

Environmental Monitoring Report

Semi-annual Report
July 2021

Mongolia: First Utility-Scale Energy Storage Project

Prepared by the Ministry of Energy for the Asian Development Bank.

CURRENCY EQUIVALENTS

(as of 1 Jul 2021)

Currency unit	–	Mongolian Tughrik
MNT1.00	=	\$
\$1.00	=	2,849.82 MNT

ABBREVIATIONS

ADB	–	Asian Development Bank
BESS	–	Battery Energy Storage System
CES	–	Central Energy System
EA	–	Executing Agency
EMP	–	Environmental Management Plan
IA	–	Implementing Agency
IEE	–	Initial Environmental Examination
kWh	–	kilowatt-hour
MOE	–	Ministry of Energy
MOF	–	Ministry of Finance
MW	–	Megawatt
NDC	–	National Dispatching Center
NPTG	–	National Power Transmission Grid
O&M	–	Operation and Maintenance
PAM	–	Project Administration Manual
PMU	–	Project Management Unit

WEIGHTS AND MEASURES

cm	–	centimeter
km	–	kilometer
m	–	meter
m/s	–	meter per second
m ²	–	square meter
m ³	–	cubic meter
mg/l	–	milligram per liter
mg/m ³	–	milligram per cubic meter
°C	–	degree celsius

NOTES

- (i) The fiscal year (FY) of the Ministry of Energy ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

This environmental monitoring report is a document of the borrower. The views expressed herein do not necessarily represent those of ADB's Board of Directors, Management, or staff, and may be preliminary in nature.

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Executive Summary

Description of the Project

Project Name:	First Utility-Scale Energy Storage Project
Project Number:	53249-001
Country:	Mongolia
Project Type:	Loan and Grant
Borrower:	Government of Mongolia
Executing Agency (EA):	Ministry of Energy
Implementing Agency (IA)	“National Power Transmission Grid” State-owned Joint Stock Company
Total Estimated Project Cost	US\$ 114.95 million

	Source	Amount (\$ Million)	Share of Total (%)
Financing Plan	1. Asian Development Bank		
	Ordinary capital resources (Loan 3874-MON)	100.00	86.99
	High-Level Technology Fund (Grant 0696-MON)	3.00	2.61
	2. Government of Mongolia	11.95	10.40
	Total	114.95	100.00

Date of Approval:	22 Apr 2020
Signing Date:	14 May 2020
Effectivity Date:	17 Jun 2020
Closing Date (original):	31 Mar 2025
Elapsed loan period:	60 months

	Source	Allocated (\$Million)	Utilization (\$Million)	Percentage (%)
Status of project financing	Grant	3.00	0.00	0.00
	Loan	100.00	0.00	0.00
	Counterpart	11.95	0.00	0.00
	Total	114.95	0.00	0.00

1. Introduction

A. Scope of the Report

This report is the first environmental monitoring report for the First Utility-Scale Energy Storage Project. It covers period January to June 2021, and was prepared by Project Management Unit.

The report did not include the support of the Project Management Consultant (PMC) company due to the lack of a contract with the PMC company during the reporting period. Also, the selection of the 3rd party environmental monitoring company has not yet begun.

B. Background of the Project

Objectives of the Project: First Utility-Scale Energy Storage Project aims to install large scale advanced battery energy storage system (BESS) in the Central Energy System (CES) grid in Mongolia to absorb curtailed renewable energy electricity and smoothen fluctuations caused by the intermittency of renewable energy. This will expand the system's capacity to connect additional renewable energy supply and meet the growing power demand in the CES grid to meet the Government of Mongolia's long-term renewable energy target by 2030. The proposed project is listed in the Country Operations Business Plan: Mongolia (2020-2021).

Impact and outcome. The project is aligned with the following impact: renewable energy capacity increased to 20% of total generation capacity by 2023 and 30% by 2030. The project will have the following outcome: renewable electricity penetration increased. On successful completion, the project will supply 58.5 gigawatt-hours of clean peaking power annually, and support the integration of an additional 859 gigawatt-hours of renewable electricity into the CES grid annually, thereby avoiding 842,039 tons of carbon dioxide emissions yearly by 2025.

Output 1: Large scale advanced battery energy storage system installed. By 2023, 80 MW/200 mega-watt-hours of advanced BESS is installed. The BESS will be resilient to extremely cold climate and will be equipped with a battery energy management system to be fully charged by renewable electricity, which is otherwise curtailed, and to discharge clean electricity to supply peaking power in the CES. The BESS will also provide the regulation reserve in the CES grid, which enables at least 350 MW of additional renewable energy capacity to be integrated into the CES.

Output 2: Institutional and organizational capacity enhanced. The project will help strengthen the capacity of the National Dispatching Center (NDC) to handle power dispatch and grid operations and of the NPTG to operate and maintain the BESS sustainably. It will include (i) developing BESS operation and maintenance (O&M) regulations to avoid reducing battery life through overcharging and discharging, which is a major cause of fire, and to secure the necessary funds for a major overhaul to replace the battery pack after 13 years of operation; (ii) developing an ancillary service pricing policy and guidelines to create room for private sector investment in BESS for future capacity addition; (iii) providing training for NDC and NPTG staff, with particular attention on female staff, and developing a gender policy in the energy sector; and (iv) disseminating project knowledge and lessons to other DMCs facing similar challenges in scaling up renewable energy.

Location: The BESS will be located at Khoroo 32, Songino Khairkhan district in western Ulaanbaatar, adjacent to the Songino 220/110/35 kV substation. It will be built in a modular manner by paralleling blocks of batteries to a suitable MW capacity. The actual arrangement will depend on the supplier of the BESS and advice will be taken from the manufacturer with regard to the size of blocks and the detailed design of the BESS.

C. Project management arrangements

The Ministry of Energy (MOE) is the executing agency for the project. National Power Transmission Grid (NPTG) state-owned joint stock company is the Implementing Agency. A project steering committee, chaired by the Ministry of Energy and including MOF, NPTG and NDC, has been established to provide strategic and policy guidance.

Project Implementation Organizations	Management Roles and Responsibilities
Ministry of Finance (MOF), the Borrower	<ul style="list-style-type: none"> • Act as representative of the Borrower in accordance to the Law on Government of Mongolia. • Conclude onlending and subgrant agreements with the implementing agency (IA). • Submit withdrawal applications (WA) to the Asian Development Bank (ADB). • Submit the WA nominated authorized signatories to approve WAs processing. • Process and submit to ADB WAs and, if required, requests for reallocation of the loan proceeds based on request made from the executing agency (EA). • Approve structure, composition, and remuneration of project management unit (PMU) based on the project administration manual (PAM) and relevant regulations; • Assume supervision and oversight of financial performance. • Sign the review mission memorandum of understanding (MOU) to ensure that project is implemented in line with the project documents and that changes in the project documents are in line with the relevant laws and regulations.
Project Steering Committee	<ul style="list-style-type: none"> • Comprising Ministry of Energy (chair), representatives of the Ministry of Finance, Energy Regulatory Commission, National Dispatching Center, and National Power Transmission Grid State-Owned Joint Stock Company (members). • Provide overall guidance on project management and implementation.
Ministry of Energy, the executing agency (EA)	<ul style="list-style-type: none"> • Take overall responsibility of project implementation. • Provide overall guidance and oversight to the project management unit and project management consultants. • Submit required annual audit reports and financial statements of project accounts, and annual audited financial statements of the implementing agency (IA) to ADB.
Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> • Take the overall responsibility for project implementation including environmental and social safeguards. • Establish project management unit (PMU), and recruit PMU staff, and project management consultants. • Finalize draft bid document, bid evaluation report, and contracts, and submit them to ADB for necessary approval. • Authorize WA and submit to MOF. • Ensure timely submission of budget proposals in line with the budget law. • Appoint Project Coordinator based on competitive selection results and endorsement of MOF; dismiss Project Coordinator based on contract permitted justifications. • Recruit through open competitive selection and dismiss project staff other than those described in Article 10.1.8 and 10.1.9 of Regulation 196 and relevant amendments to the regulation. • Administer financing and procurement of projects in conformance with laws, regulations and guidelines of Mongolia and ADB, if not regulated otherwise in loan agreement. • Conclude contract with selected provider of goods, works and services required for the project, oversee performance of such contracts, enforce compliance with relevant regulations and clauses set in the loan agreement and PAM and evaluate implementation.

	<ul style="list-style-type: none"> • Develop, in conformance with Budget Law, and submit to MOF proposals reflecting input of PMUs regarding expected external and internal financial contributions provided under signed loan agreements for their consideration in drafting of budget ceilings, annual draft budgets, budget amendment drafts and budget schedules. • Ensure financial statements are audited by an independent auditor and submit audit reports to ADB. • Undertake control of goods, works, services procured with proceeds of foreign loans as well as contractor performance, evaluate and validate satisfaction of contractual obligations. • If contractual obligations of the contractor are evaluated as having been not met, submit proposal to ADB regarding changing or, if deemed necessary, terminating the underlying contract, and reach solution based on mutual consensus. • Accept from PMU for archiving purposes final project reports, audited financial statements, and all other project-related documents and ensure the PMU uploads these reports and documents to MOF's Official Development Assistance Management and Information System (ODAMIS) on a timely basis. • Have overall responsibility for ensuring the implementation of the Environmental Management Plan (EMP). • Ensure allocation of sufficient budget for EMP implementation and monitoring.
Project Management Unit (PMU) under MOE	<ul style="list-style-type: none"> • Responsible for managing, coordinating, and supervising the project implementation. • Provide guidance on the day-to-day activities of the project and assistance to the IA to ensure smooth project implementation. • Responsible for coordinating ongoing procurement documents (bid document, bid evaluation report, and contracts). • Submit project progress reports, environment monitoring reports, project financial audit report, and entity audited financial statements to ADB. • Oversee the implementation of the EMP. • Oversee implementation, monitoring and reporting of gender action plan (GAP). • Establish and manage advance accounts. • Check invoices from contractors and prepare WA to be submitted to MOE and MOF • Report project implementation progress and compliance to ADB. • Retain necessary financial information and evidences related to payment and claim. • Review the update initial environmental examination (IEE)/EMP and submit to ADB for disclosure. • Ensure that relevant documents are reported to the MOF's ODA MIS in a timely manner • Coordinate resolution of complaints under the Grievance Redress Mechanism (GRM).
Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> • Liaise with ADB on the implementation of the EMP and corrective actions. • Review the environmental monitoring reports submitted by the IA, and submit to ADB for disclosure.
National Power Transmission Grid State-Owned Joint Stock Company, IA	<ul style="list-style-type: none"> • Assist the PMU in coordinating ongoing procurement documents (bid document, bid evaluation report, and contracts). • Assist the PMU to conduct environment, land acquisition, and social monitoring. • Assist PMU on implementation of EMP. • Assist PMU on collecting supporting documents for WA submission. • Submit annual audited entity financial statements to PMU for submission to ADB. • Update the IEE and EMP (if required) to reflect the changes in detailed design. • Ensure that the (revised) IEE/EMP requirements are included in the bidding documents and civil works contracts. • Require BESS contractor to develop a Construction EMP (CEMP) in compliance with the EMP, and reviewing and approving the CEMP. • Ensure that the BESS Contractor implements the CEMP properly and in compliance with the requirements of the EMP. • Ensure that the BESS Contractor complies with the relevant environmental management and protection requirements and regulations of Mongolia and the ADB, and with any Project environmental or social loan covenants and assurances. • Identify any environmental issues during implementation and propose necessary corrective actions. • Ensure implementation of the GRM such that complaints from affected persons are efficiently and effectively resolved.

	<ul style="list-style-type: none"> • Ensure implementation of the environmental monitoring plan presented in the EMP. • Prepare and submitting semi-annual/annual environmental monitoring reports to PMU for onward submission to ADB.
Project Management Consultants	<ul style="list-style-type: none"> • Assist the PMU and IA on day-to-day activities of the project. • Responsible for the supervision of installation of battery energy storage system (BESS). • Provide assistance to the executing and the implementing agencies in the project design, procurement and construction management, testing and commissioning. • Assist the PMU and IA in reviewing feasibility study report and carry out engineering design. • Assist the PMU in preparing bid documents, carry out bid evaluation and/or contract negotiation, and award contracts in accordance with ADB procurement regulations. • Assist the PMU and IA to process invoices and prepare WA. • Assist the PMU to fulfill reporting requirements of ADB. • Assist the PMU and IA to conduct environment, land acquisition, and social and gender action plan implementation and monitoring, and prepare environmental monitoring reports.
Asian Development Bank	<ul style="list-style-type: none"> • Provide guidance to the EA and IA at each stage of the project for smooth implementation in accordance with the agreed implementation arrangements. • Conduct regular loan review missions, including midterm and project completion review missions, and ensure that EA, IA and MOF are fully consulted with and that the relevant MOUs are signed by them. • Review and approve procurement actions. • Review the updated IEE/EMP • Monitor compliance with all loan covenants including safeguards. • Timely processing of WAs and releasing eligible funds. • Review annual audit reports and follow-up on audit recommendations. • Regularly update the project performance review reports in coordination with both the MOE and NPTG. • Regularly update the project information documents for public disclosure at ADB website, including the safeguard documents.

D. Environmental overview of the Project area

Ulaanbaatar, the capital of Mongolia, is the country's largest city, and home to 1.3 million people (45% of the population). It is administrated as an independent municipality. It spans an administrative area of 4,704 km² and is comprised of 9 districts and 152 subdistricts (khoros).

Ulaanbaatar is situated in the Tuul River valley at 1,350 masl, and is surrounded by the foothills of the Khentii mountain range that includes the Bogd Khan Uul and the Bogd Khan Uul National Park in the south, Chingeltei Uul in the north, Bayanzurkh Uul in the east and Songino Khaikhan Uul mountain range in the west and north west. The terrain is flat in the city center and becomes gently to steeply rolling in the outlying peri-urban areas. To the east, elevation rises up to about 1,400 m; to the west, about 1,250 m; to the north, between 1,600 and 1,800; and to south, 1,800 m. The seismic activity in vicinity of Ulaanbaatar is relatively low.

The east-west Tuul river bisects the city. The *Ger* districts¹ represent the expansion of the city to the north, northeast and northwest. With respect to educational attainment, life expectancy, and monetary income, the national average Human Development Index (HDI) in Mongolia and Ulaanbaatar are 0.735 and 0.812 respectively.

¹ *Gers* are traditional portable dwellings traditionally used by semi-nomadic herders and others in Mongolia, typically heated by a central stove fueled with wood or animal dung, or with coal. *Ger* districts, which have grown up around many Mongolian cities, especially Ulaanbaatar, include both gers and other types of homes, including those built with masonry products and other materials.

The BESS will be located in Songino Khaikhan district, adjacent to the Songino 220/110/35 kV substation in western Ulaanbaatar. Songino Khaikhan District encompasses much of Ulaanbaatar's' western and northern area, extends to the foothills of Songino Khaikhan mountain.



Figure 1. Location of the Project site.

E. Project Implementation Progress

The PMU was established by Ministry of Finance's order №101 dated 4 May 2020. PMU staff recruitment is started in July and it is completed in December 2020. The selection of all 8 experts has been completed including Monitoring and Evaluation / Environmental officer.

The Project Steering Committee has been established by Minister of Energy's order №156 dated 10 August 2020. The Project Steering Committee approves the project's action plans, financial and procurement plans, other documents and discusses and resolves other relevant issues.

The EPC contractor tender was announced on ADB and MOE websites, and "Udriin sonin" daily newspaper in 06 May 2021. Selection process is underway.

The Project Management Consultant (PMC) selection process is completed. The contract has been signed with the winning company RWE Technology and it is approved by ADB on 25 June 2021.

2. Compliance to National Regulations

Environment safeguards classification by the Asian Development Bank (ADB). According to the requirement of ADB's Safeguard Policy Statement (SPS, 2009), the Project is categorized as "B" for environment, requiring the preparation of an IEE including an Environmental management plan (EMP).

Mongolian requirements

Mongolia has enacted a policy and legal framework for environmental assessment and management. The *Law on Environmental Protection* (2012) is an overarching law for all environmental legislation. It is the principal law that regulates activities associated with the protection of the environment with special emphasis on 'Natural Resource Reserve Assessment' and 'Environmental Impact Assessment'. The latest amendment to the *Law on Environmental Protection* (2012) establishes the liability of polluters to pay compensation for damage caused to the environment and natural resources. The amount of compensation payable depends on the natural resources that have suffered the damage.

The *Law on Environmental Impact Assessment* (2012) stipulates the EIA requirements of Mongolia (described further below). The purpose of this law is environmental protection, the prevention of ecological imbalance, the regulation of natural resource use, the assessment of environmental impacts of projects, and procedures for decision-making regarding the implementation of projects.

The *Law on Water* (2015) regulates the effective use, protection and restoration of water resources. It specifies regular monitoring of the levels of water resources, quality and pollution, and provides safeguards against water pollution. The *Law on Water Pollution Fees* (2019) introduces fines and fees for the pollution of water resources.

The *Law on Land* (2015) regulates the possession and use of land by a citizen, entity and organization, and other related issues. Articles 42/43 provide guidance on removing possessed land and granting compensation. Other relevant legislation includes The *Law on Subsoil* (1995), *Law on Air* (2012), and the *Law on Wastes* (2012). In addition to environmental laws and regulations, there are occupational health and safety laws and regulations the EA and IA must comply with.

Mongolia has developed a number of key environmental policy documents, including: Biodiversity Conservation Action Plan, 1996; State Environmental Policy, 1997; Mongolian Action Program for the 21st Century (Map21), 1998; National Action Plan for Climate Change, 2000; National Plan of Action to Combat Desertification, 2000; National Plan of Action for Protected Areas, 1997; National Environmental Action Plan, 1996, 2000; and Green Development Policy of Mongolia, 2014.

The Ministry Nature, Environment and Tourism (MNET) is the agency primarily responsible for the implementation of environmental policy in Mongolia. Agencies under the MNET with responsibility for environmental protection and management include the

Department of Green Development Policy and Planning, the Department of State Administration and Management, the Department of Environment and Natural Resources.

Mongolia has signed on to a number of international environmental conventions, including the UN Framework Convention in Climate Change, 1994. In addition, the Mongolia has ratified a number of International Labor Organization (ILO) core labor standards.

The *Law on Environmental Impact Assessment* (1998, amended 2002 and 2012) regulates Mongolian EIA requirements. There are two stages defined in the EIA Law: an initial screening through a General EIA (GEIA), and a full Detailed EIA (DEIA). In the first stage the project implementer submits to the MNET i) baseline environment study (BES); ii) a feasibility study including a description of the proposed project, drawings and technical and economic justification; and iii) written opinion of the soum (district) governor. The MNET reviews the submission and issues one of three GEIA conclusions:

- (i) project may be implemented provided that certain conditions set in the GEIA conclusion are followed;
- (ii) project is required to undergo a detailed EIA (DEIA) for identification of potential impacts, avoidance of negative impacts with mitigation measures, and elaboration of an EMP. The DEIA should be conducted by a government licensed EIA company. Upon completion, the DEIA will be reviewed by the EIA committee of the MNET for approval; or
- (iii) project rejected on grounds of non-conformity with relevant legislation, or the adverse impact of the equipment and technology on the environment are too great, or absence of the project in the land management.

The scope of the DEIA (if required) is defined in a Terms of Reference (ToR) prepared by the GEIA review committee. The DEIA report must be prepared by a MNET authorized Mongolian company, and should be submitted to the MNET or aimag government by the project proponent.

A Project GEIA was prepared by PPTA national environmental specialist and was submitted to MNET. Based on the review of the GEIA by MNET, a qualified national consultant (Sunny Trade Co., Ltd LLC) was recruited to prepare a Project DEIA. The DEIA was approved by Ministry of Nature, Environment and Tourism on 8 January 2020.

Mongolian National Standards (MNS) prescribe allowable ambient and discharge standards for ambient air, noise, water and soil quality, and industrial effluent, wastewater, boiler emissions, etc. During the design, construction, and operation of a project, the ADB SPS 2009 requires the borrower to follow environmental standards consistent with good international practice (GIP), as reflected in internationally recognized standards such as the World Bank Group's *EHS Guidelines*. Relevant *EHS Guidelines* include *General EHS Guidelines* (covering environment; occupational health and safety; and community health and safety), and *EHS Guidelines for Electric Power Transmission and Distribution*.

ADB Requirements

The major applicable ADB policies, regulations, requirements and procedures for environmental assessment are the SPS 2009, and the *Environmental Safeguards – A*

Good Practice Sourcebook (2012), which jointly provide the basis for this IEE. The SPS 2009 establishes an environmental review process to ensure that projects undertaken as part of programs funded through ADB loans are environmentally sound, are designed to operate in line with applicable regulatory requirements, and are not likely to cause significant environment, health, social, or safety hazards.

At an early stage in the project cycle, typically the project identification stage, ADB screens and categorizes proposed projects based on the significance of potential project impacts and risks. A project’s environment category is determined by the category of its most environmentally sensitive component, including direct, indirect, induced, and cumulative impacts. The Project has been classified by ADB as environment category B, requiring the preparation of an IEE (this report).

The SPS 2009 requires a number of additional considerations, including: (i) project risk and respective mitigation measures and project assurances; (ii) project-level grievance redress mechanism; (iii) definition of the project area of influence; (iv) physical cultural resources damage prevention analysis; (v) occupational and community health and safety requirements (including emergency preparedness and response); (vi) economic displacement that is not part of land acquisition; (vii) biodiversity conservation and natural resources management requirements; (viii) provision of sufficient justification if local standards are used; (ix) assurance of adequate consultation and participation; and (x) assurance that the EMP includes an implementation schedule and measurable performance indicators.

3. Compliance to Environmental Covenants from the ADB Loan Agreement

The MOE as executing agency has the overall responsibility for compliance with IEE and EMP.

Once the project management consulting company has started to provide consulting services, the 3rd party environmental monitoring company will be selected to conduct environmental monitoring.

4. Progress in Implementing the Environmental Management Plan/Environmental Monitoring Plan

A. IEE report update

Initial environmental examination report has been updated on February 2021 due to changes of BESS capacity from 125MW/160MWh to 80MW/200MWh.

B. Topography survey

The PMU conducted 1:200 and 1:500 scale topographical survey at the project site by a professional company “NSA” LLC to provide information to the bidders. During the survey, two topographical network points established in the project area, and topographical report submitted to the PMU.

Point number	Rectangular coordinates		Geographical coordinates		Height
	North	East	North	East	

001	5302504.544	620309.089	47°51'52.58298"	106°36'31.08933"	1370.754
002	5302287.503	620188.580	47°51'45.63687"	106°36'25.07373"	1374.048



Figure 2. Topographical network points in the project site.

C. Environmental monitoring

Land certificate. In 2019, the Capital City Governor's Decree No. A / 919 was issued to possess land for BESS site. Accordingly, the land fee was paid by the national Power Transmission Grid State owned company. The land agreement was signed by the State Secretary of the Ministry of Energy and the land certificate has been obtained.

No environmental monitoring measurements were made during the reporting period as no 3rd party environmental monitoring company was selected. Because The PMC company is just contracted in 25 June 2021.

5. Significant Events or Issues Encountered, Changes in Project Scope, and Corresponding Safeguard Measures Undertaken, if Applicable

The capacity of the Battery Energy Storage System to be installed under the project has been changed from 125MW/160MWh to 80MW/200MWh. Related Feasibility study report, Initial environmental examination report and other relevant documents have been updated.

6. Implementation of Grievance Redress Mechanism and Complaints Received from Stakeholders

A contract has been signed with a Project Management Consulting company, but consulting services have not yet begun. Also, the construction work of the project has not started yet, so the grievance redress mechanism has not been implemented.

7. Conclusion and Recommendations

Once, the project management consulting firm starts the consulting service work, it will jointly select a 3rd party environmental monitoring company and organize pre-construction phase environmental monitoring at the project site.