

# Environmental and Social Management System Implementation Report

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March 2018

## People's Republic of China: Hebei Energy Efficiency Improvement and Emission Reduction Project

Prepared by:

PMO of Hebei ADB Loan Energy Efficiency Improvement and Emission Reduction (EPP) Project

## ABBREVIATIONS

ADB	–	Asian Development Bank
CSC	–	construction supervision company
EIA	–	environmental impact assessment
EMD	–	environmental monitoring division
EMP	–	environmental management plan
EMS	–	environmental monitoring station
EMU	–	environment management unit
EPB	–	environmental protection bureau
PRC	–	People's Republic of China
GRM	–	Grievance Redress Mechanism
EE	–	Energy Efficiency
HFB	–	Hebei Provincial Finance Bureau
ESCO	–	energy service company
HDRC	–	Hebei Provincial Development & Reform Committee
NDRC	–	National Development & Reform Committee
HPG	–	Hebei Provincial Government
CDQ	–	coke dry quenching
PMO	–	Project Management Office
ESMS	–	Environmental and Social Management System
PIAL	–	Prohibited Investment Activities List
SPS	–	sanitary and phytosanitary standards
ESSM	–	environmental and social safeguards manager

## NOTE

In this report, "\$" refers to US dollars.

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# Hebei ADB Loan Energy Efficiency Improvement and Emission Reduction (EPP) Project Environmental & Social Management System Implementation Report

(As of December 31, 2017)

## **I. Outline of the Project**

### 1. Introduction to the Project

The Hebei ADB Loan Energy Efficiency Improvement and Emission Reduction (EPP) Project (hereinafter referred to as “ADB Loan Project”) not only aims to use the low-interest loan of ADB, but also intends to innovate the construction model of energy efficiency improvement and emission reduction project by introducing and borrowing the international advanced technologies and scientific management experience, so as to promote the further development of energy efficiency improvement and emission reduction work in Hebei Province.

The ADB Loan Project adopted the mode of “fiscal onlending and intermediate financing institute service”, with Hebei Provincial Government being the Borrower. The Loan is in US dollar and the term is 15 years. The first batch of sub-projects involves eight enterprises that locate separately in 6 cities in Hebei Province including Tangshan, Langfang, Hengshui, Cangzhou, Handan and Xingtai. The construction mainly includes CDQ power generation, resources comprehensive utilization power project, thermal power equipment retrofitting, energy management center, energy system optimization, recycling water residual heat and pressure utilization, comprehensive energy efficiency and emission reduction technological retrofit and mid & high temperature heat collecting solar water heating service etc. The total investment is RMB 1.223 billion yuan, including \$ 100 million ADB loan (amounting to RMB 615 million yuan), and about RMB 608 million yuan of supporting funds. After the energy savings M&V, the EPP capacity formed during the real measurement to the 8 sub-projects is 135.12MW (the expected capacity in sub-project agreements is 149.5MW), and annual saving of standard coal is about 230,000 tons, the CO<sub>2</sub> emission reduced is about 673,500 tons, and the SO<sub>2</sub> emission reduced is about 6,431 tons. As the Fengmei and Xionglong sub-projects are not put into full operation, it's expected that, after the 8 sub-projects are all put into full operation, the final EPP capacity is expected to be 165.55MW, the annual saving of standard coal is expected to be 281,400 tons, the CO<sub>2</sub> emission

reduced is expected to be about 825,000 tons, and the SO<sub>2</sub> emission reduced is expected to be about 7,880 tons.

2. Eight enterprises in the first batch of sub-projects include:

(1) Tangshan Jianlong Jianzhou Iron & Steel Co., Ltd CDQ Power Generation Project;

(2) Hebei Fengmei Coking Co., Ltd CDQ Power Generation Project;

(3) Hebei Xinglong Grain Biochemical Co., Ltd Resources Comprehensive Utilization Power Generation Project;

(4) Yufeng Enterprises Group Co., Ltd Thermal Power Equipment Retrofitting Project;

(5) Hebei Lianguan Electrode Co., Ltd Energy System Optimizing Project;

(6) China Resources Cangzhou Co-generation Co., Ltd Recycling Water Residual Heat & Pressure Utilization Project;

(7) Hebei Qianjin Iron & Steel Group Co., Ltd Energy Management Center Project;

(8) Hebei Guangyuan Solar Energy Technology Co., Ltd Mid & High Temperature Heat Utilization Project.

Region	Implementing Unit	Introduction to the Sub-project	Progress
Ningjin	Yufeng Enterprises Group Co., Ltd	Thermal Power Equipment Retrofitting Project: to replace the current four small boilers and two 6MW, one 12MW small turbine generators with one 220 t/h high temperature & high pressure pulverized coal fired boiler and a 35MW back-pressure steam turbine generator.	Has completed the bidding and procurement work. Has completed the construction and was put into operation. Has withdrawn \$ 17 million. All the loan funds has been withdrawn.
Fengfeng Mining Area	Hebei Fengmei Coking Co., Ltd	CDQ Power Generation Project: to install two CDQ system with the capacity of 140 t/h, taking the original wet coke quenching system as a backup system; choose two medium temperature and medium pressure CDQ boilers, with rated steam production volume of 69 t/h; and install one set of 6MW back-pressure steam turbine generator to utilize the residual steam.	Has completed the bidding and procurement work. Has completed the construction and was put into operation. Has withdrawn \$ 24 million. All the loan funds has been withdrawn.
Jizhou	Hebei Lianguan Electrode Co., Ltd	Electrode Production Energy System Optimization Project: to reform the induced draught system of the current roaster, and install a carbon roasting smart optimizing and energy efficiency and emission reduction controlling system, a dust recycling device and a electric tar and dedust system and change the heating method of existing heat transfer oil boiler.	Has completed the bidding and procurement work. Has completed the construction and was put into operation. Has withdrawn \$ 5.7 million. All the loan funds has been withdrawn.
Quzhou	Hebei Xinglong Grain Biochemical Co., Ltd	Resource Comprehensive Utilization Power Project: to install two sets of 3MW back-pressure steam turbine generator on the basis of the current two 40 t/h boilers; to install a 0.5 MW internal combustion generator to utilize the methane from the company's waste water processing station for power generation.	Has completed the bidding and procurement work. The installation of auxiliary equipment is completed. Has withdrawn \$ 7 million. All the loan funds has been withdrawn.
Langfang	Hebei Qianjin Iron & Steel Group Co., Ltd	Energy Management Center Project: to set up the Energy Management Center, including information system, basic automation and other supporting facilities. To conduct comprehensive management	Has completed the bidding and procurement work. Has completed the construction and was put

		and control to resources in the iron production system such as power, blast furnace gas, converter gas, compressed air, O <sub>2</sub> , N <sub>2</sub> , Ar, steam, manufactured water etc, and establish the factory-area environment and cyclic economy management platform.	into operation. Has withdrawn \$ 7.5 million. All the loan funds has been withdrawn.
Cangzhou	China Resources Cangzhou Co-generation Co., Ltd	Circulating Water Residual Heat and Residual Pressure Utilization Project: to recycle the residual heat in the #2 cooling circulating water system, and implement heat pump reform, the total heat supply of the heat pump set is 245 MW, among which 98MW residual heat is recycled.	Has completed the bidding and procurement work. Has completed the construction and was put into operation. Has withdrawn \$ 11.8 million. All the loan funds has been withdrawn.
Zunhua	Tangshan Jianlong Jianzhou Iron & Steel Co., Ltd	CDQ Power Project: to install a set of CDQ system and supporting facilities with the capacity of 100 t/h and a power station. The high temperature/high pressure steam produced by CDQ system will be used for power generation, through a 15MW extraction condensing turbine generator.	Has completed the bidding and procurement work. Has completed the construction and was put into operation. Has withdrawn \$ 15 million. All the loan funds has been withdrawn.
Xingtai	Hebei Guangyuan Solar Technology Co., Ltd	To adopt the ESCO mode to provide the collective customers (such as hospital, school or communities etc) with solar water heaters, the scope of which has reached 200,000 m <sup>2</sup> of solar energy heat collecting area.	Has completed the installation of 200,000 m <sup>2</sup> of solar energy heat collecting area. Has withdrawn \$ 12 million. All the loan funds has been withdrawn.

CDQ = coke dry quenching, LDG = Linz Donawitz gases (from LD convertor), MW = megawatt, t/a = ton per annum, t/h = ton per hour.

## II. Implementing Method for the Environmental Management & Monitoring Plan

Adopt the mechanism of regular control and management to supervise the construction of the sub-projects conducted according to the Environmental Management & Monitoring Plan, and grasp the situation of the implementation of the projects, and secured a real effect in the phasal sense out of the projects.

### 1. Staffing of the Implementing and Supervising Institute of Environmental Management and Monitoring Procedure

Environmental Influence Assessment is required in the preparation phase work of all sub-projects, the TA experts of ADB prepared the Comprehensive Environmental Management Plan which was incorporated into the sub-project agreements as a provision. This can help to effectuate the supervision and management of the Environmental & Social Management System (ESMS) in implementing the projects.

The PMO set up as required the position for environmental management and monitoring, the position A & B for environmental & social safeguards management, which are mainly responsible for supervising and managing the implementation of environmental & social safeguards system, and collecting all the environmental information and monitoring results in the implementation of the projects and conducting regular coordination with the sub-project units so as to ensure that they follow the requirements of the environmental management and monitoring plan. Information of staff in charge of the environmental management is listed below:

### Staff in the Position of Environmental Management

Position	Name	Unit	Responsibility	Contact	Email
A	Pengliang ZHANG	PMO	Responsible for supervising and managing the implementation of environmental and social safeguards system	0311- 87187960	hebeipmo@ 126.com
B	Yanxia ZHANG	PMO	Assist in supervising and managing the environmental and social safeguards system	0311- 87187960	hebeipmo@ 126.com

## Institutional Setup and Responsibilities

Institution	Roles and Responsibilities	Progress
Steering Committee Office	<p>Prepare the project mode, policies, implementation plan and annual work plan;</p> <p>Review relevant systems and methods such as the project mode, funds management etc.;</p> <p>Review the coordination and deployment of funds in the project and its implementation;</p> <p>Fulfill key decisions of the Steering Committee;</p> <p>Approve the procedure for use of interest differentials account, including the awarding method for the sub-projects in the first batch and the ESCO credit guarantee mechanism for the succeeding projects.</p>	<p>Set up PMO;</p> <p>Prepared the Project Management Method and the Financial Management Method.</p>
PMO	<p>Review the sub-projects in accordance with the project selection criteria and project approval procedure;</p> <p>Organization and coordination in the implementation of the projects;</p> <p>Provide sufficient staff and budget, and provide training to the ESMS staff;</p> <p>Check and verify the progress of the sub-projects;</p> <p>Coordinate the M&amp;V of energy savings of all sub-projects;</p> <p>Check and acceptance of sub-projects;</p> <p>Collect the proposals of candidate projects constructed with the revolving funds;</p> <p>Submit all files required by ADB and maintain relevant records;</p> <p>Review and approve the procurement of goods and work, make sure it follows the requirement of "Procurement Plan";</p> <p>Prepare the list of candidate ESCOs that require the guarantee of third parties;</p> <p>Conduct the due diligence investigation on the sub-projects applying for project guarantee funds;</p> <p>Sign sub-project agreement with the sub-project units in accordance with the implementation agreement and onlending agreement.</p>	<p>Signed the implementation agreement with the sub-project units;</p> <p>Reviewed the bidding procurement document as required;</p> <p>Appointed full-time environmental management staff, and completed the training;</p> <p>Made regular coordination with the sub-project units;</p> <p>Prepared the fifth Environmental &amp; Social Management and Monitoring Report and submitted to ADB in Mar. 2017.</p>
	Assist the PMO with the onlending to sub-projects;	Signed the Onlending Agreement with Hebei Finance Bureau;



<p>Huaxia Bank (intermediate financing service agency)</p>	<p>Disburse the sub-project loan after reviewed the withdrawal application in accordance with the agreement signed with Hebei Finance Bureau; Manage the monetary flow in disbursement, interests and capital repaid; Supervise the non-performing sub-project loan; Submit monthly report to the PMO and Hebei Finance Bureau on the disbursement and repayment of sub-projects; Conduct due diligence investigation to the new sub-projects constructed with revolving funds and credit analysis to units applying for new sub-projects; Propose to the PMO about accepting or refusing the new sub-project units based on the due diligence investigation; May provide equity funds to the succeeding sub-projects.</p>	<p>Assist Hebei Finance Bureau in disbursing loan funds to the project units; Complete related financial management work; Assist in relevant work of PMO.</p>
<p>Sub-project Units</p>	<p>Implement the sub-projects under sub-loan agreement; Ensure the implementation of sub-projects meet the requirement of environmental management plan; Implement the environmental management system according to the situation and requirements of sub-projects; Ensure the equipment and engineering meet the requirement of Procurement Plan.</p>	<p>All contracts are under implementation including the environmental management plan; All sub-projects are implementing the environmental monitoring plan.</p>

## 2. Implementation Progress on Environmental Management Plan (EMP)

All the sub-project units have implemented the environmental management plan (EMP), following ADB requirements except for Hebei Guangyuan Solar Energy Technology Co., Ltd and Hebei Qianjin Iron and Steel Group Co., Ltd that are not involved in. The Table below summarizes the implementation status of all sub-projects:

## Summary of the Environmental Management Plan Implementation

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
<b>A. Pre-construction and design phase</b>					
1. EIA preparation		Identification of environmental issues and mitigation measures	Plant managers, and EIA Institutes	PMO  Local EPB	All six EE sub-projects have completed the related work.  Not applicable to Hebei Guangyuan and Hebei Qianjin.
2. EMP preparation		Assigning mitigation measures to sub-projects, a timescale and organizational responsibilities	Plant managers, and EIA Institutes	PMO  Local EPB	All six EE sub-projects have completed the related work.  Not applicable to Hebei Guangyuan and Hebei Qianjin.
3. Incorporation of EMP into project contract and facility development plans		Environmental protection facilities and mitigation measures should be designed simultaneously at the early stage with the subject facility development.  The construction/engineering manager of each plant will ensure the implementation of the mitigation measures by including environmental specifications in the bidding documents to	PMO and plant managers	PMO  Local EPB	All six EE sub-projects have completed the related work.  Not applicable to Hebei Guangyuan and Hebei Qianjin.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
		suppliers and installers; and referencing the EMP mitigation provisions and monitoring plans in the construction contracts.			
<b>B. Project construction phase</b>					
4. Noise	Construction and haulage noise impacts	At all sub-components, haulage routes will be selected to avoid villages.	Supplier/installer of equipment and plant managers	Local EPB PMO	All enterprises have followed this requirement during the construction.
5. Water	Domestic wastewater and construction wastewater	<p>Construction wastewater will not be discharged unto the surrounding soil or into surface water systems, but will be directed to sedimentation traps before discharge to the plant's drainage system.</p> <p>Oil-containing wastewater will require the installation of oil-water separators before the water enters the plant drainage system.</p> <p>During project construction, the small amount of domestic wastewater from workers living on-site can be discharged directly to the municipal sewer system.</p>	Supplier/installer of equipment and plant managers	Local EPB PMO	All enterprises have followed this requirement during the construction.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
6. Air	Dust from transport and construction activities	<p>Proper mitigation measures will be taken to reduce dust emission, such as sealing of building material, covered transportation of materials, and flushing of vehicle wheels.</p> <p>Haulage routes will be selected to avoid village roads.</p>	Supplier/installer of equipment and plant managers	<p>Local EPB</p> <p>PMO</p>	All enterprises have followed this requirement during the construction.
7. Traffic	Impacts on local roads by construction traffic	Transport and haulage routes will be selected to reduce disturbance to regular traffic.	Supplier/installer of equipment and plant managers	<p>Local EPB</p> <p>PMO</p>	All enterprises have followed this requirement during the construction.
8. Solid waste	Construction activities and living activities	<p>After separation of any hazardous material, general construction debris and other solid wastes generated from construction and demolition activities will be stored in one designated area, cleaned and salvaged for reuse, cut and sold for scrap metal or collected by local sanitation department for proper landfill disposal.</p> <p>Domestic garbage will be collected and transported on regular basis, and treated by local sanitation department.</p>	Supplier/installer of equipment and plant managers	<p>Local EPB</p> <p>PMO</p>	All enterprises have followed this requirement during the construction.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
9. Hazardous material	Hazardous and polluting materials from demolition of boilers	<p>At Hebei Lianguan Carbon Electrode Co., the cleaned-out heat oil will be handled as hazardous wastes for proper disposal. Measures for the prevention of oil spill/leakage will be taken in the removal and disposal activities of old coal-fired heat oil boilers' decommissioning.</p> <p>At Hebei Lianguan Carbon Electrode Co., the asbestos will be handled as insulation and thermal insulation material according to Law of the People's Republic of China on the Prevention and Control of Environmental Pollution by Solid Wastes (1995) and Administration Methods on Hazardous Waste Transferring Table.</p>	Supplier/installer of equipment and plant managers	Local EPB PMO	<p>Hebei Lianguan Carbon Electrode Co., Ltd has collected waste oil and treated it as hazardous wastes.</p> <p>Not applicable to other enterprises.</p>
10. Social impacts	Environmental, Health, and Safety	During the construction phase, each plant will ensure the safety and health of employees through safe working practices and provision of a safe working environment.	Supplier/installer of equipment and plant managers	Local EPB PMO	All enterprises have followed this requirement during the construction.
11. Grievance and Complaints	Complaints of all nature relevant to the project	Grievance redress mechanism will be established on the site during the implementation of sub-project.	PMO and plant managers	EPB	All enterprises have followed this requirement during the construction.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
		<p>Any complaints which concern aspects of the project construction will be recorded by the PMO (which will set up a complaints reception unit or officer) and investigated in conjunction with plant management.</p> <p>Responses and corrective actions will be timely and will be reported to the ADB.</p>			
<b>C. Project operation phase</b>					
12. Noise	Noise impacts from steam turbines, pumps, fans and blowers	<p>Noise control measures in the form of mufflers, absorption, insulation and vibrating insulation, will be provided to new noise sources to reduce overall noise levels to allow compliance to GB12348-2008 Class III standard at the facility boundary.</p> <p>There will be an additional monitoring period for noise at the nearest sensitive receptors (villages) for the initial operational period after commissioning to check that operational noises are within standard limits.</p>	Plant operators	Local EPB EMC PMO	All enterprises have followed this requirement during the operation.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
		Where noise limits are exceeded by >3 dB(A), noise barriers at plant boundary will be constructed.			
13. Water	Tap water or well extracted water for domestic supply	<p>Water qualities will be treated to meet the relevant Standards for Drinking Water Quality (GB5749–2006).</p> <p>Water analysis results requested from the supplier is reviewed in compliance with GB5749–2006.</p>	Plant operators and managers	Local BOH PMO	All enterprises have followed this requirement during the operation.
14. Air	Potential emissions from boiler stacks, coking furnaces, biogas generator stack, and fugitive emissions of dust in workshops	<p>At Hebei Lianguan, waste gas treatment devices have been installed at all boilers and furnaces in compliance with Air Pollutants Emission Standard for Boilers (GB13271–2001).</p> <p>At the Hebei Lianguan sub-project, air control facilities will be installed attaching to the newly-built roasting furnace in compliance and operated to achieve compliance with Class II Limits of Industrial Kiln Air Pollution Emission Standard (GB9078–1996).</p> <p>At the Hebei Lianguan sub-project, the electric tar filter will have a 95% removal rate of asphalt oils</p>	Plant operators and managers	Local EPB EMC PMO	All enterprises have followed this requirement during the operation.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
		<p>in air emission, in compliance with the Integrated Emission Standards of Air Pollutants (GB16297–1996).</p> <p>Dust arising from workshops will be collected by suction hoods and treated by bag filters, for the prevention of fugitive emissions.</p>			
<b>15. Solid Waste</b>	Proper reuse or disposal of process wastes	<p>Residues produced from the waste gas treatment devices will be collected and sold for proper recycle use.</p> <p>Empty drums of hydraulic oils/lubricants from all Sub-projects will be recycled by the suppliers, and manifests will be maintained on-site.</p>	Plant operators and managers	Local EPB EMC PMO	All enterprises have followed this requirement during the operation.
16. Health and Safety	Boilers WWTP Bio-gas conveyance pipeline, holders and generator High temperature solar hot water installations	At Hebei Lianguan sub-project, the environmental safety and health compliance assessment report to the current operations have been completed and related measures have been taken to improve the operation status.	Plant operators and managers	Local EPB EMC PMO	Hebei Lianguan has followed this requirement during the operation.



Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
		At Hebei Lianguan sub-project, a safety assessment is recommended to cover the installation and operation of the new roasting furnace and two oil heating boilers, as well as the demolition and removal/disposal of the replaced facilities. Related safety measures in the safety assessment report will be carried out.			
<b>D. Restoration of site landscape and sediment retention</b>					
17. Soil loss	Excavation, backfilling, construction solid waste	<p>No soil erosion measures are required as the sub-project sites are located in level, developed areas within existing industrial plant boundaries.</p> <p>During the project construction, any soil excavation and fill imports will be balanced to minimize the imported amount of fills and prevent the generation of construction wastes (including surplus soil excavated) on the site.</p> <p>After the site construction, greenbelts will be re-cultivated and maintained which will reduce the noise impact as well as restore the landscape.</p>	Plant operators and managers	Local EPB PMO	All enterprises in the construction phase implement the requirements of soil and water conservation.

Environmental Issues	Activity or Impact Area	Mitigation measures	Responsibilities		Completion Status
			Implementation	Supervision	
18.Landscape restoration	Construction site	Green belts will be restored and maintained not only for noise attenuation but also for landscape restoration after site construction.	Plant operators and managers	Local EPB PMO	All enterprises have followed this requirement during the construction.

### **III. Project Implementation and Loan Contract Requirement as well as the Compliance Status with National Laws and Regulations**

#### **1. Compliance Status with National Laws and Regulations**

During the construction of the project, the Environmental Management Plan is in full compliance with ADB Loan Agreement Requirement as well as the Compliance Status with National Laws and Regulations without any violation reported. (See the attached as the Environmental Monitoring Sheet)

#### **2. Grievance Redress Mechanism (GRM) and Information Disclosure**

During the construction of the project, the sub-projects are strictly following the Environmental Management Plan and the Grievance Redress Mechanism (GRM) of the project was established.

The project information has been posted on the website (<http://www.hbdsm.com/>) since the loan effectiveness. All the sub-projects also post the project information on the construction site and have designated responsible staff for GRM in charge. Any compliant report will be sent to Project Executing Center finally. At present, the staff at the environmental position has been in charge of the GRM, whose name and contact information has been reported to the construction site and environmental protection department.

During the sub-project construction and operation in 2017, no complaint incidents have been reported from the construction unit and the local environmental protection department.

## Environmental Agreement Clauses Defined in the Loan and Their Compliance Status

<b>Environmental Agreement</b>	<b>Compliance Status</b>
<p>The Borrower shall cause HPG, through HFB, to ensure that HXB carries out the Project with due diligence and efficiency and in conformity with sound banking, administrative, financial, engineering, environment protection and business practices.</p>	<p>In accordance with the Loan Agreement, Financial Management Service Agreement, Fund Management Regulation and other regulations, Huaxia Bank has assisted Hebei Finance Bureau (HFB) in disbursing \$ 97.45 million to the 8 sub-borrowers.</p>
<p>For the Sub-projects of the First Batch</p> <p>(1) HPG shall ensure that the preparation, design, construction, implementation, operation and decommissioning of the Sub-project and all Project facilities comply with (i) the Borrower's all applicable laws and regulations relating to environment, health and safety; (ii) the Environmental Safeguards; and (iii) all measures and requirements set forth in the Project IEE, EMP, ESMS and any additional measures set forth in the annual Safeguards Monitoring Report.</p> <p>(2) HPG shall make available and cause Sub-borrowers and the PMO to make available, necessary budgetary and human resources to fully implement the EMP.</p> <p>(3) HPG shall ensure, or cause to be ensured, that all bidding documents and contracts for Works contain provisions that require contractors to (i) comply with the measures relevant to the contractor set forth in the Project IEE, EMP, ESMS, and any additional measures set forth in the annual Safeguards Monitoring Report; (ii) make available a budget for all such environmental measures; and (iii) provide HPG with a written notice of any unanticipated environmental risks or impacts that arise during construction, implementation or operation of the project that were not considered in the Project IEE, EMP and ESMS.</p> <p>(4) submit annual safeguards monitoring reports to ADB and disclose relevant information from such reports to affected persons promptly upon submission;</p> <p>(5) if any unanticipated environmental risks and impacts arise during construction, implementation or operation of the project that were not considered in the Project IEE, EMP and ESMS, promptly inform ADB of the occurrence of such risks or impacts, with detailed description of the event and proposed additional measures; and</p>	<p>(1) It is assured that in Hebei Province all sub-projects and their preparation, design, construction, implementation and operation comply with various laws and regulations. Environmental protective measures are performed as indicated in the environmental and social management system.</p> <p>(2) PMO has designated two staff for environmental and social protection position. All sub-borrowers have designated the responsible person for environmental and social safeguard. The budget and staffs are all in place for the implementation of environmental and social management plan.</p> <p>(3) The subcontractor/bidding winners for civil work of sub-projects have followed the measures and requirements proposed in IEE, EMP, and environmental and social management system.</p> <p>(4) Environmental and social manager and her assistant at the PMO is responsible for preparing the annual environmental and social management monitoring report and have prepared the first monitoring report and submitted to the ADB.</p> <p>(5) No unexpected environmental issues and impacts occurred so far.</p>

<p>(6) report any actual or potential breach of compliance with the measures and requirements set forth in the EMP and ESMS promptly after becoming aware of the breach.</p>	<p>( 6 ) No violation of IEE, EMP, and environmental and social management system is reported.</p>
<p><b>For Sub-projects of the Subsequent Batches</b></p> <p>HPG shall ensure and cause the PMO to ensure that Sub-projects are selected and approved in accordance with the ESMS and selection criteria as provided in the PAM,</p> <ul style="list-style-type: none"> <li>(i) the Sub-project is designed, constructed, and operated in accordance with the Borrower's environmental laws and regulations, the Environmental Safeguards and ESMS;</li> <li>(ii) the institutional arrangements for effective implementation of environmental safeguards as described in the ESMS are in place before commencement of works and selection of sub-projects;</li> <li>(iii) procedures as specified in the ESMS are fully implemented in a timely manner;</li> <li>(iv) mitigation measures included in the Sub-projects' EMPs are updated at the detailed engineering design stage and incorporated into the bidding documents and Works contracts;</li> <li>(v) any adverse impact on the environment that may arise from Sub-project implementation activities is promptly mitigated or minimized and reported to ADB in accordance with the ESMS and EMPs;</li> <li>(vi) the ESMS and EMPs are implemented in full to address the environmental aspects during the construction of the sub-projects, including actions to be taken for auditing, measuring, and monitoring the environment and safety conditions of the Works, and responding to breaches in environmental or safety requirements; and</li> <li>(vii) environmental and safety aspects, and issues are reported on an annual basis to ADB in accordance with the PAM.</li> </ul>	<p>The subsequent batches have not begun.</p>

## IV. Major Issues and the Project Scope Change

There is no major issue occurring during the project construction or any change on the project scope.

## V. ENVIRONMENTAL MONITORING RESULTS

### 1. Monitoring approach and staff obligations

The environmental management staff in the PMO are dispatching the project units, requiring them to timely report the project implementation status, and the Environmental Management Plan implementation, so as to timely address the problems during project implementation and soundly do the job under the guidance of the PMO.

Respective construction units have conducted environmental monitoring on the project construction sites and report the result to the designated environmental staff of sub-projects.

### 2. In compliance with the EMP monitoring framework

Environmental Monitoring Framework and Requirements

Monitoring parameter		Monitoring location	Monitoring Frequency	Undertaken by	Compliance Status
<b>A. Construction</b>					
Air	Fugitive dusts	At the site boundary	Once during construction	Contractor Local EMC	All applicable sub-projects met the requirement
	TSP/dusts	Boilers/bag filters installed in workshop	commissioning	Contractor Local EMC	All applicable sub-projects met the requirement
	SO <sub>2</sub> , NO <sub>x</sub>	Boilers, bio-gas generator			Hebei Xinglong meet the requirement
Water	pH, SS, COD, TN, grease/oil	Domestic wastewater	Once during construction	Contractor Local EMC	All applicable sub-projects met the requirement
		Process wastewater	commissioning		All applicable sub-projects met the requirement
Noise		At the site boundary	Once during construction and at commissioning	Contractor Local EMC	All applicable sub-projects met the requirement
<b>B. Operation</b>					
Air	NO <sub>2</sub> , SO <sub>2</sub> , TSP /dusts	Boilers, biogas generator and bag-filters installed in workshop	Annually	Plant operator Local EMC	All applicable sub-projects met the requirement
Water	pH, SS, COD, TN, grease/oil	WWTP	Annually	Plant operator Local EMC	All applicable sub-projects met the requirement

Noise		At the site boundary	Upon formal operation	Plant operator Local EMC	All applicable sub-projects met the requirement
		At the nearest residences	For 3 months after commissioning	Contractor Local EMC	All applicable sub-projects met the requirement

### 3. Monitoring Results

All the sub-projects have implemented EMP monitoring in accordance with the agreed EMP monitoring framework. The monitoring results are fully in compliance with the framework above as well as the national environmental protection laws and regulations.

## VI. Conclusion

During the project construction period in 2017, no environmental incidents and major technical changes were discovered. Besides, no breach was found in the implementation of sub-projects and monitoring results against the requirement of EMP in the execution agreement of the sub-project as well as local environmental laws and regulations.

## Appendix: Information on the Environment Management

### Monitoring of the Sub-projects

## Appendix

### Information on the Environment Management Monitoring of the Sub-projects

1. The Environmental Monitoring Station of Jizhou City monitored the project environment of Hebei Lianguan Carbon Electrode Co., Ltd in December 2017 for the period of 2017, and issued the monitoring results as below.

Environmental Monitoring Framework and Compliance Status

Monitoring parameter	Monitoring location	Monitoring Frequency	Undertaken by	Monitored by	Compliance Status
<b>A. Construction</b>					
Air	Fugitive dusts	At the site boundary	Once during construction	Contractor /Local EMC	Environmental monitoring station of Jizhou HeBei GB/T15432-1995 execution value≤1.0, Monitoring value:0.284 mg/m3. Up to standard
Water	pH, SS, COD, TN, grease/oil	Domestic wastewater	Once during construction	Contractor /Local EMC	Environmental monitoring station of Jizhou HeBei GB5084-2005 Monitoring value: COD 98.4 mg/L PH: 7.10; SS:34.2. Up to standard
Noise		At the site boundary	Once during construction and at commissioning	Contractor /Local EMC	Environmental monitoring station of Jizhou HeBei GB12348-2008 environmental functional area standard for noise of second type Monitoring value: north area of factory :58dB (A) east area: 55dB (A) west area:53 dB (A) south area:55dB (A). Up to standard
<b>B.Operation</b>					

Air	TSP/dusts	Air emission devices installed in workshop	Annually	Plant operator /Local EMC	Environmental monitoring station of Jizhou HeBei GB/T15432-1995 execution value≤1.0, Monitoring value:0.42 mg/m3. Up to standard
Water	pH, SS, COD, TN, grease/oil	WWTP or discharge point	Annually	Plant operator /Local EMC	Environmental monitoring station of Jizhou HeBei GB5084-2005 Monitoring value: COD 97.8mg/L PH: 7.12; SS:33.6. Up to standard
Noise	At the site boundary		Upon formal operation	Plant operator /Local EMC	Environmental monitoring station of Jizhou HeBei GB12348-2008 environmental functional area standard for noise of second type Monitoring value: north area of factory 58dB (A) east area: 55dB (A) west area:53 dB (A) south area:55 dB (A), Up to standard
	At the nearest residences		For 3 months after commissioning	Contractor /Local EMC	Environmental monitoring station of Jizhou HeBei GB22337-2008 social life environmental noise emission standards. Monitoring results of value: daytime, night: 28.5dB; 35.6 dB.



2. The Environmental Monitoring Station of Handan City monitored the project environment of Hebei Fengmei Coking Co., Ltd. in December 2017 for the period of 2017, and issued the monitoring results as below.

B.Operation						
Air	TSP /dusts	Air emission devices installed in workshop	Annually	Plant operator /Local EMC	Environmental monitoring station of handan HeBei	GB/16297-1996 execution value $\leq 1.0$ , Monitoring value: 0.375 mg/m <sup>3</sup> . Up to standard
Water	pH, SS, COD, TN, grease/oil	WWTP or discharge point	Annually	Plant operator /Local EMC	Environmental monitoring station of handan HeBei	GB5084-2005 Monitoring value: COD 15 mg/L PH: 6.42; SS: Up to standard
Noise	At the site boundary		Upon formal operation	Plant operator /Local EMC	Environmental monitoring station of handan HeBei	GB12348-2008 environmental functional area standard for noise of second type Monitoring value: north area of factory :50.8dB ( A ) east area: 42.3dB ( A ) west area:56.8 dB(A) south area:51.0 dB(A), Up to standard
	At the nearest residences		For 3 months after commissioning	Contractor /Local EMC		

3. The Environmental Monitoring Station of Handan City monitored the project environment of Hebei Xinglong Grain Biochemical Co., Ltd. in December 2017 for the period of 2017, and issued the monitoring results as below.

Environmental Monitoring Framework and Compliance Status

Monitoring parameter	Monitoring location	Monitoring Frequency	Undertaken by	Monitored by	Compliance Status
<b>A. Construction</b>					
Air	Fugitive dusts	At the site boundary	Once during construction	Contractor /Local EMC	Environmental monitoring station of Handan HeBei. GB/T15432-1995 execution value $\leq$ 1.0, Monitoring value:0.305 mg/m <sup>3</sup> . Up to standard
Water	pH, SS, COD, TN, grease/oil	Domestic wastewater	Once during construction	Contractor /Local EMC	Environmental monitoring station of Handan HeBei. GB5084-2005 Monitoring value: COD 85.2 mg/L PH: 7.02; SS:30.3. Up to standard
Noise		At the site boundary	Once during construction and at commissioning	Contractor /Local EMC	Environmental monitoring station of Handan HeBei. GB12348-2008 environmental functional area standard for noise of second type Monitoring value: north area of factory :35.6dB (A) east area: 34.8dB (A) west area:40.1 dB (A) south area:41.4 dB (A) , Up to standard
<b>B. Operation</b>					
Air	TSP /dusts	Air emission devices installed in workshop	Annually	Plant operator /Local EMC	Environmental monitoring station of Handan HeBei. GB/T15432-1995 execution value $\leq$ 1.0, Monitoring value:0.280 mg/m <sup>3</sup> . Up to standard
Water	pH, SS, COD, TN, grease/oil	WWTP or discharge point	Annually	Plant operator /Local EMC	Environmental monitoring station of Handan HeBei. GB5084-2005 Monitoring value: COD 85.4 mg/L PH: 7.02; SS:30.1. Up to standard
Noise	At the site boundary		Upon formal operation	Plant operator /Local EMC	Environmental monitoring station of Handan HeBei. GB12348-2008 environmental functional area standard for noise of second type Monitoring value: north area of factory :35.5dB (A) east area: 34.5dB (A) west area:40.2 dB (A) south area:41.5 dB (A) , Up to standard
	At the nearest residences		For 3 months after commissioning	Contractor /Local EMC	

4. The Environmental Monitoring Center of Xingtai City and Environmental Protection Bureau of Ningjin County monitored the project environment of Hebei Yufeng Enterprise Group Co., Ltd in December 2017 for the period of 2017, and issued the monitoring results as below.

Environmental Monitoring Framework and Compliance Status

Monitoring parameter		Monitoring location	Monitoring Frequency	Undertaken by	Monitored by	Compliance Status
<b>A. Construction</b>						
Air	Fugitive dusts	At the site boundary	Once during construction	Contractor /Local EMC	Xingtai environment monitoring center	0.229mg/m <sup>3</sup>
Water	pH, SS, COD, TN, grease/oil	Domestic wastewater	Once during construction	Contractor /Local EMC	Xingtai environment monitoring center	COD:58mg/l;
Noise		At the site boundary	Once during construction and at commissioning	Contractor /Local EMC	Xingtai environment monitoring center	day: 43.2dB; night: 38.3dB;
<b>B. Operation</b>						
Air	TSP /dusts	Air emission devices installed in workshop	Annually	Plant operator /Local EMC	Ningjin environmental protection Bureau	Complies
Water	pH, SS, COD, TN, grease/oil	WWTP or discharge point	Annually	Plant operator /Local EMC	Ningjin environmental protection Bureau	Complies
Noise	At the site boundary		Upon formal operation	Plant operator /Local EMC	Ningjin environmental protection Bureau	Complies
	At the nearest residences		For 3 months after commissioning	Contractor /Local EMC		Complies

5. The Environmental Monitoring Station of Zunhua City monitored the project environment of Tangshan Jianlong Jianzhou Iron and Steel Co., Ltd in December 2017 for the period of 2017, and issued the monitoring results as below.

**Environmental Monitoring Framework and Compliance Status**

Monitoring Parameter		Monitoring Position	Monitoring Frequency	Undertaken by	Monitored by	Compliance Status
<b>A. Operation</b>						
Air	TSP/dusts	Air emission devices installed in workshop	Annually	Plant operator/ Local EMC	Environmental monitoring station of <a href="#">zunhua HeBei</a>	11.2mg/m <sup>3</sup>
Water	pH, SS, COD, TN, grease/oil	WWTP or discharge point	Annually	Plant operator/ Local EMC	Environmental monitoring station of <a href="#">zunhua HeBei</a>	COD=6mg/L PH=6.88 SS=12
Noise	At the site boundary		Upon formal operation	Plant operator/ Local EMC	Environmental monitoring station of <a href="#">zunhua HeBei</a>	55dB
	At the nearest residences		For 3 months after commissioning	Contractor/ Local EMC		

6. Hebei Province Environmental Monitoring Center and China Resources (Cangzhou) Co-generation Co., L td jointly monitored the project environment of China Resources (Cangzhou) Co-generation Co., L td in December 2017 for the period of 2017, and issued the monitoring results as below.

China Resources Cangzhou Co-generation Co.Ltd  
Environmental Monitoring Framework and Compliance Status

Monitoring parameter	Monitoring location	Monitoring Frequency	Undertaken by	Monitored by	Compliance Status
<b>B.Operation</b>					
Air	TSP /dusts	Air emission devices installed in workshop	Annually	Plant operator /Local EMC	China Resources Cangzhou Co-generation Co.Ltd 0.5mg/Nm <sup>3</sup>
Water	pH, SS, COD, TN, grease/oil	WWTP or discharge point	Annually	Plant operator /Local EMC	Hebei Environmental Monitoring PH=8.21;COD=56mg/l ; SS=20 mg/l; Ammonia/nitrogen =1.0 mg/l
Noise	At the site boundary		Upon formal operation	Plant operator /Local EMC	China Resources Cangzhou Co-generation Co.Ltd 58dB
	At the nearest residences		For 3 months after commissioning	Contractor /Local EMC	China Resources Cangzhou Co-generation Co.Ltd 50 dB

