.637). Ghorashal falls in Narsingdi district and is located 50 km north-east of Dhaka. The site can be accessed by either Dhaka-Sylhet highway or Tongi-Narshingdi highway. The site is located besides the Sitalakha River and uses the

water from that river. The Ghrashal Power Plant consists of 6 natural gas fuelled boiler/steam turbine installations. The units 1 and 2 are the first build installations (in the seventies), producing maximum 48MW each (design value 55 MW). The rest of the units have the same size and have 210 MW maximum design capacity each. The unit 4 has been considered for repowering under this operation.

5. Environmental and Social Safeguards Specialists

Dr. M. Khaliquzzaman (GEN06)

Sabah Moyeen (GSURR)

Shakil Ahmed Ferdausi (GENDR)

6. Safeguard Policies	Triggered?	Explanation (Optional)
Environmental Assessment OP/BP 4.01	Yes	The project is expected to bring environmental benefit by increasing the efficiency of the power plant and reducing the emission of greenhouse gases and some air pollutants. However, repowering will involve decommissioning of the existing boiler and associated equipment and also include installation of gas compressor, gas turbine, generator etc. Proper environmental management is required for both construction and operation phases. Environmental health and safety related risks in the decommissioning of the existing boiler and new plant commissioning are major issues. Asbestos based insulators for steam pipes in the existing boiler/turbine system need to be removed during its decommissioning. Asbestos being a hazardous material will be handled with special care as per WB Asbestos Guidance Note (2009) and international best practice. A Boiler Decommissioning Plan has been prepared in compliance with the guidance. Currently, hydrazine is used in water treatment for deoxygenation, which is a highly hazardous substance and a carcinogen. As per WBG EHS guidelines, Hydrazine will be replaced with a less hazardous substance which is now available. Due to anticipated morphology change of the Shitalakhya River during lifetime of the plant, the current water use and the adequacy of supply availability have been carefully examined. As a result of this review, closed loop cooling system will be used in the new plant instead of the once through cooling in the present plant, which will reduce water use by more than 90% for the unit. The GPS has adopted closed cooling for the new Unit-7 plant of similar capacity and other units are also likely to be moved to closed circuit cooling on re-powering. In Unit-3 repowering, MIGA is expected to be involved. The Task Team will be in dialogue with both GPS and MIGA for adoption of closed circuit cooling in Unit-3. An environmental impact assessment for the project has been

		carried out which has identified the possible environmental impacts of the project components. The Environmental Management Plans (EMP) have been prepared for different phases for the mitigation and monitoring of activities involved. Further to that, the winning Erection, Procurement and Commissioning (EPC) Contractor will submit an Environmental Action Plan (EAP) based on the EIA and the offered plant and equipment, construction method and work schedule. The EAP will be approved by BPDB and the WB before the commencement of the work. The cost of environmental management will form a part of the project cost. Technical Assistance for environmental management will be provided under the project for the operational phase. All the project activities to be funded under this proposed project will be carried out within the Ghorashal Power Plant. There is no land acquisition, displacement of people and adverse impacts on livelihoods for the project activities. There are no indigenous people in the project area as well. PGCB is implementing a national 'Power System Expansion and Efficiency Improvement Investment Program (Tranche 2)'. The project is being funded by a joint consortium of ADB, IDB and EIB. The EIA being prepared for that project includes the Resettlement Action Plan (RAP) following the ADB safeguard guideline. The PGCB project will not be considered an associated project for this IDA project and therefore no additional EIA/SIA or EMP/RAP is required for the project.
Natural Habitats OP/BP 4.04	No	The Project site is located in an industrial estate with seven existing power plants. The estate has been an industrial are for more the 40 year since the establishment of the first power plant in 1974. No natural habitat will be impacted by the project.
Forests OP/BP 4.36	No	The Project site is in at an industrial estate and therefore no forestry related issues are involved.
Pest Management OP 4.09	No	There will be no procurement of pesticides or any works within the project which could lead to the use of the increased use of pesticides. The project is expected to reduce the total water discharge by 20% from open cycle cooling process from existing plants. As by product, this water is also used for irrigation in the surrounding areas. However, it will not expand the current agriculture practice and pest management policy has not been triggered.

Physical Cultural Resources OP/BP 4.11	No	The Project site has been an industrial estate for more than 40 years and all construction and project activities will be confined to the industrial estate.
Indigenous Peoples OP/ BP 4.10	No	This policy is not triggered because there is no IPs within the project's area of influence.
Involuntary Resettlement OP/BP 4.12	No	The project will be established on the site of an existing plant and no resettlement issues are involved.
Safety of Dams OP/BP 4.37	No	This issue is not relevant to the project.
Projects on International Waterways OP/BP 7.50	No	Although the project is located on the bank of Shitalakhya River, this policy will has not been triggered. This is not a new plant but replacement of an old power plant through repowering. As a result of the repowering cooling water requirement for the plant willbe reduced by more than 90% for the unit, thus reducing dependency on the river water. Moreover, Shitalakhya rRiver is a distributary of old Brahmaputra river (which is in turn is a distributary of Brahmaputra) and a tributary of Dhaleswari river; with both origin and end points located inside Bangladesh.
Projects in Disputed Areas OP/BP 7.60	No	This issue is not relevant to this project.

II. Key Safeguard Policy Issues and Their Management

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The repowering will involve decommissioning of the existing boiler and associated equipment and also include installation of gas compressor, gas turbine, generator etc. Proper environmental management is required for both construction and operation phase. Environmental health and safety related risks in decommission of the existing boiler and new plant commissioning are major issues. Asbestos based insulators for steam pipes in the existing boiler/turbine system need to be removed during its decommissioning. Asbestos, being a hazardous material, has to be handled with special care. As there is no designated disposal site for asbestos laden material in the country, a lined disposal pit for disposal will be constructed within GPS compound. The disposal of asbestos laden material will be the responsibility of the EPC contractor with the proviso that this will be done according to WB Asbestos Guidance Note (2009) and international best practice.

In the new plant closed cooling system will be used instead of the once through cooling in the old plant and this will reduce water requirement by more than 90%; thus reducing water withdrawal from the river. Currently, hydrazine is used in water treatment (i.e., deoxygenation). It is a highly hazardous substance and a carcinogen. As per WBG EHS guidelines, Hydrazine is to be replaced with a less hazardous substance which is now available. Due to anticipated morphology change of the Shitalakhya River during lifetime of the plant, the adequacy of current water use and future supply availability have been looked into. An environmental impact assessment for the project has been carried out which has identified the possible environmental impacts in the project components and an Environmental Management Plans (EMP) has been prepared for the mitigation

and monitoring activities. The EMP implementation measures during the construction phase will be included in the bidding document and the cost of EMP implementation will form a part of the project cost.

The new plant will have significantly better efficiency and environmental performance. These characteristics will lead to lower emissions of some air pollutants as well as CO2. As the plant is to be fired with sulfur free natural gas emissions of PM10 are PM2.5 and hydrocarbons are expected to be low. The main air pollutant from is expected to be NOx and these are quantitatively dealt with in the EIA. The studies show that the new plant will contribute positively in overall air quality improvement comparing to old unit. The ambient noise level will increase in the plant area but will have no significant impact on major receptors (i.e., schools and residential areas) because of distant location.

The implantation of improved Environmental, Health and Safety Management System as per EMP is expected to lead to better management of waste and wastewater, as well as workers health and safety (i.e., including the introduction and routine use of safe working procedures; inspection; training; emergency management; fire drills; and personal protection equipment to prevent injuries, hearing damage, etc.). The Bangladesh power Development Board (BPDB) will be the implementing agency for the component- 1. BPDB is responsible for major portion of generation and distribution of electricity mainly in urban areas except Dhaka and West Zone of the country. The Board is under the Power Division of the Ministry of power, Energy and Mineral Resources, Government of Bangladesh. Although BPDB has not implemented any recent project with the World Bank, it has undertaken projects funded by external development partners that require management of environmental issues. In addition, the country law also requires full environmental assessment of power plants. BPDB is fully aware about the Bank requirement of environmental and social assessment of the project. However, BPDB currently has only a rudimentary institutional capacity for environmental management. In order to augment capacity of BPDB in the environmental management areas, the project will provide necessary Technical Assistance.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

Due to the possible morphology change of the Shitalakhya River during the lifetime of the plant and rising demand of water from new industries on the river bank, the future availability of cooling water for the plant may be a long term issue. Thus, the new plant will adopt closed loop cooling system for reducing water withdrawal from the river. No irreversible and long term adverse indirect impacts are anticipated from the project activities. For any unforeseen long term impacts, control measures will be developed and implemented under EMP for the plant.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

The rationale for this project was improvement of energy efficiency and minimization of environmental impacts. As the site was fixed, only technological alternatives were considered. Best available technologies have been chosen for the plant.

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

The client has prepared the ESIA by contracting the work to a National Firm (CEGIS) with input from reputable international consultants. In addition, the government hired an International Adviser to review the ESIA preparation process and ensure the quality to meet the both Government and the World Bank standards. As on some of the environmental and EHS issues

national standards are unavailable, the ESIA has adopted international best practices. The ESIA includes environmental monitoring programs for decommissioning, construction and operation phases. The implementation of the mitigation measures, including environmental, health and safety obligations during construction, will be monitored in accordance with a program of monitoring activities as per the EMP as specified in the ESIA report.
5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.
The potentially affected peoples are the people living and working in the area of influence of the Project are the key stakeholders. The project beneficiaries are the whole population of Bangladesh as the plant feeds power into the national grid. Special benefits will of course accrue to the local industries as power disruptions will be reduced. Public consultations and focus group discussions for the project affected area took place throughout the project preparation of ESIA.

B. Disclosure Requirements

Environmental Assessment/Audit/Management Plan/Other	
Date of receipt by the Bank	28-Jun-2015
Date of submission to InfoShop	23-Jul-2015
For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors	23-Jul-2015
"In country" Disclosure	
Bangladesh	23-Jul-2015
Comments:	
If the project triggers the Pest Management and/or Physical Cultural Resources policies, the respective issues are to be addressed and disclosed as part of the Environmental Assessment/ Audit/or EMP.	
If in-country disclosure of any of the above documents is not expected, please explain why:	

C. Compliance Monitoring Indicators at the Corporate Level

OP/BP/GP 4.01 - Environment Assessment	
Does the project require a stand-alone EA (including EMP) report?	Yes [×] No [ ] NA [ ]
If yes, then did the Regional Environment Unit or Practice Manager (PM) review and approve the EA report?	Yes [×] No [ ] NA [ ]
Are the cost and the accountabilities for the EMP incorporated in the credit/loan?	Yes [×] No [ ] NA [ ]
The World Bank Policy on Disclosure of Information	
Have relevant safeguard policies documents been sent to the World Bank's Infoshop?	Yes [×] No [ ] NA [ ]
Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?	Yes [×] No [ ] NA [ ]
All Safeguard Policies	

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?	Yes [×] No [ ] NA [ ]
Have costs related to safeguard policy measures been included in the project cost?	Yes [×] No [ ] NA [ ]
Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?	Yes [×] No [ ] NA [ ]
Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?	Yes [×] No [ ] NA [ ]

III. APPROVALS

Task Team Leader(s):	Name: Mohammad Anis,Ashok Sarkar	
Approved By		
Practice Manager/ Manager:	Name: Julia Bucknall (PMGR)	Date: 21-Sep-2015

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