Environmental and Social Assessment and Review Framework

Project Number: 50088-002
June 2018

Mongolia: Upscaling Renewable Energy Sector Project

Prepared by the Ministry of Energy for the Asian Development Bank

CURRENCY EQUIVALENTS

(as of 3 June 2018)

Currency Unit	–	Mongolian Tughrik (MNT)
MNT 1.00	=	$0.0004
$1.00	=	MNT 2411.00

ABBREVIATIONS

ADB	Asian Development Bank
AP	Affected Person
AuES	Altai-Uliastai Energy System
CEMP	Construction Environmental Management Plan
CES	Central Energy System
CITES	Convention on International Trade in Endangered Species
CRVA	Climate Risk Vulnerability Assessment
DEIA	Detailed Environmental Impact Assessment
EA	Executing Agency
ESARF	Environmental and Social Assessment and Review Framework
EHS	Environment, Health and Safety
EIA	Environmental Impact Assessment
EMoP	Environmental Monitoring Plan
EMP	Environmental Management Plan
FSR	Feasibility Study Report
GEIA	General Environmental Impact Assessment
GHG	Green House Gas
GIP	Good International Practice
GoM	Government of Mongolia
GRM	Grievance Redress Mechanism
GSHP	Shallow-Ground Heat Pump
IA	Implementing Agency
IBAT	Integrated Biodiversity Assessment Tool
IEC	Independent Environmental Consultant (national)
IEE	Initial Environmental Examination
IT	Interim Target
MNS	Mongolian National Standard
MoE	Ministry of Energy
MoET	Ministry of Environment and Tourism
NAMEM	National Agency of Meteorology and Environmental Monitoring
NGO	Non-Governmental Organization
NP	National Park
NREC	National Renewable Energy Center
OHS	Occupational Health and Safety
OM	Operations Manual, ADB
PCR	Physical Cultural Resources
PMU	Project Management Unit
PPE	Personnel Protective Equipment
PPTA	Project Preparatory Technical Assistance
PSC	Project Steering Committee
PV	Photovoltaic
RE	Renewable Energy
SOJSC	State-Owned Joint Stock Company
SPS	Safeguard Policy Statement, ADB

TA	Technical Assistance
ToR	Terms of Reference
WES	Western Energy System
WHO	World Health Organization

WEIGHTS AND MEASURES

$\mu g/m^3$	Micrograms per Cubic Meter
BOD_5	Biochemical Oxygen Demand, five days
$CaCO_3$	Calcium Carbonate
cm	Centimeter
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CO_{2e}	Carbon Dioxide Equivalent
COD	Chemical Oxygen Demand
dB(A)	A-weighted sound pressure level in decibels
DO	Dissolved Oxygen
GWh	Gigawatt Hour
GWh/y	GW-hours per year
ha	Hectare
kg	Kilogram
km	Kilometer
kV	Kilovolt
kWh	Kilowatt Hour
Leq	Equivalent Continuous Noise Level
m	Meter
m/s	Meters per Second
m^2	Square Meters
m^3	Cubic Meters
masl	Meters Above Sea Level
mg/l	Milligrams per Liter
mg/m^3	Milligrams per Cubic Meter
mm	Millimeter
MW	Megawatt
NO_2	Nitrogen Dioxide
NO_x	Nitrogen Oxides
O_3	Ozone
^oC	Degrees Celsius
pH	A measure of the acidity or alkalinity of a solution
PM_{10}	Particulate Matter smaller than 10 micrometers
$PM_{2.5}$	Particulate Matter smaller than 2.5 micrometers
SO_2	Sulfur Dioxide
SOx	Sulphur Oxides
TDS	Total Dissolved Solids
TSP	Total Suspended Particulates

NOTES

(i) The fiscal year (FY) of the Government of Mongolia and its agencies ends on 31 December.

(ii) In this report, "$" refers to US dollars.

TABLE OF CONTENTS

List of Tables

List of Figures

I. INTRODUCTION

A. Report Purpose

1. This is the Environmental and Social Assessment and Review Framework (ESARF) for the proposed Upscaling Renewable Energy Sector Project in Mongolia. The Project will be delivered through a number of subprojects, implemented over two phases, with the Phase I from 2018-2021 and Phase II from 2021-2023.

2. This is a sector Project and has been classified by ADB as environment category B, requiring the preparation of an ESARF and initial environmental examinations (IEE) for both Phase I and Phase II subprojects. An IEE has already been undertaken for the Phase I subprojects. This ESARF presents the environmental and social assessment and review procedures that will be followed for proposed Phase II subprojects, in order to comply with the environmental safeguard requirements of Safeguard Policy Statement (SPS 2009) of the Asian Development Bank (ADB) and the Mongolian on *Law Environmental Impact Assessment* (2012).

B. Project Background

3. The Project will i) support upscaling of rural renewable energy (RE) by demonstrating the application of wind, solar photovoltaic (PV) and Shallow-Ground heating in remote rural areas of western Mongolia; and ii) enhance the capacity of local public utilities in investment planning, project management, and grid control while decarbonizing energy sector in Mongolia.

4. The Project will develop the 41.0 megawatts (MW) of distributed solar and wind RE in the Western and Altai-Uliastai Energy Systems of western Mongolia, and generate 98.77 gigawatt-hour (GWh) annually. The successful completion of the Project will deliver clean and affordable electricity to around 70,000 households in remote and less developed regions of Mongolia, and will support decarbonizing the energy sector in the country.

5. The Ministry of Energy (MoE) will be the Executing Agency (EA) and the Western and Altai-Uliastai Energy Systems state owned stock companies will be the Implementing Agencies (IA) for subprojects within their regions. The National Renewable Energy Center (NREC) will be the IA for shallow Shallow-Ground heat pump (GSHP) subprojects.

6. The Project will be delivered through three components and a number of subprojects. It will be implemented over two phases, with the first phase from 2018-2021 and the second from 2019-2023.

> **Component 1: Distributed renewable energy system development.** The subprojects comprise a total of 40.5 MW of solar PV and wind power in the Western and Altai-Uliastai regions. Advanced energy storage will be installed in selected subprojects for grid stability and time-shifting. These subprojects will be implemented in two phases:(i) first phase “core” subprojects (2018-2021) with 25.5 MW capacity; and (ii) second phase “non-core” subprojects (2019-2023) with 15 MW capacity.
>
> The core subprojects will cover areas with higher energy demands in Umnugovi Soum (Uvs Aimag), Uliastai (Zavkhan Aimag), Altai City (Yesonbulag Soum, Govi-Altai

Aimag), and Altai Soum (Govi-Altai Aimag).[1] The second phase (2019-2023) covers Telmen (Zavhan Aimag), and Moron (Khovsgol Aimag). Lessons from the implementation of the first phase will be considered as the Project moves towards the implementation of the second phase.

Component 2: Shallow-Ground heat pump demonstration. This component will install 500 kW thermal of Shallow-Ground heat pump capacity in public buildings in five townships of the targeted region. In Phase I 100 kW will be installed in a kindergarten in the Khovd, the Uvs Aimag center. Additional subprojects will be rolled out in Phase II based on the initial subproject experience.

Component 3: Institutional strengthening and capacity enhancement. The component will (i) enhance technical capacity of local utilities and the national dispatching center in renewable energy investment planning, transparent selection and bidding, renewable electricity dispatch, and grid control and protection; and (ii) support preparation of renewable energy investment plan 2023-2030 in targeted regions.

7. **Table 1** provides summary information on the Component 1 to 3 subprojects, and **Table 2** presents the budget. **Figure 1** shows subproject locations.

8. An IEE has already been prepared which covers the Phase I (Component 1 and 2) subprojects, and this EARF has been developed to provide guidance on screening and categorization, assessment, planning, institutional arrangements, and processes to be followed, for Phase II (Component 1 and 2) subprojects. Since Phase II subprojects will be implemented from 2019-2023, an IEE will be prepared during environment safeguard due diligence for Phase II subprojects.

Table 1: Scaling Up Renewable Energy Components and Phases. Phase I subprojects are denoted by shading.

Location/Province	Applied Renewable Energy Technology	Capacity (MW)	Construction Period
a. Distributed Renewable Energy System Development			
Umunogovi / Uvs	Wind Power	10.0	2018–2021
Altai / Govi-Altai	Solar PV	10.0	2018–2021
Altai Soum / Govi-Altai	Solar PV/Wind hybrid and battery storage	0.5	2018–2021
Uliastai / Zhavhan	Solar PV and battery storage	5.0	2018–2021
Telmen / Zhavhan	Wind Power	5.0	2019–2022
Moron / Khovsgol	Solar PV	10.0	2019–2022
Subtotal		40.5	
b. Shallow-Ground Heat Pump Demonstration			
Hovd, the other Soums	Shallow-Ground Heat Pump	0.5	2018–2023
Total		41.0	

MW = megawatt, PV = photovoltaic.
Core subprojects are denoted by shading.

[1] Aimag = province; soum = district.

Table 2: Estimated Project budget.
($ million)

Item		Amount[a]
A.	Base Cost[b]	
	1. Distributed renewable energy system development	53.94
	a. Umunogovi wind power	15.61
	b. Altai Solar PV	11.05
	c. Altai Soum renewable energy hybrid system and battery storage	1.05
	d. Uliastai Solar PV and battery storage	9.05
	e. Telmen wind power	6.85
	f. Moron Solar PV	10.33
	2. Shallow-Ground heat pump system demonstration	1.14
	3. Institutional strengthen and capacity enhancement	1.76
	Subtotal (A)	56.84
B.	Contingencies[c]	4.04
C.	Financial Charges During Implementation[d]	5.35
	Total (A+B+C)	66.23

PV = photovoltaic.

[a] Includes taxes and duties of $5.63 million. Such amount does not represent an excessive share of the project cost. The government will finance taxes and duties through exemption.

[b] In March 2018 prices.

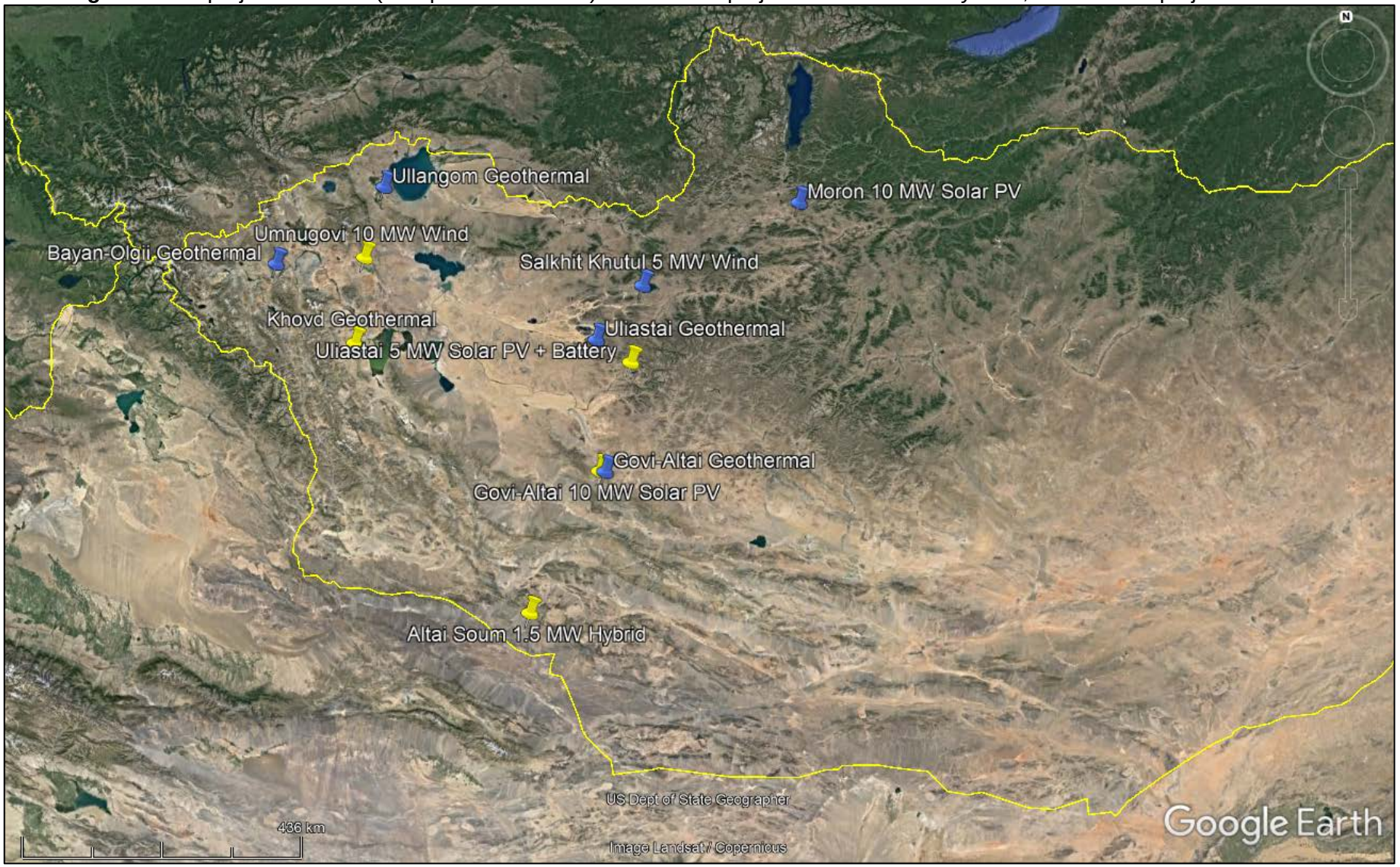
[C] Physical contingencies computed at 5.0% of base cost. Price contingencies computed at an average of 3.9% on foreign exchange costs and 20.3% on local currency costs; includes provision for potential exchange rate fluctuation assuming a purchasing power parity exchange rate.

[d] Includes interest and commitment charges. Interest during construction for ordinary capital resources loan has been computed at the 5-year US dollar fixed swap rate plus an effective contractual spread of 0.5% and maturity premium of 0.1%. Commitment charges for an ordinary capital resources loan are 0.15% per year to be charged on the undisbursed loan amount.

Note: Numbers may not sum precisely because of rounding.

Source: Asian Development Bank estimates.

Figure 1: Subproject locations (Components 1 and 2). Phase I subprojects are denoted in yellow, Phase II subprojects in blue.



Source: PPTA consultant 2017, and Google Earth 2017.

II. ASSESSMENT OF ENVIRONMENTAL POLICY, LEGAL AND ADMINISTRATIVE FRAMEWORK

9. The Project, including Phase I and II subprojects, are subject to both ADB and Mongolian environmental safeguard policies and legislation.

A. ADB Policies, Regulations and Requirements

10. Environmental safeguards requirements, including environmental impact assessment procedures, are defined in ADB's SPS 2009.[2] All projects funded by ADB must comply with SPS 2009 to ensure that projects are environmentally sound, are designed to operate in compliance with applicable regulatory requirements, and are not likely to cause significant environmental, health, or safety hazards. Environmental safeguards policy principles are defined in SPS 2009 Safeguard Requirements 1 (SR1):

i. Use a screening process for each proposed project, as early as possible, to determine the appropriate extent and type of environmental assessment so that appropriate studies are undertaken commensurate with the significance of potential impacts and risks.

ii. Conduct an environmental assessment for the proposed Project to identify potential direct, indirect, cumulative, and induced impacts and risks to physical, biological, socioeconomic (including impacts on livelihood through environmental media, health and safety, vulnerable groups, and gender issues), and physical cultural resources in the context of the project's area of influence. Assess potential trans boundary and global impacts, including climate change. Use strategic environmental assessment where appropriate.

iii. Examine alternatives to the project's location, design, technology, and components and their potential environmental and social impacts and document the rationale for selecting the particular alternative proposed. Also consider the no project alternative.

iv. Avoid, and where avoidance is not possible, minimize, mitigate, and/or offset adverse impacts and enhance positive impacts by means of environmental planning and management. Prepare an environmental management plan (EMP) that includes the proposed mitigation measures, environmental monitoring and reporting requirements, related institutional or organizational arrangements, capacity development and training measures, implementation schedule, cost estimates, and performance indicators. Key considerations for EMP preparation include mitigation of potential adverse impacts to the level of no significant harm to third parties, and the polluter pays principle.

v. Carry out meaningful consultation with affected people and facilitate their informed participation. Ensure women's participation in consultation. Involve stakeholders, including affected people and concerned nongovernment organizations, early in the project preparation process and ensure that their views and concerns are made known to and understood by decision makers

[2] Safeguard Policy Statement. ADB, 2009. The SPS is underpinned by the ADB Operations Manual, Bank Policy (OM Section F1/OP, 2013).

and taken into account. Continue consultations with stakeholders throughout project implementation as necessary to address issues related to environmental assessment. Establish a grievance redress mechanism to receive and facilitate resolution of the affected people's concerns and grievances regarding the project's environmental performance.

vi. Disclose a draft environmental assessment (including the EMP) in a timely manner, before project appraisal, in an accessible place and in a form and language(s) understandable to affected people and other stakeholders. Disclose the final environmental assessment, and its updates if any, to affected people and other stakeholders.

vii. Implement the EMP and monitor its effectiveness. Document monitoring results, including the development and implementation of corrective actions, and disclose monitoring reports.

viii. Do not implement project activities in areas of critical habitats, unless (i) there are no measurable adverse impacts on the critical habitat that could impair its ability to function, (ii) there is no reduction in the population of any recognized endangered or critically endangered species, and (iii) any lesser impacts are mitigated. If a project is located within a legally protected area, implement additional programs to promote and enhance the conservation aims of the protected area. In an area of natural habitats, there must be no significant conversion or degradation, unless (i) alternatives are not available, (ii) the overall benefits from the project substantially outweigh the environmental costs, and (iii) any conversion or degradation is appropriately mitigated. Use a precautionary approach to the use, development, and management of renewable natural resources.

ix. Apply pollution prevention and control technologies and practices consistent with international good practices as reflected in internationally recognized standards such as the World Bank Group's Environmental, Health and Safety Guidelines. Adopt cleaner production processes and good energy efficiency practices. Avoid pollution, or, when avoidance is not possible, minimize or control the intensity or load of pollutant emissions and discharges, including direct and indirect greenhouse gases emissions, waste generation, and release of hazardous materials from their production, transportation, handling, and storage. Avoid the use of hazardous materials subject to international bans or phase-outs. Purchase, use, and manage pesticides based on integrated pes management approaches and reduce reliance on synthetic chemical pesticides.

x. Provide workers with safe and healthy working conditions and prevent accidents, injuries, and disease. Establish preventive and emergency preparedness and response measures to avoid, and where avoidance is not possible, to minimize, adverse impacts and risks to the health and safety of local communities.

xi. Conserve physical cultural resources and avoid destroying or damaging them by using field-based surveys that employ qualified and experienced experts during environmental assessment. Provide for the use of "chance find" procedures that include a pre-approved management and conservation approach for materials that may be discovered during project implementation.

11. During the design, construction, and operation of a project, the 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

Environment, Health and Safety Guidelines (hereafter referred to as the *EHS Guidelines*).[3] The *EHS Guidelines* contain discharge effluent, air emissions, and other numerical guidelines and performance indicators as well as prevention and control approaches that are normally acceptable to ADB and are generally considered to be achievable at reasonable costs by existing technology. When host country regulations differ from these levels and measures, the borrower/client is to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, the borrower/client is required to provide justification for any proposed alternatives.

12. The EHS Guidelines include General EHS Guidelines (covering environment; occupational health and safety; and community health and safety), Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution, Environmental, Health, and Safety Guidelines for Wind Energy, and Environmental, Health, and Safety Guidelines for Geothermal Projects.

B. Mongolia Environmental Policy and Legal Framework

13. Mongolia has enacted a comprehensive policy and legal framework for environmental assessment and management. It has policies, legislation and strategies in place to manage protected areas such as national parks, to satisfy its international obligations, and to protect the quality of the environment for the health and well-being of its citizens. The hierarchy of policies and legislative provisions for environmental management in Mongolia includes the Constitution, international treaties, policies, and environment and resource protection laws, regulations and standards.[4]

1. Legal Framework

14. Environmental policy reform undertaken since the early 1990s has resulted in a large number of environmental laws, the ratification of most international environmental conventions, protection of a substantial area of the country in the protected area system, and an increased presence of Non-Governmental Organizations (NGOs). A summary of relevant environmental legislation is presented in **Table 3**.

a) Constitution

15. Article 16.1.2 of the *Constitution of Mongolia* (1992) states that everyone has the right to live in a healthy and safe environment and to be protected against environmental pollution and ecological imbalance.

b) Law on Environmental Protection

16. The *Law on Environmental Protection* (1998, amended 2002 and 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'. It governs the land and subsoil, mineral resources, water resources, plants, wildlife and air, and requires their protection against adverse effects to prevent ecological imbalance. The environmental protection law regulates the inter-relations between the state, citizens, economic entities and organizations, with a guarantee for the human right to live in a healthy and safe environment. It aims for ecologically balanced social and economic development, the protection of the

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[3] *World Bank Group, Environmental, Health, and Safety Guidelines*, April 30, 2007, Washington, USA. http://www.ifc.org/ifcext/enviro.nsf/Content/EnvironmentalGuidelines

[4] UNDP, 2008. Institutional Structures for Environmental Management in Mongolia. Ulaanbaatar and Wellington.

environment for present and future generations, and the proper use of natural resources, including land restoration and protecting land and soil from adverse ecological effects. Article 7 of the law requires the conduct of natural resource and environmental impact assessments to preserve the natural state of the environment. Article 10 requires the conduct of environmental monitoring. National policy to protect ecologically significant aspects of the environment and to restore natural resources is prepared under the *Law on Environmental Protection*.

17. 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.

Table 3: Applicable Mongolian environmental laws.

Current Laws	Latest Changes
Law on Environmental Protection	Amended, 2012
Law on Environmental Impact Assessment	Amended, 2012
Law on Development Policy Planning	Enacted, 2015
Law on Air	Amended, 2012
Law on Fees for Air Pollution	Amended, 2012
Law on Water	Amended, 2012
Law on Water Pollution Fees	Enacted, 2012
Law on Fees for the Use of Natural Resources	Amended, 2012
Law on Forests	Amended, 2012
Law on Waste	Enacted, 2012
Law on Waste Management	Enacted, 2017
Law on Hazardous Substances and Chemicals	Amended, 2006
Law on Land	Amended, 2015
Law on Land Fees	Amended 2012
Civil Code of Mongolia	Amended 2014
Law on Cadastral Mapping and Land Cadastral	Amended 2011
Law on Subsoil	Amended, 1995
Law on Soil Protection and Combating Desertification	Created, 2012
Law on Special Protected area	Amended, 2014
Law on Buffer Zones	Enacted, 1997
Law on Protection of Plants	Amended, 2011
Law on Natural Plants	Amended, 2012
Law on Fauna	Amended, 2012
Law on Minerals	Amended 2015
Law on Fire Safety	Amended, 2015
Law on Disaster Protection	Amended, 2012
Law on Sanitation	Amended, 2012
Law on Protection of Cultural Heritage	Amended 2014
Law on Labor Safety and Hygiene	Amended, 2015

Source: ADB PPTA consultants.

c) Law on Environmental Impact Assessment

18. 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.

d) Law on Water

19. The *Law on Water* (2012) regulates relations pertaining to 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.

e) Law on Wastes

20. The *Law on Wastes* governs the collection, transportation, storage, and depositing in landfills of household and industrial waste, and re-using waste as a source of raw materials to eliminate hazardous impacts of household and industrial waste on public health and the environment. Undertakings that generate significant amount of wastes must dispose of the wastes in designated landfills that meet prescribed standards.

f) Law on Specially Protected Areas

21. The *Law on Specially Protected Areas* (2014) regulates the use and procurement of land for state protection, fosters scientific research, and preserves and conserves the land's original condition in order to protect specific characteristics, unique formations, rare and endangered plants and animals, historic and cultural monuments, and natural beauty. The law establishes four protected area categories, each managing land for a different purpose under a separate management directive. These include Strictly Protected Areas (SPA), National Parks (NP), Nature Reserves (NR) and National Monuments (NM).

g) Health and Safety

22. In addition to environmental laws and regulations, there are occupational health and safety laws and regulations the EA must comply with:

- Article 16 of the National Constitution of Mongolia states that every employee has the right to "suitable conditions of work".
- The Mongolian Labor Code (1999) is the main piece of legislation guiding employment in Mongolia. It covers collective contracts and agreements, labor contracts, remuneration, working hours, working conditions, public holidays, vacations, safety, employment of minors and the disabled, dispute resolution and labor monitoring by the State.
- The government adopted a National Program for Occupational Safety and Health Improvement in 2001 and national standards were also adopted such as the National Standard on Occupational Health and Safety MNS 5002:2000.
- The Law on Labor Safety and Hygiene (2008) covers requirements for industrial buildings and facilities, requirements for machinery and equipment, requirements for hazardous chemicals and explosives, fire safety, medical check-ups, personal protective equipment, training, rights to favorable working conditions and investigation of accidents and occupational diseases.

h) Electricity Generation

23. The regulatory framework of for electricity generation includes:

- The *Law on Energy* (February 2001) defines the legal framework of the sector, describes the duties and responsibilities of stakeholder like the Mongolian parliament, government, ministry and energy regulatory commission and other parties, owner-ship form, classification of energy facilities, and license and energy tariff issues. According to this law Mongolian energy sector was

uncoupled and divided into classifications generation, transmission grid, distribution grid, dispatching and consumer.

- The *Law on Renewable Energy* (January 2007) brought additional legal framework for the supply and utilization of electricity from renewable energy resources like wind, solar and hydro. The law described all duties and responsibility of stakeholders and the feed-in tariffs for the renewable energy sources, validation time of feed-in tariffs and power purchase agreements.
- The Mongolian grid code provides information on terms and definitions and procedures, is one of the main legal frameworks for grid connected operation.
- The *Law on Construction* provides information on construction processes in Mongolia.

2. Environmental Policy Framework

24. A fundamental principle of the Mongolian state environmental policy is that economic development must be in harmony with the extraction and utilization of natural resources and that air, water and soil pollution will be controlled. In 1996 Mongolia's National Council for Sustainable Development was established to manage and organize activities related to sustainable development in the country. The country's strategy is designed for environmentally friendly, economically stable and socially wealthy development, which emphasizes people as the determining factor for long-term sustainable development.

25. Mongolia has also developed a number of key 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.

26. In addition, guidance documents with important environmental repercussions developed under the auspices of other ministries include the Roads Master Plan, the Power Sector Master Plan, the Tourism Master Plan, and the Renewable Energy Master Plan. Other documents such as the annual Human Development Reports have increasingly incorporated environmental aspects.

3. Environmental Institutional Framework

27. The State Great Khural of Mongolia is the highest organ of State power and the supreme legislative power. The State Great Khural is unicameral and consists of 76 members elected by the mixed electoral system.

28. The Ministry of Environment and Tourism (MoET) is the agency primarily responsible for the implementation of environmental policy in Mongolia. Agencies under the MoET with responsibility for environmental protection and management are described below:

- The Department of Green Development Policy and Planning is responsible for developing national advocacy, legislation, policies, strategies and programs on environmental protection and green development in accordance with the sustainable development goals of the country; developing financial and investment plans, and provide comprehensive policy guidance. Additional

responsibilities include: coordination across sectors to promote green development consistent with ecological principles; planning and initiation of regional and international participation of Mongolia in solving global environmental challenges; and development of policies, programs and projects that introduce clean technologies, and scientific and technological achievements.

- The Department of State Administration and Management is responsible for administration and leadership in the MoET. Its functions include addressing human resource management and development issues, providing legal advice, introducing best practices for administration in the MoET, developing systems of reporting and accountability, resolving appeals and complaints, and improving organizational management. The department focuses on ensuring the continuity and stability of MoET operations by way of professional and disciplined departments, and on developing human resource policies and improving the effectiveness of their implementation, guidelines and recommendations on required future courses of action.
- The Department of Environment and Natural Resources is responsible for the planning and implementation of actions to reduce environmental degradation and adverse environmental impacts, and ensuring the appropriate use of natural resources. Its functions include implementing laws and regulations, policy, programs, and activities related to the conservation and appropriate use of natural resources; restoring areas that have suffered from degradation; organizing and coordinating biological conservation activities; conducting environmental assessments and maintaining the Environmental Information Databank; and organizing training and public awareness activities related to environmental conservation. Activities undertaken in this context include:
    - Reviewing EIAs;
    - Monitoring the implementation of environmental monitoring programs, environmental protection plans, and rehabilitation programs of mines; receiving and reviewing annual reports on the above activities; and issuing professional guidelines and recommendations on required future courses of action;
    - Conducting environmental assessments and maintaining the State Environmental Information Databank;
    - Maintaining a unified registry of very toxic, toxic, and harmful chemicals, and issuing authorizations for their manufacture and import; and,
    - Coordinating household and industrial waste management policy; and managing air pollution.
- The Department of Specially Protected Areas Administration and Management has been entrusted with the responsibility of implementing the laws and regulations concerning Specially Protected Areas (SPAs). Its functions include coordinating activities related to the expansion of the SPA network and the implementation of associated programs, projects, and actions, as well as providing professional and practical assistance to the administrative authorities of SPAs. It focuses on ensuring the integration of policies and actions promoting sustainable natural resource use and ecological balance. These responsibilities are carried out by developing partnerships with all organizations engaged in policy implementation, ensuring the effective allocation of resources, and organizing and coordinating their activities in line with government policy, programs, and plans.
- The Ecologically Clean Technologies and Science Division is responsible for developing and promoting clean technologies in Mongolia by introducing cleaner production technology to all aspects of production and services.

- The Department of Monitoring, Evaluation and Internal Auditing responsibilities are to monitor and control the implementation of policy planning and its operational phases, to evaluate results, to create information databases, to present statistical data and to ensure transparency and information disclosure.
- The Department of Land and Water is responsible for implementing government policy and decisions related to the sustainable use, protection and restoration of land and water resources in Mongolia; signing and monitoring the implementation of contracts and agreements, in the name of the MoET, with relevant foreign and domestic organizations, companies, and individuals; collecting fees and payments for the use of land and water resources and allocating these according to the appropriate procedures; and allocating and reporting on the use of funds for their conservation and restoration of land and water resources.
- The National Agency for Meteorology, Hydrology and Environmental Monitoring is responsible for managing a national, integrated hydrological, meteorological, and environmental monitoring network; ensuring preparedness for potential natural disasters or major pollution incidents; establishing conditions to permit the full and complete use of meteorological and hydrological resources; continuously monitoring radioactivity, air and water pollution, and soil contamination levels; and providing essential hydrological, meteorological, and environmental data to state and government officials, businesses, and individuals.

4. International Environmental Commitments

29. Mongolia has signed on to a number of international environmental conventions, including:

- World Heritage Convention, 1990;
- Convention on Biological Diversity, 1993;
- UN framework convention in Climate Change, 1994;
- UN Convention on Combatting Desertification, 1996;
- The Convention on Wetlands of International Importance, especially as Waterfowl Habitat 'Ramsar Convention', 1996;
- Vienna Convention for the protection of the Ozone Layer, 1996;
- Montreal Protocol (regulating substances that deplete the ozone layer), 1996;
- Convention on International Trade in Endangered Species of Fauna and Flora (CITES), 1996;
- Convention on the Transboundary Movement of Hazardous Waste (Basel), 1997;
- Convention on Migratory Species of Wild Animals /Bonn Convention, 1999;
- Kyoto Protocol, 1999;
- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, 2000;
- Cartagena Protocol, 2002; and,
- Stockholm Convention (SC) on Persistent Organic Pollutants (POPs), 2004.

30. In addition, the Mongolia has ratified the following International Labor Organization (ILO) core labor standards:

- Abolition of Forced labor (C105);
- Child Labor (C182);
- Discrimination (C111);

- Freedom of Association and the Right to Organize (C87);
- Equal Remuneration (C100);
- Minimum Age (C138); and,
- Right to Organize and Collective Bargaining Convention, 1949 (C098).

5. Environmental Impact Assessment Legal Framework and Procedures

31. The *Law on Environmental Impact Assessment* (2012) regulates Mongolian EIA requirements, including all new projects as well as the renovation and expansion of existing industrial, service and construction activities and project which use natural resources. Depending on the type and size of the planned activity, the responsible party for implementing the EIA law will be either MoET or relevant aimag government.

32. There are two types of EIAs defined in the EIA Law: an initial screening through a General EIA (GEIA), and a full Detailed EIA (DEIA). The GEIA, developed by the project implementer, includes i) baseline description of the affected environment; ii) description of the proposed project including drawings; iii) technical and economic justification for the project; and iv) written opinion of the *soum* governor, and is submitted to the MoET. The review of the GEIA will lead to one of four conclusions:

(i) project may be implemented without conducting a DEIA;
(ii) project may be implemented without conducting a DEIA, but with specific conditions and/or impact mitigation measures;
(iii) project requires a further DEIA; or
(iv) 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.

33. The review of the GEIA is free and usually takes about 12 working days.

34. 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 MoET authorized Mongolian company, and should be submitted to the MoET or aimag government by the project proponent. A DEIA typically includes:

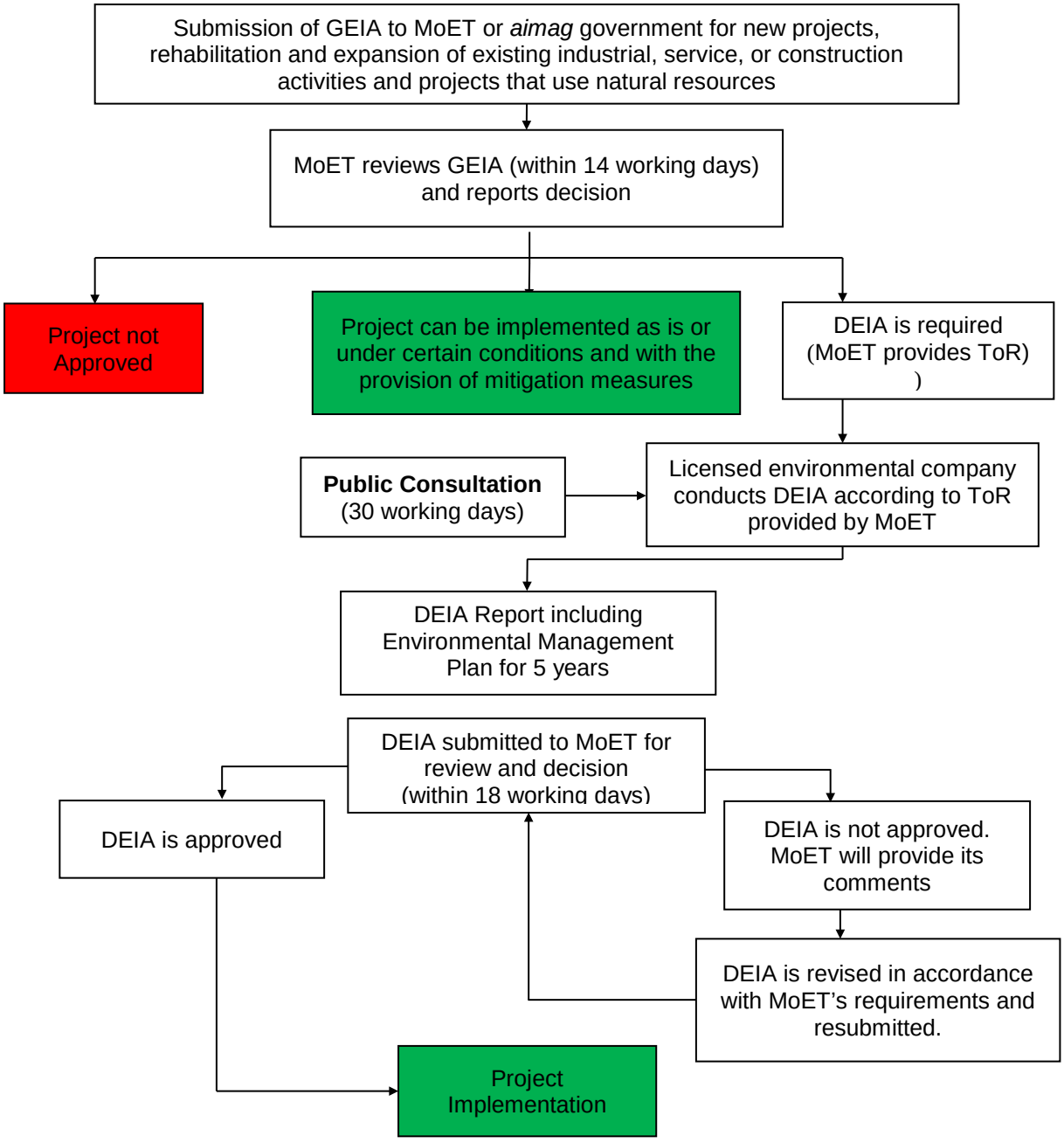
(i) Environmental baseline data;
(ii) Project and technology alternatives;
(iii) Recommended measures to mitigate and eliminate potential; adverse impacts;
(iv) Analysis of the extent and distribution of adverse impacts and consequences;
(v) Risks assessment;
(vi) Environmental management plan to include environmental protection (mitigation) plan and environmental monitoring program;
(vii) Opinions and comments of affected households in the project area;
(viii) If applicable other issues regarding cultural heritage in the project area and special nature of the project; and
(ix) If applicable a rehabilitation plan.

35. The reviewer(s) of the GEIA also review the DEIA, generally within 18 working days, and present the findings to the MoET. Based on the content of the DEIA, reviewer conclusions, and any additional comments by MoET departments, MoET issues a decision on whether to approve or reject the project.

36. **Figure 2** presents a simplified diagram of the EIA procedure in Mongolia.

37. Phase II subprojects preparation shall follow all applicable Mongolian regulations and ADB's SPS 2009. Gaps between national and SPS 2009 requirements such as public consultation and GRM will be addressed during Phase II due diligence. Phase II subprojects shall comply with new national environmental regulations if applicable.

Figure 2: EIA procedure in Mongolia.



C. Applicable Mongolian Environmental Standards

38. 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. Relevant MNS are discussed below.

1. Ambient Air Quality

39. The Mongolian *Law on Air* regulates protection of ambient air, prevention from pollution,

and reduction and monitoring of emissions of air pollutants. The Mongolian ambient air quality standards are presented in MNS 4585: 2007.

40. The World Health Organization (WHO) Air Quality Guidelines are recognized as international standards and are adopted in the *EHS Guidelines*. In addition to guideline values, interim targets (IT) are given for each pollutant by the WHO as incremental targets in a progressive reduction of air pollution.

41. The WHO guidelines and corresponding MNS are presented in **Table 4**. Overall the MNS for ambient air quality exceed or show a high degree of equivalency to the WHO guidelines or IT values, and are adopted for use in this report.

42. Mongolian boiler emission standards and EHS guidelines are presented in **Table** 5.

43. During Phase II subproject due diligence, applicable national and EHS Guidelines standards shall be compared and the subprojects shall adopt the standards that are more stringent.

Table 4: Mongolian ambient air quality standards (MNS 4585: 2007) and WHO Guidelines.

Pollutant	**Averaging Period**	**Mongolian Standards (µg/m³)**	**WHO ambient air quality guidelines (GL) and interim targets (IT), (µg/m³)**
Nitrogen Dioxide (NO_2)	20 Minute	85	
	1 hour	-	200
	24 hour	40	-
	Annual	30	40
Sulphur Dioxide (SO_2)	10 Minute	500	500 (GL)
	15 Minute	-	-
	20 Minute	450	-
	1 Hour	-	-
	24 hour	20	125 (IT-1) 50 (IT-2) 20 (GL)
	Annual	10	-
Particulate Matter (PM_{10})	24 hour	100	150 (IT-1) 100 (IT-2) 75 (IT-3) 50 (GL)
	Annual	50	70 (IT-1) 50 (IT-2) 30 (IT-3) 20 (GL)
Particulate Matter ($PM_{2.5}$)	24 hour	50	75 (IT-1) 50 (IT-2) 37.5 (IT-3) 25 (GL)
	Annual	25	35 (IT-1) 25 (IT-2) 15 (IT-3) 10 (GL)
Carbon Monoxide (CO)	30 Minute	60,000	-
	1 hour	30,000	-
	8 Hour	10,000	-
Ozone (O_3)	8 hour	100	160 (IT) 100 (GL)

Pollutant	Averaging Period	Mongolian Standards (µg/m³)	WHO ambient air quality guidelines (GL) and interim targets (IT), (µg/m³)
Lead (Pb)	24 hour	1	-
	Annual	0.5	-

Source: Mongolian *Law on Air* and WHO Air Quality Guidelines (2006) in IFC EHS Guidelines (2007).

Table 5: Mongolian boiler emission standards and EHS guidelines.

Parameter	Mongolian Standard and EHS Guidelines (mg/Nm³ at one atmospheric pressure and 0 °C)							
	MNS 5043-2016: Hot water boilers with heating capacity up to 4.2 MW. General technical requirements.		**MNS 5216-2016**: Household stoves. General technical requirements.		**MNS 6298-2011**: Maximum acceptable level and measuring method or air pollutants in in flue gas of new thermal power plants and thermal plants.		**EHS Guidelines 2007**: Small Combustion Facilities Emissions Guidelines (3 – 50 MWth).	
SO_2	mg/Nm³	600-1000 depending on type of fuel (liquid, gas and solid)	mg/Nm³	1200	mg/Nm³	400 urban 600 remote areas	mg/Nm³	2000
NO_x	mg/Nm³	230-500 depending on type of fuel (liquid, gas and solid)	mg/Nm³	700	mg/Nm³	450-1.100 based on volatile coal	mg/Nm³	650
CO	mg/Nm³	115-9700 depending on type of fuel (liquid, gas and solid)	mg/Nm³	9800	mg/Nm³	180-300	-	-
PM	mg/Nm³	170-300 depending on type of fuel (liquid, gas and solid)	mg/Nm³	100	mg/Nm³	50-200	mg/Nm³	50-150
Dry Gas Excess O_2 Content	-	-	-	-	-	-	%	6

Source: Environmental Monitoring Report #2, Ulaanbaatar Urban Services and Ger Areas Development Investment Program, June 2017 and IFC EHS Guidelines (2007).

2. Water

44. **Table 6** summaries Mongolian ambient water quality standards MNS 4585: 2007, **Table 7** summaries Mongolian drinking water standards MNS 0900: 2005, and **Table 8** summarizes effluent wastewater quality standards MNS 4943: 2011. The *EHS Guidelines* recommend that discharges of process wastewater, sanitary wastewater, wastewater from utility operations or stormwater to surface water should not result in contaminant concentrations in excess of local ambient water quality criteria. The MNS water and wastewater standards are adopted for use in this report, supported by the WHO Guidelines for Drinking-water Quality, Fourth Edition (2011).

Table 6: Mongolian ambient water quality standards (MNS 4585: 2007).

Parameter	Unit	Standard
(pH)		6.5-8.5
Dissolved Oxygen (O_2)	mgO/l	6&4 not less
BOD_5	mgO/l	3
COD	mgO/l	10
NH_4-N	mgN/l	0.5
NO_2-N	mgN/l	0.02
NO_3-N	mgN/l	9
PO_4- P	mgP/l	0.1
Chloride Cl	mg/l	300
Fluoride F	mg/l	1.2
SO_4	mg/l	100
Manganese Mn	mg/l	0.1
Nickel Ni	mg/l	0.01
Copper Cu	mg/l	0.01
Molybdenum Mo	mg/l	0.25
Cadmium Cd	mg/l	0.005
Cobalt Co	mg/l	0.01
Lead Pb	mg/l	0.01
Arsenic As	mg/l	0.01
Total Chromium Cr	mg/l	0.05
Hexavalent chromium (Cr^{6+})	mg/l	0.01
Zinc Zn	mg/l	0.01
Mercury Hg	mg/l	0.1
Mineral oil	mg/l	0.05
Phenol	mg/l	0.001

Source: Mongolian Standard MNS 4586:1998.

Table 7: Mongolian Drinking Water Standards (MNS 0900: 2005).

Parameter	Unit	Standard
Physical Quality		
pH	mg/l (milligrams/liter)	6.5-8.5
Hardness	mg equivalent/l	7.0
Total Dissolved Solids (TDS)	mg/l	1000.0
Turbidity	mg/l	1.5
Taste	Score	2.0
Odor	Score	2.0
Color	Degree	20
Inorganic Quality		
Molybdenum (Mo)	mg/l	0.07
Barium (Ba)	mg/l	0.7
Boron (B)	mg/l	0.5
Copper (Cu)	mg/l	1.0
Calcium (Ca2+)	mg/l	100.0
Magnesium (Mg2+)	mg/l	30.0
Manganese (Mn)	mg/l	0.1
Sodium (Na)	mg/l	200.0
Phosphate (PO_4-)	mg/l	3.5
Fluoride (F)	mg/l	0.7-1.5
Selenium (Se)	mg/l	0.01
Strontium (Sr)	mg/l	2.0
Sulfate (SO_4-)	mg/l	500.0
Chloride (Cl)	mg/l	350.0

Parameter	Unit	Standard
Arsenic (As)	mg/l	0.01
Hydrogen sulphide (H_2S)	mg/l	0.1
Chromium (Cr)	mg/l	0.05
Dry residue	mg/l	1000.0
Uranium (U)	mg/l	0.015
Beryllium (Be)	mg/l	0.0002
Cadmium (Cd)	mg/l	0.003
Total mercury (Hg)	mg/l	0.001
Total cyanide (CN-)	mg/l	0.01
Ammonium ion, (NH_4+)	mg/l	1.5
Nitrate ion, (NO_3-)	mg/l	50.0
Nitrite ions (NO_2-)	mg/l	1.0
Phosphate ions, (PO_4-)	mg/l	3.5
Silver (Ag)	mg/l	0.1
Iodine (I_2)	mg/l	1.0
Vinyl chloride	mg/l	0.0003
Nickel (Ni)	mg/l	0.02
Lead (Pb)	mg/l	0.01
Aluminum	mg/l	0.5
Antimony (Sb)	mg/l	0.02
Total iron (Fe)	mg/l	0.3
Zinc (Zn)	mg/l	5.0
Organic Quality		
Benzene	mg/l	0.01
Xylenes	mg/l	0.5
Nitrile 3 acetic acid	mg/l	0.2
2 chlorinated methane	mg/l	0.02
2 chlorinated ethane	mg/l	0.03
3 chlorinated ethane	mg/l	0.07
4 chlorinated ethane	mg/l	0.04
Phenolic compounds	mg/l	0.002
Styrene	mg/l	0.02
Toluene	mg/l	0.7
Ethyl benzene	mg/l	0.3
Pesticides		
Atrazine	mg/l	0.002
Carbofuran	mg/l	0.007
Lindane	mg/l	0.002
Molinat	mg/l	0.006
Endrin	mg/l	0.00006
Microbial Quality		
Total Coliform	Coli / ml	100 (at source) 20 (at supply)
E.Coli	E.Coli / 100 ml	E.Coli / 100 ml
Radiological Quality		
Total α radioactivity	Bq/l	0.1
Total β radioactivity	Bq/l	1.0

Source: Mongolian Standard MNS 0900: 2005.

Table 8: Mongolian effluent wastewater discharge standard (MNS 4943: 2011).

Parameter	Unit	Standard
Water temperature	C^o	20
pH	-	6-9
Odor	Sense	No smell
Total Suspended Solids (TSS)	mg/l	50
BOD_5	mg O_2/l	20
COD	mg O_2/l	50
Permanganate oxidizing capacity	mg O_2/l	20
Total Dissolved Solids (TDS)	mg/l	1,000 *
Ammonia Nitrogen (NH_4)	mg N/l	6

Parameter	Unit	Standard
Total Nitrogen (TN)	mg/l	15
Total phosphorous (TP)	mg/l	1.5
Organic phosphorous (DOP)	mg/l	0.2
Hydrogen sulphide (H_2S)	mg/l	0.5
Total iron (Fe)	mg/l	1
Aluminum (Al)	mg/l	0.5
Manganese (Mn)	mg/l	0.5
Total Chromium (Cr)	mg/l	0.3
Hexavalent chromium (Cr^{6+})	mg/l	Absent
Total cyanide (CN)	mg/l	0.05
Free cyanide	mg/l	0.005
Copper (Cu)	mg/l	0.3
Boron (B)	mg/l	0.3
Lead (Pb)	mg/l	0.1
Zinc (Zn)	mg/l	1
Cadmium (Cd)	mg/l	0.03
Antimony (Sb)	mg/l	0.05
Mercury (Hg)	mg/l	0.001
Molybdenum (Mo)	mg/l	0.5
Total Arsenic (As)	mg/l	0.01
Nickel (Ni)	mg/l	0.2
Selenium (Se)	mg/l	0.02
Beryllium (Be)	mg/l	0.001
Cobalt (Co)	mg/l	0.02
Barium (Ba)	mg/l	1.5
Strontium (Sr)	mg/l	2
Vanadium (V)	mg/l	0.1
Uranium (U)	mg/l	0.05
Oil and grease	mg/l	1
Fat	mg/l	5
Surface active agents	mg/l	2.5
Phenol (C_6H_5OH)	mg/l	0.05
Trichloroethylene (C_2HCl_3)	mg/l	0.2
Tetrachloroethylene	mg/l	0.1
Chlorine remains (Cl)	mg/l	1
Bacteria triggering water-borne disease	-	Absent in 1 mg of water

Source: Mongolian Standard MNS 4943: 2011.

3. Groundwater

45. The Mongolian standard outlining the general requirements for protection of groundwater (MNS 3342: 1982) indicates that the contamination of groundwater with industrial raw materials, products and municipal wastes during transportation and storage is prohibited. Relevant requirements in the standard include:

a. Raw materials and products for industrial and municipal waste storage tanks with potential to contaminate groundwater resources should comply with following:
   - Geological - hydrogeological investigations of the storage tank construction, potential soil infiltration estimates of geological materials, groundwater protection measures to be developed based on the amount and characteristics of the chemicals stored.
   - Storage tanks to be tested for leakage prior to use.
   - For areas at the base of mountains, loops of rivers, river beds and highly fractured parts of geological sediments which are used for drinking water, storage tanks cannot be established in these regions.

b. In case of groundwater contamination due to accidents, the damaged area should be protected, spill gathered without further distribution, the prohibition of drinking water collection from this area, and quick organization and removal of traces of contamination.
c. In the event of groundwater pollution or when the contamination reaches dangerous levels, the method of observation and control will depend on the ground water quality, its intended use and the potential consequences of the pollution.

46. There is no equivalent standard recommended in the *EHS Guidelines,* and the MNS standard is adopted for use in this report.

4. Soil

47. Mongolian standards for heavy metals in soil are presented in MNS 5850: 2008.

Table 9: Mongolian heavy metals standard (MNS 5850: 2008).

Parameter	CR	Pb	Cd	Ni	Zn
Mongolian Standard (MNS 5850: 2008)	150	100	3	150	300

Source: MNS 5850: 2008.

48. There is no equivalent standard recommended in the *EHS Guidelines,* and the MNS standard is adopted for use in this report.

5. Noise

49. Mongolian noise standards are set out in the national standard MNS 4585: 2007 and are compared with relevant international guidelines from the WHO (as presented in the EHS Guidelines) in **Table 10**. WHO standards are more stringent than Mongolian standards for sensitive receptors. WHO standards will be applied if a subproject is close to sensitive receptors.

6. Other Relevant Standards

50. Since the Phase II will involve wind power, transmission lines and civil works, shadow flicker standards, connection to grid, EMF standards, and occupational noise exposure from the World Bank EHS Guidelines shall be followed during Phase II subproject environment safeguard due diligence.

7. Special Protected Areas

51. The *Law on Special Protected Areas* (15 November 1994) is intended to protect the natural landscape, rare fauna and flora, historical and cultural sites and natural sightseeing sites.

52. The law classifies State special protected areas into four categories: i) strictly protected areas; ii) national conservation parks; iii) nature reserves; and iv) monuments. Strictly protected areas are further divided into three zones based on natural forms, features of soil, water, fauna, flora and its vulnerability to human activities: i) pristine zone; ii) conservation zone; and iii) limited use zone.

Table 10: Mongolian noise standard (MNS 4585: 2017) and WHO Guidelines.

Parameter	MNS Standard dB(A)		WHO Guideline dB(A)	
	Daytime 07:00 – 23:00	**Night 23:00 – 07:00**	**Daytime 07:00 – 22:00**	**Night 22:00 – 07:00**
Maximum Environmental Noise Exposure for the Public	60	45	WHO Class I - Residential, institutional, educational: 55 WHO Class II - industrial, commercial: 70	WHO Class I - Residential, institutional, educational: 45 WHO Class II - Industrial, Commercial: 70

Source: MNS 4585: 2007 and WHO Noise Quality Guidelines (1999) in IFC EHS Guidelines (2007).

53. In the pristine zone, only protection activities conformant with the need to preserve original natural features may be conducted; research and investigation activities may be conducted only in the way of observation methods and without causing any damage to the natural features. All other activities are prohibited within this zone. In the conservation zone, biotechnological measures that use environmentally safe technologies may be implemented to enhance flora and fauna reproduction and to mitigate damages caused by natural disasters. The following activities may be conducted in the limited use zone using environmentally safe technologies and with appropriate licenses or permits:

- soil and plant cover restoration;
- forest maintenance and cleaning;
- animal inventories and activities to regulate animal population numbers, age, sex and structure, following an approved program and methods;
- use of mineral water and other treatment and sanitation resources;
- ecotourism organized following designated routes and areas, according to appropriate procedures;
- use of accommodations according to appropriate procedures and designated for temporary residence, camping, observation, research or investigation by travelers or other people with permission;
- taking photographs, making audio and video recordings and using them for commercial purposes;
- worshipping natural sacred sites and conducting other traditional ceremonies; and,
- collect and use the associated natural resources and medicinal and food plants, according to established regulations, for household needs.

III. ANTICIPATED ENVIRONMENTAL IMPACTS AND PHASE II SUBPROJECT ASSESSMENT

A. Assessment of Impacts

54. Anticipated positive and negative environmental impacts of Phase II subproject will be assessed following SPS 2009 and national environmental assessment laws and regulations. All subprojects will be screened using the Rapid Environmental Assessment (REA) checklist as well as site visits to determine the environment category of each subproject. Environment category A sub-projects will not be eligible for financial support from the Project.

55. Potential adverse impacts will be limited to minor disturbance, including increases in dust and noise levels due to ground work and installation machinery, potential occupational and community H&S risks, change of land use, contamination of soils or water from spills of fuel, oil and chemicals if any, disposal of waste water and solid waste during construction and operation, and minor quantities of domestic wastewater from cleaning solar panels during the operational period. The impacts of solar glare and bird collision during operation shall be assessed during Phase II subproject preparation. The life span of solar panels is normally 20 to 25 years. Disposal of the used panels shall strictly follow 2017 Mongolian Law on Waste Management. Potential direct, indirect, induced or cumulative impacts should also be considered including the impacts of any associated existing and associated facilities. A subproject specific sub-EMP will be prepared for each Phase II subproject.

56. Environmental assessment of Phase II subprojects shall be prepared following both national regulations and World Bank's Environmental, Health, and Safety General Guidelines, Environmental, Health, and Safety Guidelines for Wind Energy, Environmental, Health, and Safety Guidelines for Electric Power Transmission and Distribution, and Environmental, Health, and Safety Guidelines for Geothermal Projects.

57. If existing facilities are involved for Phase II subprojects, environmental audit of existing facilities shall be conducted following SPS 2009.

B. Subproject Eligibility Criteria

58. Phase II subprojects must comply with the eligibility criteria presented below.

Project Suitability Criteria

- Must be small scale RE subproject in remote rural areas of western Mongolia.
- Must support the overall Project objective of supporting upscaling of rural RE.

Environmental Criteria

Subprojects that meet any one of the following criteria shall be excluded:

- encroach, or sited within, the core and buffer zones of state special protected areas (i.e., strictly protected areas, national parks, national reserves and monuments);
- encroach, or sited within, local special protected areas (which could be natural zones, unique formations, historic and cultural monument/sites, and scenic areas);
- sited in the vicinity of/close to/adjacent to local special protected areas and will likely cause damage to, or loss of, these areas;
- likely to have impacts on Important Bird Areas and bird flyways;

- likely not conform to national environment-related legislations, to both national and ADB-acceptable standards for environmental quality, and to relevant international environmental conventions to which Mongolia is a party; (see Section II of this ESARF);
- likely to cause significant impacts that cannot be mitigated to acceptable levels;
- have potential impacts on Physical Cultural Resources;
- involve any one of the ten activities in the ADB Prohibited Investment Activities List (Appendix I);
- are classified as environment category A.
- will entail permanent or temporary land acquisition, and physical displacement or economic displacement; and
- have impact on ethnic minorities.

Subprojects must meet the following criteria to be eligible:
- Minimize bird collision during site selection and design of the wind turbine height;
- Subproject designs shall consider wind strength, permafrost, site elevation in relation to power output; and
- Must have environmental, public health or safety benefits.

C. Eligibility of Proposed Phase II Subprojects

59. Proposed subprojects under Phase II are as follows:

Muren:	A 10 MW Solar PV farm will be installed at Mörön soum, Khovs-gol Aimag.
Salkhit Khutul:	A 5 MW wind farm will be installed at Nomrog soum, Zavkhan Aimag.
Aimag Capitals:	Four 0.1 MW Shallow-Ground heat pumps will be installed at the capitals of Uvs, Bayan-Olgii, Zavkhan and Govi-Altai Aimag capitals.

60. The proposed Phase II subprojects comply fully with the eligibility criteria. However, it is possible that the current list of proposed Phase II subprojects may change over time, so this is a preliminary conclusion only. Selection of new subprojects shall meet all the eligibility criteria and exclude category A subprojects.

D. Phase II Subproject Environmental Assessment and Review

1. ADB and GOM Requirements

ADB:	environmental categorization, assessment, review and approval is required for each subproject prior to implementation.
GoM:	each subproject must undergo GEIA review by the MoET prior to implementation; if GEIA conclusion warrants a DEIA, a DEIA report shall be submitted to, and reviewed and approved by, the MoET prior to implementation.

2. Environmental Assessment Steps

61. The subprojects will undergo ADB and GOM environmental assessment in 2018, prior to implementation. The following steps will be implemented in parallel.

STEP 1: Screening and Categorization

ADB categorization. Screening will be undertaken to determine the environment safeguard category of a subproject and the appropriate extent and type of environmental assessment to conduct. The category of a subproject will be based on its most environmentally sensitive activity. Each proposed subproject will be screened as to its type, location, scale and sensitivity and magnitude of its potential environmental impacts, and may be assigned to any of the following categories:

> **Category A**, if proposed activity is likely to have significant adverse environmental impacts that are irreversible, diverse, or unprecedented; and that may affect an area larger than the sites or facilities subject to physical works.
>
> **Category B**, if the potential adverse impacts of a proposed activity are less adverse than those of Category A projects. Impacts are site-specific; and few if any of them are irreversible, and in most cases mitigation measures can be designed more readily than for Category A subprojects.
>
> **Category C**, if proposed activity is likely to have minimal or no adverse environmental impacts. Such activities still require a short report justifying their classification and why no impacts are predicted.

Screening shall be carried out at the early stage of subproject preparation, as soon as sufficient information on the component subprojects and their activities are available, using the rapid environmental assessment (REA) checklist and safeguard screening checklists (involuntary resettlement and indigenous people) in **Appendix II**.

A REA checklist shall be completed for each subproject. Screening and categorization shall be carried out by the MoE Project Management Unit (MoE PMU). The REA checklists will be completed based on subproject site visits, discussions with local environmental protection authorities and other relevant stakeholders. ADB East Asia Department (EARD) Environmental Specialist will be available to support the PMU environmental safeguard staff in the screening and categorization, and ADB's confirmation of the categorization.

MoET Categorization. As soon as sufficient information subprojects and activities are available, a GEIA will be prepared and submitted to the MoET for screening. Based on the Law on EIA, the following documents will be required for the GEIA: (i) project description; (ii) approved or authorized as final technical and economic feasibility study; (iii) working drawings; and (iv) other relevant documents. The PMU will inform ADB on the projects classification by MoET.

STEP 2: Scoping and Consultant Selection

Scoping. In liaison with ADB's EARD, the PMU will undertake a scoping exercise to define the subproject's area of influence, i.e. the geographic boundary to be used to define impacts, potentially affected people, and mitigation measures, monitoring tasks, and the scope of public consultation.

In Mongolia, scoping is usually undertaken as part of the GEIA.

Selection of Consultants. The selection of the right institute or individual specialists to conduct the environmental assessments and prepare the IEE/EMP and DEIA reports is critical.

For the preparation of IEE/EMP for Phase II subproject, the consultant team will consist of at least one international and one national environmental specialist. The International Environmental Specialist should have at least a postgraduate degree on environmental management or relevant fields, a minimum of 10 years work experience on environmental management and monitoring, or relevant fields, experience on environmental impact assessment of solar PV and wind energy projects including in respect of World Bank/IFC EHS Guidelines, the supervision of the implementation of EMP of renewable energy projects. The National Environmental Specialist should be affiliated to a national institute with a valid MoET license to conduct environmental impact assessment. S/he should have at least a postgraduate degree on environmental management or relevant fields, a minimum of 5 years work experience on environmental management and monitoring, or relevant fields, experience on the supervision and implementation of EMP of renewable energy projects, and fair ability to communicate in English.

For the Mongolian assessment the GEIA and DEIA will be undertaken by a qualified national institute with a valid MoET license to conduct environmental impact assessment, in accordance with the requirements of the Mongolian *Law on Environmental Impact Assessment.*

STEP 3: Environmental Assessment

The MoE, through its PMU safeguard staff, will be responsible for the environmental assessment of Phase II subprojects. Environment specialist from EAEN will support the PMU in environmental assessment of Phase II subprojects.

- **ADB IEE**

  An IEE shall be prepared by the recruited international and domestic consultants in accordance ADB's SPS 2009. If existing facilities are involved, an environmental audit shall be conducted.

  The draft IEE will be submitted to ADB by the MoE, and will be revised in accordance with ADB comments. The finalized IEE will be formally submitted by the MoE for disclosure on the ADB website after DEIA has been approved. The IEE will also be disclosed on the MoE website.

  A draft ToR for the consultants is presented in **Appendix III.** An IEE outline is presented in **Appendix IV**, and the Phase I IEE can also be used as a guide.

- **Climate Risk and Vulnerability Assessment (CRVA)**

  During subproject screening, use the AWARE tool to determine potential climate risk to the subprojects. If the climate risk is medium or high, a CRVA shall be conducted and the findings of the CRVA shall be incorporated in the subproject design.

- **Mongolian GEIA/DEIA**

  The DEIA will be prepared by a qualified national institute with a valid MoET license to conduct environmental impact assessment, in accordance with the requirements of the Mongolian *Law on Environmental Impact Assessment.*

  The draft DEIA will be submitted to MoET by the MoE, and will be revised in accordance with MoET comments. The finalized DEIA will be formally

submitted by the MoE to MoET, and once approved will be disclosed on the MoE website.

A draft ToR for the consultants is presented in **Appendix III.** The Phase I DEIA can be used as a guide.

IV. PHASE II ENVIRONMENTAL MANAGEMENT

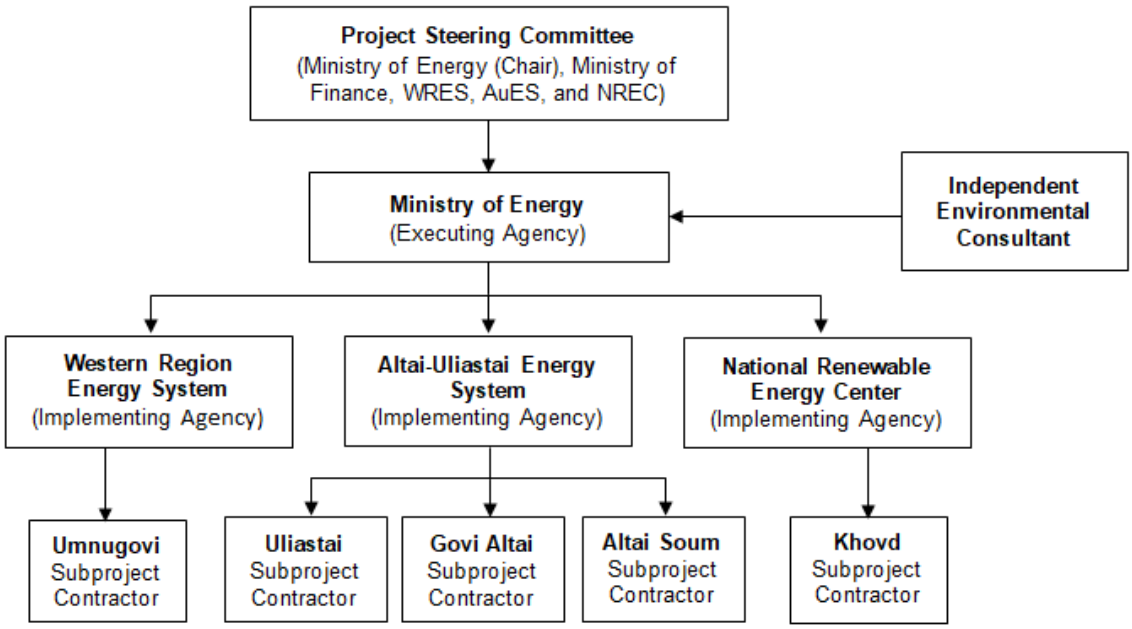
A. Project Institutional Arrangements

62. Institutional arrangements for Phase II subproject will follow the same approach as in Phase I. The MoE will be the Project EA and the Western and Altai-Uliastai Energy Systems state owned stock companies will be the IA for subprojects within their regions. The NREC will be the IA for shallow ground heat pump projects. The IAs will have day-to-day responsibility for implementing their respective subprojects.

63. Construction contractors will be responsible for implementing the mitigation measures during construction for each subproject. Contractors will be required to respond to the environmental specifications in the bidding documents in their proposals. Each contractor will also be required to develop a Construction Environmental Management Plan (CEMP) which outlines the way in which they will comply with the EMP, and will assign a person responsible for environment, health and safety. After Project completion, environmental management responsibilities will be handed over to the operation and maintenance units of the IAs. During operation, IAs will be responsible for implementing the mitigation measures.

64. The implementation arrangements for the Project are illustrated in **Figure 3**.

Figure 3: Project Implementation Arrangements.



B. Responsibilities for EMP Implementation

Steering Committee

65. Chaired by the MoE and including the Ministry of Finance (MoF), WES, AuES, and NREC, the Steering Committee will provide overall guidance to the Project implementation.

Ministry of Energy (MoE)

66. The MoE will be the EA for the Project and the primary point of contact with ADB. It will appoint environmental and social safeguards staff to its Project Management Unit (MoE PMU), and will be responsible for overall project planning and management, coordination, and monitoring and supervision. In relation to environment safeguards, the MoE PMU will:

- Establish baseline data of surface water, groundwater and air quality in the Phase II subproject sites, if applicable.
- Prepare the IEE, a site specific EMP and EMoP for Phase II subproject (a sample sub-EMP and EMoP is shown in Appendix VII).
- Obtain environmental clearances from Ministry of Environment and Tourism.
- Implement of EARF and prepare IEE/EMP for the Phase II subprojects.
- Have overall responsibility for ensuring the implementation of the EMP.
- Ensure allocation of sufficient budget for EMP implementation and monitoring.
- Ensure compliance with loan assurances, including all the requirements specified in the EMP.
- Ensure that the necessary environmental clearances and permits are secured for the project.
- Provide coordination and supervision support to the subproject IAs.
- Coordinate resolution of complaints under the GRM.
- Liaise with ADB on the implementation of the EMPs and corrective actions.
- Review the environmental monitoring reports submitted by the subproject IAs.
- Incorporate the results of the environmental monitoring reports into progress reports submitted to ADB.
- Analyze grid stability for the connection of Phase II solar and wind energy.

Subproject Implementing Agencies (IAs)

67. Each subproject IA will appoint environmental and social safeguards focal point within their respective PMUs. The IAs will have direct day-to-day responsibility for ensuring the implementation of the EMP, including:

- Revise the IEE and EMP as required during detailed design.
- Ensure that national EIA and revised IEE/EMP requirements are included in the bidding documents and civil works contracts.
- Obtain all necessary environmental clearances and permits for the project.
- Coordinating delivery of the training program described in the EMP.
- Require the contractors to develop CEMPs (one for each subproject) in compliance with the EMP, and review and approve CEMPs.
- Ensure the contractors implement the CEMPs properly and in compliance with the requirements of the relevant sub-EMPs.
- Ensure that the contractors comply 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.
- Undertake ongoing outreach and communications with project stakeholders and affected persons (APs).
- Ensure implementation of the GRM such that complaints from affected persons are efficiently and effectively resolved.
- Ensure implementation of the environmental monitoring presented in the EMPs environmental monitoring plans.
- Review environmental monitoring reports submitted by the contractors.

- Prepare and submit consolidated semi-annual/annual environmental monitoring reports to MoE PMU for onward submission to ADB.

Subproject Contractors

68. The subproject contractors will be responsible for construction of the Project components, including implementing the relevant EMP mitigation measures. The contractors will also submit quarterly environmental reports to their relevant IA PMU on sub-EMP implementation, and will be required to report any spills, accidents, fires and grievances received and take appropriate action.

Environmental Consultant (IEC)

69. Qualified environmental consultants will be recruited to support the EA and IA PMUs in environmental assessment, environmental monitoring, reporting, GRM implementation, and delivery of the training program for Phase II subprojects.

Ministry of Environment and Tourism (MoET)

70. The MoET will provide environmental clearances to phase II subprojects and may undertake inspections and monitoring at their discretion.

ADB

71. ADB will conduct environmental safeguard due diligence during Project review missions. ADB will review the environmental monitoring reports submitted by the EA PMU and will disclose the reports on its website. IEE/EMP prepared by EA PMU shall be submitted to ADB for clearance and disclosure on ADB's website. If the EA PMU fails to meet safeguards requirements described in the IEE/EMPs, ADB will require the EA to take corrective measures and advise the EA on items in need of follow-up actions.

C. Training and Capacity Building

72. To ensure effective implementation of the Phase II subproject EMPs, the capacity of the EA and IA PMUs and contractors will be strengthened. The main training emphasis will be to ensure that the contractors, IA PMU and EA PMU are well versed in environmentally sound practices and are able to undertake all construction and operation with the appropriate environmental safeguards. The training will focus on both construction and operation phases of the project. The training program, based on the Phase I program, is summarized in **Table 11.**

Table 11: Institutional strengthening and training.

Topic	Attendees	Contents	Frequency	Cost USD
EMP Implementation	EA PMU, IA PMU, subproject contractors	EMP contents, EMP adjustment if needed, prepare CEMPs, roles and responsibilities, monitoring, supervision and reporting procedures	Once prior to construction	5,000
Grievance Redress Mechanism (GRM)	EA PMU, IA PMU, subproject contractors	GRM procedures; roles and responsibilities		
Environmental Protection	EA PMU, IA PMU, subproject contractors	Pollution control on construction sites (air, noise, wastewater, solid waste)		
Environmental Monitoring Plan (EMoP)	EA PMU, IA PMU, subproject contractors	Monitoring methods, data collection and reporting requirements		
Safety Training	EA PMU, IA PMU, subproject contractors	Traffic safety, construction safety, road safety, occupational safety		

Note: there is one training program covering all subprojects.

D. Environmental Monitoring

EMP Compliance and Ambient Monitoring

73. The MoE PMU will ensure that the Phase II subproject IEEs include EMPs with a monitoring plan describing monitoring measures in detail, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions. The monitoring program shall focus on the environment within each subproject's area of influence. The extent of monitoring activities during construction and operation shall be commensurate with the subprojects' risks and impacts.

74. Monitoring will involve compliance inspections in order to assess mitigation implementation against requirements specified in the EMP. Ambient monitoring of air, noise and surface water is optional and will be implemented if deemed necessary.

75. Monitoring shall also cover significant events or issues encountered during construction; changes in project design and EMP, including corrective actions, if applicable; and compliance with the relevant provisions in the project legal agreement. The IEC will assist the PMU with environmental monitoring.

E. Reporting

76. The MoE, through the PMU, shall prepare periodic Project environmental monitoring reports that describe progress in implementation of the EMP and compliance issues and corrective actions, if any. The reports shall also document the effectiveness and lessons learned in environmental mitigation and environmental impact monitoring, as well as grievances received and resolved. The IEC will assist the PMU with environmental reporting.

77. The MoE, through the PMU, shall submit environmental monitoring report semi-annually during construction and annually during operation to ADB. ADB will disclose these reports on its website. Environmental monitoring template is presented in **Appendix V**.

F. Corrective Actions

78. If monitoring identifies weakness or deficiencies in the implementation of the EMP, the MoE shall define corrective actions. Corrective actions could range from improving technical aspects of mitigation implementation to enhancing the environmental management capacity of IAs. A corrective action plan generally:

a) describes corrective actions necessary to address each area of concern;
b) prioritizes these actions;
c) identifies responsibilities for implementation of each corrective action;
d) identifies a time-line for their implementation; and,
e) presents a schedule for communicating the results of plan implementation to affected communities and ADB.

V. PHASE II INFORMATION DISCLOSURE AND PUBLIC CONSULTATION REQUIREMENTS

A. Mongolian and ADB Requirements for Public Consultation

1. Mongolian Requirements

79. Mongolian public consultation requirements are related to the DEIA process, described in Chapter II of this report. The *Law on Environmental Impact Assessment* (2012) requires that:

- Development plans and programs assessed as part of the DEIA process will be publicly disclosed on the website of the State Administrative Central Organization in charge of nature and environment.
- There will be a 30-working day period for submittal of verbal or written public input, and the DEIA consultant should organize community consultations that include local government and local residents within the area of influence.
- The DEIA should include meeting minutes, comments by local government, and community consultation that has been conducted with local communities in the area of influence.[5]

2. ADB Requirements

80. ADB's SPS 2009 has specific requirements for information disclosure and public consultation. Information disclosure involves delivering information about a proposed project to the general public and to affected communities and other stakeholders, beginning early in the project cycle and continuing throughout the life of the project. Information disclosure is intended to facilitate constructive engagement with affected communities and stakeholders over the life of the project.

81. In order to make key documents widely available to the general public, the SPS 2009 requires submission of a final IEE for Category B projects, to ADB for posting on the ADB website. The SPS 2009 requires that borrowers take a proactive disclosure approach and provide relevant information from environmental assessment documentation directly to affected peoples and stakeholders.

82. The SPS 2009 also requires that the borrower carry out consultation with affected people and other concerned stakeholders, including civil society, and facilitate their informed participation.

B. Phase II Public Consultation and Disclosure Requirements

1. Consultation

83. The MoE, through the PMU, will follow ADB's requirements to carry out meaning public

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[5] *Law on Environmental Impact Assessment* (2012), Articles 8 and 18.

consultation through public consultation meetings with affected people and other stakeholders or other means that can facilitate meaningful consultations. Consultation must be specific to the environmental impacts of the subprojects. Public consultation will: (i) begin at the early stage of subproject preparation and carry on throughout the project cycle; (ii) provide timely disclosure of relevant information, understandable and accessible to the public; (iii) ensure a free and un-intimidated atmosphere without coercion; (iv) ensure gender inclusiveness tailored to the needs of disadvantaged and vulnerable groups; and (v) at least once, in the early stages of the environmental assessment process to allow the affected communities and other interested parties to share their views on the proposed subprojects, environmental issues and concerns, measures to address the issues and concerns, monitoring and GRM. Consultation will continue throughout construction and in the operation phase. During construction, consultation may be undertaken in the forms of formal questionnaire surveys and informal interviews. The consultation should focus on public complaints about community annoyances from construction activities, such as construction noise and dust, as well as public concerns about the environment and resettlement. Immediate adjustments must be undertaken to address any public complaints and concerns.

2. Documentation

84. The consultation process shall be well documented. All relevant views raised during the consultation shall be incorporated in the Phase II environmental assessment report and its environmental management plan, and considered in subproject design. The gender of all consultees, attendance sheets and notes of consultations shall be included in the IEE as proof that consultation/s had been held. IEE shall include how the concerns raised and opinions of the participants are addressed.

85. To comply with the Mongolian Law on EIA:

a) the opinions of citizens and soum/district officials of subproject areas shall be documented and form part of the DEIA Report (**Appendix VI**); and
b) the opinions of affected citizens shall also be taken into account when MoET makes the decision on the approval of the DEIA Report and granting the Project clearance/permit to implement.

3. Information Disclosure

86. The EA PMU and the MoET shall ensure public access to the approved DEIA Report and its EMP. Hard copies of the above documents (in English and in Mongolian) will be made available for consultation at the PMU office and other locations accessible to the subproject stakeholders. The EA is also responsible for ensuring that all environmental monitoring reports are properly and systematically kept as part of the project record, and made readily accessible by all stakeholders including affected people.

87. In addition, according to ADB's requirements, the environmental assessment document (IEE) and environmental monitoring reports must be submitted to ADB and will be posted on ADB's website. IEE shall also be disclosed on EA and IAs' website.

VI. PHASE II GRIEVANCE REDRESS MECHANISM REQUIREMENTS

A. Introduction

88. Phase II of the Project will utilize the grievance redress mechanism (GRM) developed in Phase I.

89. A project grievance can be defined as an actual or perceived project related problem that gives ground for complaint by an affected person (AP). As a general policy, the EA will work proactively toward preventing grievances through the implementation of impact mitigation measures and community liaison activities that anticipate and address potential issues before they become grievances. In addition, as the project has strong public support and will not involve any involuntary land or property acquisition or resettlement, significant grievances are unlikely. Nonetheless, during construction and operation it is possible that unanticipated impacts may occur if the mitigation measures are not properly implemented, or unforeseen issues arise. In order to address complaints if or when they arise, a project GRM has been developed in accordance with ADB requirements and GoM practices. A GRM is a systematic process for receiving, recording, evaluating and addressing an AP's project-related grievances transparently and in a reasonable period of time.

B. ADB's GRM Requirements

90. The ADB's SPS 2009 requires the EA and IAs to establish a GRM to receive and facilitate resolution of affected people's concerns and complaints about the project's environmental performance during construction and operation phases of the project. The GRM should (i) be scaled to the risks and adverse impacts of the project; (ii) address affected people's concerns and complaints promptly using an understandable and transparent process; (iii) be readily accessible to all sections of the community at no cost and without retribution; and (iv) not impede access to the Mongolian judicial or administrative remedies, and ADB's Office of the Special Project Facilitator (OSPF) and Compliance Review Panel (CRP).

C. Current GRM Practice in Mongolia

91. Residents' complaints or concerns in Mongolia are generally taken directly to contactors or to bahg or soum Citizens Representative Hurals and/or bahg or soum government representatives. This approach focusses on taking complaints to lower administrative levels, so mitigation actions can be taken quickly without delay, and elevating to higher levels if required.

D. Project GRM

1. Objective

92. A GRM, consistent with the requirements of the ADB SPS, will be established to prevent and address community concerns, reduce risks, and assist the project to maximize environmental and social benefits. In addition to serving as a platform to resolve grievances, the GRM has been designed to: (i) provide open channels for effective communication, including the identification of new environmental issues of concern arising from the project; (ii) demonstrate concerns about community members and their environmental well-being; and (iii) prevent and mitigate any adverse environmental impacts on communities caused by project implementation and operations. The GRM will be accessible to all members of the

community.

2. GRM Steps and Timeframe

93. Procedures and timeframes for the grievance redress process are as follows and illustrated in **Figure 4**.

Stage 1: Resolution at Local Level. If a concern arises, the AP may try to resolve the issue of concern directly with the relevant subproject contractor (during construction) or operator (during operation). If the concern is resolved successfully, no further action is required. Nonetheless, the contractor (during construction) and/or the operator (during operation) shall record any complaint and actions taken to resolve the issues and report the results to the relevant IA PMU. If no solution is found within 10 working days, the complainant is not satisfied with the suggested solution under Stage 1, or the AP does not wish to resolve the concern directly with the contractor or operator, proceed to Stage 2.

Stage 2: Complaint Eligibility Assessment and IA PMU Resolution. The AP will submit the grievance to the relevant subproject IA PMU (e.g. WES, AuES or NREC IA PMUs) directly or via local entry points, either verbally or in writing. Local entry points will include bahg or soum Citizens Representative Hurals, and/or bahg or soum government representatives. The IA PMU will make a written record of each complaint and assess its eligibility. If the complaint is deemed ineligible, e.g. related to an issue outside the scope of the Project, the IA PMU will provide the AP a clear written explanation of the decision within 5 working days.

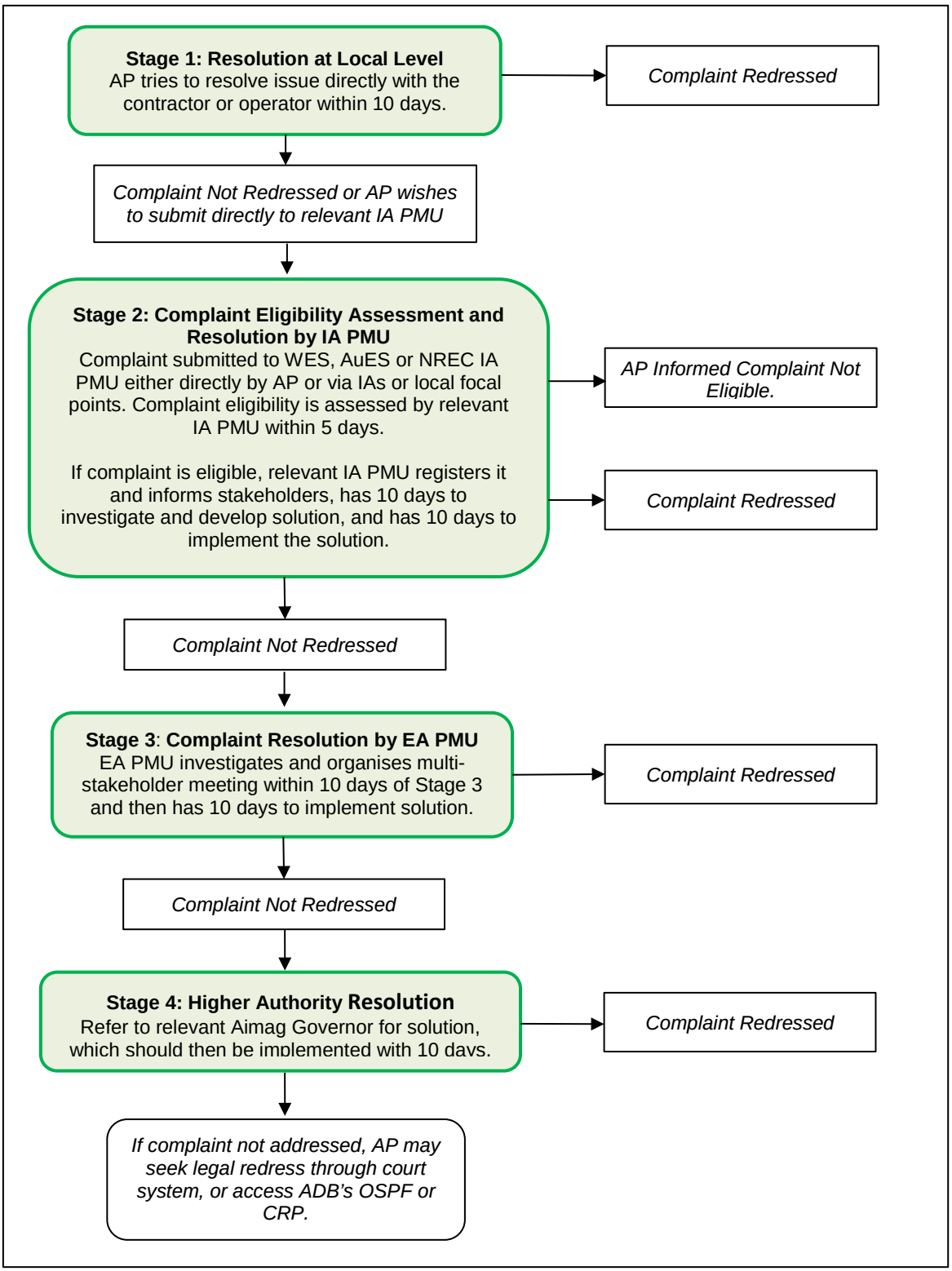
If the complaint is deemed eligible the relevant IA PMU will register the complaint and inform the relevant entry point, contractor or operator, the EA PMU and the ADB. The IA PMU will take steps to investigate, communicate with all relevant stakeholders and identify a resolution within 10 working days of receipt of the complaint. This may involve instructing the contractor or operator to take corrective actions. Within 10 working days of the redress solution being agreed upon, the contractor or operator should implement the redress solution and convey the outcome to the EA PMU and the AP.

Stage 3: EA PMU Complaint Resolution. If no solution can be identified by the IA PMU or if the AP is not satisfied with the suggested solution under Stage 2, within two weeks of the end of Stage 2 the EA PMU will organize a multi-stakeholder meeting including relevant local government authorities. The meeting should result in a solution acceptable to all, and identify responsibilities and an action plan. The contractor or operator will implement the agreed redress solution and convey the outcome to the relevant IA PMU, AP and other stakeholders within 10 working days.

Stage 4: Higher Authority Resolution. If the multi-stakeholder meeting cannot resolve the problem, and the AP is unsatisfied, the EA PMU will set up a meeting with the relevant Aimag Governor's office to identify a solution, which should be then implemented within 7 days.

Stage 5: If the complainants are not satisfied with the suggested solution under Stage 4, the AP can access ADB's OSPF or CRP, or seek local legal address.

Figure 4: Project GRM.



3. Reporting

94. Each IA PMU will record the complaint, investigation, and subsequent actions and results, and report this information to the EA PMU. This information will be included in the environmental monitoring reports to the ADB.

95. The tracking and documenting of grievance resolution will include: (i) tracking forms and procedures for gathering information from project personnel and complainant(s); (ii) periodic reviews of complaints so as to recognize grievance patterns, identify any systemic causes of grievances, and periodically evaluate the overall functioning of the mechanism; (iii) processes for informing stakeholders about the status of a case; and (iv) procedures to retrieve data for reporting purposes, including the periodic reports to the EA and ADB.

APPENDIX I: PROHIBITED INVESTMENT ACTIVITIES LIST

The following do not qualify for Asian Development Bank financing:

(i) production or activities involving harmful or exploitative forms of forced labor[1] or child labor;[2]
(ii) production of or trade in any product or activity deemed illegal under host country laws or regulations or international conventions and agreements or subject to international phaseouts or bans, such as (a) pharmaceuticals,[3] pesticides, and herbicides,[4] (b) ozone-depleting substances,[5] (c) polychlorinated biphenyls[6] and other hazardous chemicals,[7] (d) wildlife or wildlife products regulated under the Convention on International Trade in Endangered Species of Wild Fauna and Flora,[8] and (e) transboundary trade in waste or waste products;[9]
(iii) production of or trade in weapons and munitions, including paramilitary materials;
(iv) production of or trade in alcoholic beverages, excluding beer and wine;[10]
(v) production of or trade in tobacco;[10]
(vi) gambling, casinos, and equivalent enterprises; [10]
(vii) production of or trade in radioactive materials,[11] including nuclear reactors and components thereof;
(viii) production of, trade in, or use of unbonded asbestos fibers;[12]
(ix) commercial logging operations or the purchase of logging equipment for use in primary tropical moist forests or old-growth forests;
(x) marine and coastal fishing practices, such as large-scale pelagic drift net fishing and fine mesh net fishing, harmful to vulnerable and protected species in large numbers and damaging to marine biodiversity and habitats.

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[1] Forced labor means all work or services not voluntarily performed, that is, extracted from individuals under threat of force or penalty.
[2] Child labor means the employment of children whose age is below the host country's statutory minimum age of employment or employment of children in contravention of International Labor Organization Convention No. 138 "Minimum Age Convention" (www.ilo.org).
[3] A list of pharmaceutical products subject to phaseouts or bans is available at http://www.who.int.
[4] A list of pesticides and herbicides subject to phaseouts or bans is available at http://www.pic.int.
[5] A list of the chemical compounds that react with and deplete stratospheric ozone resulting in the widely publicized ozone holes is listed in the Montreal Protocol, together with target reduction and phaseout dates. Information is available at http://www.unep.org/ozone/montreal.shtml.
[6] A group of highly toxic chemicals, polychlorinated biphenyls are likely to be found in oil-filled electrical transformers, capacitors, and switchgear dating from 1950 to 1985.
[7] A list of hazardous chemicals is available at http://www.pic.int.
[8] A list is available at http://www.cites.org.
[9] As defined by the Basel Convention; see http://www.basel.int.
[10] This does not apply to project sponsors who are not substantially involved in these activities. Not substantially involved means that the activity concerned is ancillary to a project sponsor's primary operations.
[11] This does not apply to the purchase of medical equipment, quality control (measurement) equipment, and any equipment for which ADB considers the radioactive source to be trivial and adequately shielded.
[12] This does not apply to the purchase and use of bonded asbestos cement sheeting where the asbestos content is less than 20%.

APPENDIX II: RAPID ENVIRONMENTAL ASSESSMENT (REA) AND SOCIAL SAFEGUARDS CHECKLISTS

- REA Solar Energy
- REA Wind Energy
- REA General (for Geothermal subprojects)
- Social Safeguard Screening Checklists

Rapid Environmental Assessment (REA) Checklist – SOLAR ENERGY

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES), for endorsement by Director, SDES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:	
Sector Division:	

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Physical cultural heritage site			
▪ Located in or near to legally protected area			
▪ Located in or near to special habitats for biodiversity (modified or natural habitats)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Offshore (marine)			
B. Potential Environmental Impacts Will the Project cause…			
▪ large scale land disturbance and land use impacts specially due to diversion of productive lands?			
▪ involuntary resettlement of people? (physical displacement and/or economic displacement)			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ noise, vibration and dust from construction activities?			
▪ an increase in local traffic during construction?			

Screening Questions	Yes	No	Remarks
▪ environmental disturbances such as soil erosion, land contamination, water quality deterioration, air pollution, noise and vibrations during construction phase?			
• aesthetic degradation and property value loss due to establishment of plant and ancillary facilities?			
▪ changes in flow regimes of the water intake from surface water or underground wells due to abstraction for cooling purposes?			
▪ pollution of water bodies and aquatic ecosystem from wastewater treatment plant, from cooling towers, and wash-water during operation?			
▪ a threat to bird or bat life from colliding with the project facilities and/or being burned by concentrated solar rays?			
▪ industrial liquid (dielectric fluids, cleaning agents, and solvents) and solid wastes (lubricating oils, compressor oils, and hydraulic fluids) generated during construction and operations likely to pollute land and water resources?			
▪ Soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells (photovoltaic technologies contain small amounts of cadmium, selenium and arsenic) during installation, operation and decommissioning?			
▪ noise disturbance during operation due to the proximity of settlements or other features?			
▪ visual impacts due to reflection from solar collector arrays resulting in glint or glare?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts between local laborers and those from outside the area?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommission?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials and wastes such as explosives, fuel and other chemicals during construction, and operation?			
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector:

Subsector:

Division/Department:

Screening Questions		Score	Remarks[1]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?		
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High):_____

Other Comments:_____
_____

Prepared by:

_____

[1] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Rapid Environmental Assessment (REA) Checklist – Wind Energy

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES), for endorsement by Director, SDES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:

Sector Division:

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Physical cultural heritage site			
▪ Located in or near to legally protected area			
▪ Located in or near to special habitats for biodiversity (modified or natural habitats)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Offshore (marine)			
B. Potential Environmental Impacts Will the Project cause…			
▪ large scale land disturbance and land use impacts specially due to diversion of productive lands?			
▪ involuntary resettlement of people? (physical displacement and/or economic displacement)			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ noise, vibration and dust from construction activities?			
▪ an increase in local traffic during construction?			

Screening Questions	Yes	No	Remarks
▪ environmental disturbances such as soil erosion, land contamination, water quality deterioration, air pollution, noise and vibrations during construction phase?			
• aesthetic degradation and property value loss due to establishment of plant and ancillary facilities?			
▪ changes in flow regimes of the water intake from surface water or underground wells due to abstraction for cooling purposes?			
▪ pollution of water bodies and aquatic ecosystem from wastewater treatment plant, from cooling towers, and wash-water during operation?			
▪ a threat to bird or bat life from colliding with the project facilities and/or being burned by concentrated solar rays?			
▪ industrial liquid (dielectric fluids, cleaning agents, and solvents) and solid wastes (lubricating oils, compressor oils, and hydraulic fluids) generated during construction and operations likely to pollute land and water resources?			
▪ Soil/water contamination due to use of hazardous materials or disposal of broken or damaged solar cells (photovoltaic technologies contain small amounts of cadmium, selenium and arsenic) during installation, operation and decommissioning?			
▪ noise disturbance during operation due to the proximity of settlements or other features?			
▪ visual impacts due to reflection from solar collector arrays resulting in glint or glare?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ social conflicts between local laborers and those from outside the area?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during construction, installation, operation, and decommission?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials and wastes such as explosives, fuel and other chemicals during construction, and operation?			
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector:

Subsector:

Division/Department:

Screening Questions		Score	Remarks[2]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?		
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High):_____

Other Comments:_____
_____

Prepared by: _____

_____

[2] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

Rapid Environmental Assessment (REA) Checklist - General

Instructions:

(i) The project team completes this checklist to support the environmental classification of a project. It is to be attached to the environmental categorization form and submitted to the Environment and Safeguards Division (SDES), for endorsement by Director, SDES and for approval by the Chief Compliance Officer.

(ii) This checklist focuses on environmental issues and concerns. To ensure that social dimensions are adequately considered, refer also to ADB's (a) checklists on involuntary resettlement and Indigenous Peoples; (b) poverty reduction handbook; (c) staff guide to consultation and participation; and (d) gender checklists.

(iii) Answer the questions assuming the "without mitigation" case. The purpose is to identify potential impacts. Use the "remarks" section to discuss any anticipated mitigation measures.

Country/Project Title:

Sector Division:

Screening Questions	Yes	No	Remarks
A. Project Siting Is the Project area adjacent to or within any of the following environmentally sensitive areas?			
▪ Cultural heritage site			
▪ Legally protected Area (core zone or buffer zone)			
▪ Wetland			
▪ Mangrove			
▪ Estuarine			
▪ Special area for protecting biodiversity			
B. Potential Environmental Impacts Will the Project cause…			
▪ impairment of historical/cultural areas; disfiguration of landscape or potential loss/damage to physical cultural resources?			
▪ disturbance to precious ecology (e.g. sensitive or protected areas)?			
▪ alteration of surface water hydrology of waterways resulting in increased sediment in streams affected by increased soil erosion at construction site?			
▪ deterioration of surface water quality due to silt runoff and sanitary wastes from worker-based camps and chemicals used in construction?			
▪ increased air pollution due to project construction and operation?			

Screening Questions	Yes	No	Remarks
▪ noise and vibration due to project construction or operation?			
▪ involuntary resettlement of people? (physical displacement and/or economic displacement)			
▪ disproportionate impacts on the poor, women and children, Indigenous Peoples or other vulnerable groups?			
▪ poor sanitation and solid waste disposal in construction camps and work sites, and possible transmission of communicable diseases (such as STI's and HIV/AIDS) from workers to local populations?			
▪ creation of temporary breeding habitats for diseases such as those transmitted by mosquitoes and rodents?			
▪ social conflicts if workers from other regions or countries are hired?			
▪ large population influx during project construction and operation that causes increased burden on social infrastructure and services (such as water supply and sanitation systems)?			
▪ risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during project construction and operation?			
▪ risks to community health and safety due to the transport, storage, and use and/or disposal of materials such as explosives, fuel and other chemicals during construction and operation?			
▪ community safety risks due to both accidental and natural causes, especially where the structural elements or components of the project are accessible to members of the affected community or where their failure could result in injury to the community throughout project construction, operation and decommissioning?			
▪ generation of solid waste and/or hazardous waste?			
▪ use of chemicals?			
▪ generation of wastewater during construction or operation?			

A Checklist for Preliminary Climate Risk Screening

Country/Project Title:

Sector:

Subsector:

Division/Department:

Screening Questions		Score	Remarks[3]
Location and Design of project	Is siting and/or routing of the project (or its components) likely to be affected by climate conditions including extreme weather related events such as floods, droughts, storms, landslides?		
	Would the project design (e.g. the clearance for bridges) need to consider any hydro-meteorological parameters (e.g., sea-level, peak river flow, reliable water level, peak wind speed etc.)?		
Materials and Maintenance	Would weather, current and likely future climate conditions (e.g. prevailing humidity level, temperature contrast between hot summer days and cold winter days, exposure to wind and humidity hydro-meteorological parameters likely affect the selection of project inputs over the life of project outputs (e.g. construction material)?		
	Would weather, current and likely future climate conditions, and related extreme events likely affect the maintenance (scheduling and cost) of project output(s) ?		
Performance of project outputs	Would weather/climate conditions, and related extreme events likely affect the performance (e.g. annual power production) of project output(s) (e.g. hydro-power generation facilities) throughout their design life time?		

Options for answers and corresponding score are provided below:

Response	Score
Not Likely	0
Likely	1
Very Likely	2

Responses when added that provide a score of 0 will be considered low risk project. If adding all responses will result to a score of 1-4 and that no score of 2 was given to any single response, the project will be assigned a medium risk category. A total score of 5 or more (which include providing a score of 1 in all responses) or a 2 in any single response, will be categorized as high risk project.

Result of Initial Screening (Low, Medium, High):_____

Other Comments:_____
_____
__

Prepared by: _____

_____

[3] If possible, provide details on the sensitivity of project components to climate conditions, such as how climate parameters are considered in design standards for infrastructure components, how changes in key climate parameters and sea level might affect the siting/routing of project, the selection of construction material and/or scheduling, performances and/or the maintenance cost/scheduling of project outputs.

SOCIAL SAFEGUARD SCREENING CHECKLISTS

1. Land Acquisition and Involuntary Resettlement Impact Pre-Screening Checklist

Date: _.

A. Subproject Data

Subproject Title _____

Probable Involuntary Resettlement Effects	**Yes**	**No**	**Instruction**	**Remarks**
B. Involuntary Acquisition of Land				
1. Will there be land acquisition?			If "Yes" in any of question 1 to 4, the project is NOT eligible for financing.	
2. Will there be residential house demolition causing loss of shelter to people/workers due to land acquisition or construction activities?				
3. Will there be any temporary occupation of land that affects the land, housing, assets or livelihoods/business of people.				
4. Will there be restrictions on land use or access to common properties (e.g. environmental buffer zone)?				
5. Has the land been acquired recently (within 2 years)?			If "Yes", please go to below question C-6. If "No", the project will be category C, and can be eligible for the potential financing.	
C. Outstanding issue on Acquired Land and Involuntary Resettlement within 2 years				
6. Is there any outstanding issue (e.g. outstanding payment of compensation, complains from affected people and/or communities)			If "Yes", please conduct due diligence to confirm there is no outstanding issue. If "No", the project is category C, and can be eligible for the potential financing.	

Prepared by:

Name and Position:_____ _____

Date:

Overall conclusion on Involuntary Resettlement Category (circle one):

NOT C C

2. Ethnic Minorities Impact Pre-Screening Checklist

Date:

A. Subproject Data ***Subproject Title***				
KEY CONCERNS (Please provide elaborations on the Remarks column, if necessary)	**YES**	**NO**	**Instruction**	**Remarks**
B. Ethnic Minorities Identification and Potential Impacts				
1. Are there socio-cultural groups present in or use the project area who may be considered as "tribes" (hill tribes, schedules tribes, tribal peoples), "minorities" (ethnic or national minorities), or "indigenous communities" in the project area?			If "Yes", please proceed to the next question. If "No", the project is category C, and can be eligible for the potential financing.	
2. Will the project have negative impact on the cultural, ceremonial, spiritual uses that define the identity and community of ethnic minorities?			If "Yes", project is not eligible for financing. If "No", the project is category C, and can be eligible for the potential financing.	
Prepared by:				
Name and Position				
Date:				

Overall conclusion on Ethnic Minority Category (circle one):

NOT C C

APPENDIX III: TERMS OF REFERENCE FOR IEE CONSULTANT AND GEIA/DEIA INSTITUE

A. Objective

The Upscaling Renewable Energy Sector Project (Phase II) will i) support upscaling of rural renewable energy (RE) by demonstrating the application of wind, solar photovoltaic (PV) and Shallow-Ground heating in remote rural areas of western Mongolia; and ii) enhance the capacity of local public utilities in investment planning, project management, and grid control while decarbonizing energy sector in Mongolia.

1. The Project will be delivered through a number of subprojects, implemented over two phases, with the Phase I from 2018-2021 and Phase II from 2019-2022 (**Table 1**).

Table 1: Scaling Up Renewable Energy Components and Phases. Proposed Phase II subprojects are denoted by shading.

Location/Province	Applied Renewable Energy Technology	Capacity (MW)	Construction Period
a. Distributed Renewable Energy System Development			
Umunogovi / Uvs	Wind Power	10.0	2018-2021
Altai / Govi-Altai	Solar PV	10.0	2018-2021
Altai Soum / Govi-Altai	Solar PV/Wind hybrid and battery storage	0.5	2018-2021
Uliastai / Zhavhan	Solar PV and battery storage	5.0	2018-2021
Telmen / Zhavhan	Wind Power	5.0	2019-2022
Moron / Khovsgol	Solar PV	10.0	2019-2022
Subtotal		*40.5*	
b. Shallow-Ground Heat Pump Demonstration			
Hovd, other Soums	Shallow-Ground Heat Pump	0.5	2018-2023
Total		***41.0***	

MW = megawatt, PV = photovoltaic.

2. The Project has been classified by ADB as environment category B, requiring the preparation of an IEE. This document presents a Terms of Reference (ToR) for undertaking environmental assessments of Phase II subprojects.

3. The objective of the consultancy is to provide guidance and support to the EA in the conduct of environmental assessments for Phase II subprojects, including (i) preparation of an IEE including an EMP in compliance with ADB's SPS 2009; and ii) preparation of GEIA and DEIA reports in compliance with the Mongolian L*aw on Environmental Impact Assessment* (2012).

B. Composition

4. For the preparation of IEE/EMP, the consultant's team will consist of at least one international and one national environmental specialist. The International Environmental Specialist should have at least a postgraduate degree on environmental management or relevant fields, a minimum of 10 years work experience on environmental management and monitoring, or relevant fields, experience on environmental impact assessment of solar PV and wind energy projects including in respect of World Bank/IFC EHS Guidelines, the supervision of the implementation of EMP of renewable energy projects. The National

Environmental Specialist should be affiliated to a national institute with a valid MoET license to conduct environmental impact assessment. S/he should have at least a postgraduate degree on environmental management or relevant fields, a minimum of 5 years work experience on environmental management and monitoring, or relevant fields, experience on the supervision and implementation of EMP of renewable energy projects, and fair ability to communicate in English. The expert will perform all tasks specified above under the guidance of the international environment specialist and perform site-specific environmental monitoring indicated in the EMP and EMoP.

5. The Mongolian DEIA will be undertaken by a qualified national institute with a valid MoET license to conduct environmental impact assessment, in accordance with the requirements of the Mongolian *Law on Environmental Impact Assessment*.

C. Scope of Work

6. **ADB IEE.** The consultants will conduct environmental due diligence of the Phase II subprojects in compliance with ADB's SPS 2009. The consultant's duties include, but are not limited to, the following:

(i) collect relevant information from the IAs and relevant local government agencies on environment related issues;
(ii) assist the PMU in updating the IEE/EMP following EARF and the World Bank/IFC Guidelines including additional public consultation, environmental monitoring plan as necessary to revise or incorporate additional environmental mitigation and monitoring measures, budget and institutional arrangements, based on the detailed design and submit the revised IEE/EMP to ADB for approval and disclosure;
(iii) develop an EMP training program and provide training to staff from the PMU, project implementing units (PIUs) within the IAs, and contractors prior to the commencement of each construction package on topics, including but not limited to: ADB's Safeguard Policy Statement (2009), implementation of EMP and EMoP, monitoring and reporting requirements, grievance redress mechanism (GRM), preparation and implementation of contractor's EMP, implementation plan, and method statements;
(iv) assist the PMU and IAs in conducting consultation meetings with relevant stakeholders as required, informing them of imminent construction works, updating them on the latest project development activities and GRM;
(v) prepare a monthly environmental supervision report template and review the reports provided by the PIUs to identify progress with implementation of EMP, key issues and actions and environmental performance;
(vi) assist the PMU in selecting an external environment monitoring organization licensed by the Ministry of Environment and Tourism (MoET); provide guidance to the selected organization in conducting environmental impact monitoring according to the environmental monitoring plan in the EMP; and coordinate with this organization on all monitoring activities; review external environment monitoring reports (both construction and operation periods) prepared by the organization;
(vii) assist the PMU and PIUs in preparing EMP implementation provisions for the bidding document and contract;
(viii) undertake site visits to assess the implementation of the EMP; verify the implementation of the environmental protection measures specified in the EMP; identify EMP-related non-compliance issues, highlight areas of good practice, assist contractors/IAs in preparing corrective action plans (CAPs), and oversee implementation of necessary corrective actions;

(ix) assist the PMU and PIUs to prepare semi-annual environmental monitoring reports during construction and annual reports during operation in accordance with ADB requirements;
(x) assist the PMU and PIUs to prepare EMP implementation plan for the following year including resources and funding to MoET by the end of each year during implementation period; and
(xi) assist the PMU and PIUs in presenting the performance of the EMP implementation to the local community, local governor's office, and the parties affected by the project.
(xii) Revise the IEE to reflect (a) any unanticipated impacts occurring during project implementation and proper mitigation measures to respond that impacts; and also (b) a result of any design changes.
(xiii) Assist the national institute recruited by MoET in preparing domestic environmental impact assessment (EIA), and prepare IEE/EMP following EARF, and climate risk and vulnerability assessment for non-core subprojects (5 MW wind power in Telmen, 10 MW solar PV in Moron, and 4 locations of shallow-ground heat pump and assist the EA and the IAs for domestic EIA approval.
(xiv) Work with the team on the development of medium term distributed renewable energy investment plan to ensure that environment safeguards can be addressed through sensitivity mapping, etc.

7. **Mongolian GEIA/DEIA.** The institute will conduct environmental due diligence of the Phase II subprojects in compliance with the Mongolian *Law on Environmental Impact Assessment* (2012). The institute's duties include, but are not limited to, the following:

(i) Support the EA in preparing a GEIA for submittal to the MoET.
(ii) If needed, prepare a detailed EIA (DEIA) which fully responds to the conclusion of the GEIA issued by MoET. A suggested format is presented in **Appendix VI.** This will include the conduct of all necessary field work and primary and secondary data collection.
(iii) Submit draft DEIA to MoET and revise as necessary in order to obtain an environmental impact clearance certificate (or equivalent) from MoET.
(iv) Assist EA in disclosing the finalized DEIA on the EA's website.

8. **Cooperation, Information Sharing and Harmonization**. It is expected that the ADB consultant and the Mongolian institute will work closely together. The Mongolian institute will share all field and primary and secondary data collected, and the teams will collaborate in assessing impacts and developing mitigation measures. There should be a high degree of harmonization in overall findings and recommendations between the IEE and DEIA, though the IEE may contain more stringent mitigation measures than the DEIA if required to comply with the SPS 2009.

D. Budget

9. The estimated cost for the conduct of the Phase II IEE and DEIA is presented in **Table 2**. The cost estimates assume (i) categorization as B for environment by ADB; and (ii) GEIA concluding the need to prepare a DEIA for the Phase II subprojects.

Table 2: Estimated cost for Phase II subprojects IEE and DEIA.

No.	Item	Quantity	Unit Cost	Estimated Cost
	IEE Preparation			
1	International Environmental Specialist		-	-
1a	Fee (person months)	1.25	$ 18,000	$ 22,500
1b	International Trips	1	$ 5,000	$ 5,000
1c	Miscellaneous Travel Expenses (lump sum)	1	$ 200	$ 200
1d	Local Travel	1	$ 1,500	$ 1,500
1e	Per Diem (person days)	30	$ 150	$ 4,500
2	National Environmental Specialist		-	-
2a	Fee (person months)	2	$ 5,000	$ 10,000
2b	Local Travel	1	$ 1,500	$ 1,500
2c	Per Diem (person days)	30	$ 150	$ 4,500
	Subtotal			*$ 49,700*
	DEIA Preparation			
8	Consultant (lump sum)	1	$ 30,000	*$ 30,000*
	Capacity Building			
9	Environmental Management Training, external expert (days including preparation)	5	$ 150	*$ 750*
	Subtotal			*$ 80,450*
	5% contingency			*$ 4,023*
	TOTAL			***$ 84,473***

Source: ADB PPTA consultants.

APPENDIX IV: OUTLINE OF AN ENVIRONMENTAL IMPACT ASSESSMENT REPORT

An environmental assessment report is required for all subprojects.

The substantive aspects of this outline will guide the preparation of environmental impact assessment reports, although not necessarily in the order shown. The outline is based on the SPS 2009, and assumes that an IEE will be required for the Phase II subprojects.

Executive Summary
Summarizes critical facts, significant findings, and recommended actions.

I Introduction
Introduces the proposed Project, report purpose, approach to IEE preparation and IEE structure.

II Policy, Legal, and Administrative Framework
Discusses Mongolia's and ADB's environmental assessment legal and institutional frameworks, status of approval of the domestic DEIA report, and applicable environmental guidelines and standards, and project-relevant international environmental agreements to which Mongolia is a party.

III Description of the Project
Describes the Project rationale; components; geographic, ecological, social, and temporal context, including any associated facility required by and for the project (for example, access roads, power plants, water supply, quarries and borrow pits, and spoil disposal); implementation arrangements, budget and time schedule. It normally includes drawings and maps showing the project's layout and components, the project site, and the project's area of influence.

IV Description of the Environment
Describes relevant physical, biological, and socioeconomic conditions within the project area. It also looks at current and proposed development activities within the project's area of influence, including those not directly connected to the project. It indicates the accuracy, reliability, and sources of the data.

V Anticipated Environmental Impacts and Mitigation Measures

Predicts and assesses the project's anticipated positive and negative direct and indirect impacts to physical, biological, socioeconomic (including occupational health and safety, community health and safety, vulnerable groups and gender issues, and impacts on livelihoods through environmental media), and physical cultural resources in the project's area of influence, in quantitative terms to the extent possible; identifies mitigation measures and any residual negative impacts that cannot be mitigated; explores opportunities for enhancement; identifies and estimates the extent and quality of available data, key data gaps, and uncertainties associated with predictions and specifies topics that do not require further attention; and examines global, transboundary, and cumulative impacts as appropriate.

VI Analysis of Alternatives
Presents an analysis of alternatives undertaken to determine the best way of achieving the Project objectives while minimizing environmental and social impacts. It also states the basis for selecting the particular project design proposed and, justifies recommended emission levels and approaches to pollution prevention and abatement where relevant.

VII Information Disclosure, Consultation, and Participation
This section:

(i) describes the process undertaken during project design and preparation for engaging stakeholders, including information disclosure and consultation with affected people and other stakeholders;
(ii) summarizes comments and concerns received from affected people and other stakeholders and how these comments have been addressed in project design and mitigation measures, with special attention paid to the needs and concerns of vulnerable groups, including women, the poor, and Indigenous Peoples; and
(iii) describes the planned information disclosure measures (including the type of information to be disseminated and the method of dissemination) and the process for carrying out consultation with affected people and facilitating their participation during project implementation.

VIII Grievance Redress Mechanism
Describes the Project grievance redress mechanism (both informal and formal Channels) for resolving complaints, including time frame and mechanisms for resolving complaints about environmental performance.

IX Conclusion and Recommendation
Presents conclusions drawn from the assessment and recommendations.

Appendixes
The environmental management plan (EMP) is presented in Appendix I (either one for Phase II, or one for each Phase II subproject). The EMP(s) are meant to be a “stand alone” document, and a suggested structure is as follows:

A. Introduction
B. Objectives
C. Implementation Arrangements
D. Responsibilities for EMP Implementation
E. Potential Impacts and Mitigation Measures
F. Environment Monitoring Plan
G. Environment Reporting
H. Training and Capacity Building
I. Estimated EMP Budget
J. Mechanisms for Feedback and Adjustment

Key components of the EMP are described in more detail below (with the level of detail commensurate with the project’s impacts and risks):

Mitigation Measures:

a) identifies and summarizes anticipated significant adverse environmental impacts and risks;
b) describes each mitigation measure with technical details, including the type of impact to which it relates and the conditions under which it is required (for instance, continuously or in the event of contingencies),

together with designs, equipment descriptions, and operating procedures, as appropriate; and

c) provides links to any other mitigation plans (for example, for involuntary resettlement, Indigenous Peoples, or emergency response) required for the project.

Monitoring:

a) describes monitoring measures with technical details, including parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits and definition of thresholds that will signal the need for corrective actions; and (b) describes monitoring and reporting procedures to ensure early detection of conditions that necessitate particular mitigation measures and document the progress and results of mitigation.

Implementation Arrangements:

a) specifies the implementation schedule showing phasing and coordination with overall project implementation;

b) describes institutional or organizational arrangements, namely, who is responsible for carrying out the mitigation and monitoring measures, which may include one or more of the following additional topics to strengthen environmental management capability: technical assistance programs, training programs, procurement of equipment and supplies related to environmental management and monitoring, and organizational changes; and (c) estimates capital and recurrent costs and describes sources of funds for implementing the environmental management plan.

Performance Indicators:

a) describes the desired outcomes as measurable events to the extent possible, such as performance indicators, targets, or acceptance criteria that can be tracked over defined time periods.

Other appendices may present supporting information, including the domestic EIA approval and records from the public consultation activities.

APPENDIX V: ENVIRONMENTAL MONTIRORING REPORT TEMPLATE

Environmental Monitoring Report

Semi-annual Report
{Month Year}

MON: Upscaling Renewable Sector Project

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

CURRENCY EQUIVALENTS
(as of {Day Month Year})

Currency unit	–	Mongolian Tughrik
MNT1.00	=	$
$1.00	=	MNT

ABBREVIATIONS

WEIGHTS AND MEASURES

NOTES

(i) The fiscal year (FY) of the Ministry of Energy ends on 31 December.

(ii) In this report, "$" refers to US dollars.

TABLE OF CONTENTS

APPENDIX VI: CONTENTS OF A DETAILED ENVIRONMENTAL IMPACT ASSESSMENT (DEIA) REPORT

1. Environmental baseline data and indices
2. Description of the Project and alternatives
3. Recommended measures to mitigate and eliminate potential significant adverse impacts
4. Analysis and calculation of the extent and distribution of adverse impacts and consequences
5. Accidents and risks assessment
6. Environmental management plan
7. Addressed opinions and comments of citizens and presidiums of soum and district citizen's representatives khurals of the area of the project implementation
8. Other issues regarding cultural heritage in the project area and special nature of the Project

Source: *Law on Environmental Impact Assessment*. 1998. Revised 2001, 2006 and 2012.

APPENDIX VII: SAMPLE SUB-EMP AND EMoP

Sub-EMP

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
A. Preconstruction Phase					
Detail Design Stage	Environmental Management Readiness	− This sub-EMP will be updated as required and incorporated into the detailed design. − The updated sub-EMP requirements will be incorporated into tender and contract documents. − A detailed assessment of earthquake risks will be undertaken and the result incorporated into the subproject designs as appropriate. − The subproject contractor will develop a subproject CEMP that outline the manner by which they will comply with the requirements of the IEE and sub-EMP. − In accordance with the GRM presented in Chapter VIII of the Project IEE, the EA PMU will be assigned overall responsibility for the GRM; GRM training will be provided for the contractors, the EA PMU, subproject IA PIU, and GRM access points; and the GRM access point phone numbers, fax numbers, addresses and emails will be disseminated at the construction site. − Residents and key stakeholders in will be informed and consulted.	EA PMU and subproject IA PIU	EA and ADB	Included in EA and subproject IA operations budget
B. Construction Phase					
Topography and Soils	Erosion, borrow and spoil	Good soil maintenance practices (where applicable): − Minimize the area of soil clearance. − Maintain slope stability at cut faces by implementing	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
		erosion protection measures. − Use temporary berms or other appropriate temporary drainage provisions to prevent stormwater runoff from entering adjacent water bodies. − Ensure that borrow areas are located away from residential areas, water bodies, dry river beds and valuable pasture/grazing land. − Dispose of spoil (if any) at spoil disposal sites identified in consultation with soum authorities. − After use, grade borrow and spoil areas to ensure drainage and visual uniformity.			
Ambient Air	Fugitive dust generated by construction activities, gaseous air pollution (SO_2, CO, NOx) from construction machinery	Good site maintenance practices implemented: − Stockpiles will be managed to reduce problematic fugitive dust emissions, including covering if necessary. Water spraying is to be used only if other techniques are unsuccessful. − The locations of the stockpiles will be downwind of sensitive receptors (if applicable). − Construction site management: Water will be sprayed on construction sites and material handling routes if monitoring indicates fugitive dust is impacting residents. − Transport of materials: Trucks carrying earth, sand or stone will be covered with tarpaulins or other suitable cover. Construction vehicles and machinery will be maintained to a high standard to minimize emissions; and − Manufacturing plants: Site any plants for the production of concrete at least 500 m downwind from the nearest dwelling.	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract
	Equipment Procurement	It is expected that major equipment will be sourced from outside of Mongolia. Equipment will be required to meet technical specifications including ability to withstand predicted climate changes. Once required technical specifications are met, preference will be given to regional suppliers so as to minimize transport requirements and associated greenhouse	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
		gas and other emissions.			
Surface and Ground Water	Construction and domestic wastewater	Good wastewater practices implemented: − Temporary drainage provision will be provided during construction to ensure that any storm water running off construction areas will be controlled. − Construction sites will be equipped with adequate potable water and temporary sanitation facilities.	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract
Waste	Waste management and resource use	Good waste management practices and the adoption of the waste hierarchy: − The preference is for prevention of waste at source. Procurement options will play a role in waste prevention as the procurement of materials which have less packaging for example, would be preferable. Excavated soil will be used for backfilling to the maximum extent practical. Waste minimization is the second preferred option. This means the effective management of materials on site through good house-keeping and work planning, in order to generate less waste. Reuse or recycling options should be considered prior to disposal, separate containers for recyclables shall be used if there is a market for the materials. Disposal of waste which cannot be reused or recycled shall take place at sites authorized by authorities. − Storage and containment: Provide appropriate waste storage containers for worker's construction wastes, regularly haul to an approved disposal facility. − General Management: Prohibit burning of waste at all times.	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract
	Hazardous and polluting materials	Good waste management practices implemented: – Storage facilities for fuels, oil, chemicals and other hazardous materials will be within secured areas on impermeable surfaces provided with dikes, and at least 300 m from drainage structures, important water bodies and other sensitive receptors.	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
		– Storage facilities for hazardous materials will be placed on impermeable surfaces with a storage capacity of at least 110% of the capacity of the hazardous materials stored. – Signs will be placed at chemicals and hazardous materials storage sites to provide information on type and name of chemicals and hazardous materials. – Spill response procedures will be developed (including provision of absorbents at hazardous materials storage facilities), and all spills will be cleaned immediately. – Providers of hazardous materials will be responsible for removing and or recycling them if they become wastes, either in Mongolia in licensed facilities, or through transport to a licensed facility in another country in the region. All exports of hazardous wastes must be with the review and approval of the MoET, and all necessary export licenses must be obtained. – Vehicles and equipment will be properly maintained and refueled either off-site in local garages or other similar facilities. Washing or repair of machinery in or near surface waters is prohibited.			
Biological Resources	Impacts on Uvsiin Khar Us Lake IBA	– Site is 11.5 km from lake, and local authorities confirm that lake is saline and turbid, and does not provide habitat supporting migratory or resident waterfowl or other birds. Nonetheless, the Uvsiin Khar Us Lake IBA will be designated as a no-entry area by construction equipment, and no harvesting or collection of birds and other wildlife will be allowed.	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract
Socio-economic Resources	Traffic Impacts	Good traffic and road management practices: – Transportation routes and delivery schedules planned in consultation with relevant road management authorities. – Any damage caused by construction traffic will be repaired by the subproject contractor. – Vehicles transporting construction materials or wastes will be required to slow down when passing through or nearby	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
		sensitive locations.			
	Worker Occupational Health and Safety (OHS)	Good construction OHS practices implemented as per the general EHS Guidelines and the EHS Guidelines for Wind Energy: – All relevant Mongolian safety regulations will be strictly enforced. – All workers will be will be equipped with appropriate personal protective equipment (PPE), such as hard hats, insulating and/or fire resistant clothes, appropriate grounding, hot line and uninsulated tools, safety gloves, safety goggles, fall protection system including safety belts and other climbing gear (for work at heights), ear protection, etc. PPE will be maintained and replaced as necessary. – All work at height will be prohibited during non-daylight hours, during periods of fog, and during periods of strong wind. – Construction sites will be equipped with adequate potable water and temporary sanitation facilities. – Training will be provided to workers in all aspects of OHS, including prevention of communicable diseases (including HIV/AIDS) prior to the start of construction and on a regular basis (e.g. monthly briefings). Emergency Response Procedures (ERP): – Emergency response procedures will be developed, including communication protocols for interaction with local and regional emergency response providers, protocols for shutting down power, firefighting response procedures, provision of appropriate firefighting equipment, training for workers on fire response, and record keeping. – Medical emergency response procedures will be developed covering both workers and community	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
		members (when affected by project related activities), including communication protocols for interaction with local and regional emergency response providers, first aid equipment on site, contact information for the nearest ambulance and medical facilities, training for workers on initial on-site emerge response, protocols for informing and transferring injured workers to local or provincial health centers, and record keeping. At least one trained first-aid worker will be available at the construction site. – Training will be provided to workers in all aspects of the ERP.			
	Community health and safety risks	Good community health and safety practices, including: − Outreach to local communities to disseminate knowledge about safety at or near the construction sites, installation of site safety fencing and warning signs (in Mongolian language). − On site supervision personal (including night guards), as determined by the risk, to prevent unauthorized access to construction areas. − Signs will be placed at construction sites in clear view of the public. All sites will be made secure to avoid public access to the construction site.	Subproject Contractor	IA PIU supported by IEC	Included in the construction contract
	PCRs	If any chance finds of PCRs are encountered: − construction activities will be immediately suspended; − destroying, damaging, defacing, or concealing PCRs will be strictly prohibited in accordance with Mongolian regulations; − the local Cultural Heritage Bureau will be promptly informed and consulted; and, − construction activities will resume only after thorough investigation and with the permission of the local Cultural Heritage Bureau.			

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
C. Operation Phase					
Waste	Solid and Hazardous Wastes	− Domestic wastes will be collected and disposed at approved local waste disposal site following national regulations. − Equipment that requires replacement will be recycled by the equipment provider, either in Mongolia in licensed facilities, or through transport to a licensed facility in another country in the region. − Wastes that are considered hazardous will be disposed by the provider, either in Mongolia in licensed facilities, or through transport to a licensed facility in another country in the region. − All exports of hazardous wastes must be with the review and approval of the MoET, and all necessary export licenses must be obtained.	Subproject Operator	EA	Subproject operating budget
Flooding	Flood damage	− Flood dykes to be provided to protect from flash flooding.	Subproject contractor	IA	Subproject construction budget
Flora and Fauna	Bird and bat collisions	− Site is 11.5 km from Uvsiin Khar Us Lake and migratory pathways. Local authorities have confirmed that Uvsiin Khar Us Lake is saline and turbid, and does not provide habitat supporting migratory or resident waterfowl or other birds. Subproject operation is not expected to have any significant impact on resident or migratory bird populations. − Nonetheless, bird and bat strikes will be monitored during implementation, and if necessary operational changes will be implemented. The nature of the operational change will depend on the nature of the recorded fatalities. For example, experience shows that bat fatalities can be significantly reduced by raising turbine cut in speed during periods when bats are active, with marginal annual power loss (less than 1% of total annual output). If migratory bird	Subproject Operator, consultations with PMU safeguards staff, relevant specialists and ADB	EA, ADB	Subproject operating budget

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
		fatalities are recorded, turbine operation can be curtailed during active migratory periods and times. In order to develop appropriate strategy the operators will consult with the PMU environmental safeguard staff and relevant specialists such as the Mongolian Wildlife Science and Conservation Centre, and ADB.			
	Bird electrocutions and collisions on power lines	Distribution OPL will feature bird friendly designs developed in consultation with the Mongolian Wildlife Science and Conservation Centre and the relevant local power company. Technical advice will also be sought from leading avian powerline interaction experts, such as guidelines produced by the Avian Power Line Interaction Committee (APLIC). Bird friendly design could include ensuring a safe distance between energized wires or between energized and grounded parts; designing crossarms, insulators and other parts of powerlines such that that birds find no opportunity to perch near energized power lines that might be hazardous; and, the use of marker balls, bird diverters, or other devices to increase line visibility.	Subproject Contractor in consultation with PMU safeguards staff, relevant specialists and ADB	IA PIU supported by IEC	Included in the construction contract
Occupational Health and Safety	Worker safety	Good operation OHS practices implemented as per the general EHS Guidelines and the EHS Guidelines for Wind Energy: − Workers will wear PPE, such as safety shoes or boots with non-slip soles, climbing gear, goggles, etc., to protect workers from potential safety hazards. − Check electrical equipment for safety before use; verify that all electric cables are properly insulated; take faulty or suspect electrical equipment to a qualified electricity technician for testing and repair. − All workers will undergo periodic examinations by occupational physician to reveal early symptoms of possible chronic effects or allergies; and − Health and safety will be incorporated into the regular staff training programs, including prevention of communicable diseases.	Subproject Operator	EA	Subproject operating budget

Item	Potential Impacts and Issues	Mitigation Measures and/or Safeguards	Responsibility		Source of Funds
			Implemented By	Supervised By	
	Community Health and Safety	− Wind turbines to be equipped with safety warning signs in Mongolian and anti-climbing devices.	Subproject Operator	EA	Subproject operating budget
Climate Risk	Adaptation to observed and Projected Climate Change	− Selection of turbines with a lower cut-in wind speed (less than 3.0 m/s), if available, to help address the observed trend in some locations of declining minimum wind speeds; − Supporting infrastructure such as power lines designed to survive future projected extreme wind speed events; and − Flood dykes and site drainage to be installed to protect sites from flash flooding.	EA PMU and subproject IA PIU	EA and ADB	Included in EA and subproject IA design and construction budgets

Note: ADB = Asian Development Bank; EA = Executing Agency; IA = Implementing Agency; PMU = Project Management Unit.

Sub-EMoP

Subject	Parameter	Location	Frequency	Implemented by	Supervised by	Source of Funds
A. Pre-construction Phase						
Air Pollution	Dust/particulates	Construction sites	Once before construction commences	IA PIU or a third part monitoring company contracted by IA PIU	PMU, local environmental authority at its discretion	IA PIU: IA Budget
Noise	Noise level	Construction sites	Once before construction commences	IA PIU or a third part monitoring company contracted by IA PIU	PMU, local environmental authority at its discretion	IA PIU: IA Budget
B. Construction Phase						
Erosion and Spoil	Compliance inspection of soil erosion management measures.	Construction sites, spoil disposal sites	Monthly during construction; and once after completion of spoil disposal	IA PIU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	IA PIU: IA Budget IEC: IEC Budget
Air Pollution	Compliance inspection of site maintenance measures.	Construction sites, spoil disposal sites	Monthly during construction; and once after completion of spoil disposal	IA PIU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	IA PIU: IA Budget IEC: IEC Budget
Surface and Groundwater	Visual compliance inspection of wastewater mitigation measures.	Construction sites	Monthly during construction of tower bases near rivers	IA PIU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	IA PIU: IA Budget IEC: IEC Budget
Flooding	Review of works scheduling to ensure works are not undertaken during risk times for flooding.	Contractors work plan	Review works schedule prior to start of construction, and periodically as required, especially prior to spring melts and summer rains.	PMU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	PMU SS: PMU Budget IEC: LICE Budget
Solid Waste	Compliance inspection of domestic and construction waste collection and disposal	Waste collection and disposal sites.	Monthly	IA PIU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	IA PIU: IA Budget IEC: IEC Budget

Subject	Parameter	Location	Frequency	Implemented by	Supervised by	Source of Funds
Hazardous and Polluting Materials	Compliance inspection of hazardous materials management and recycling.	Storage facilities for fuels, oil, chemicals and other hazardous materials. Vehicle and equipment maintenance areas.	Monthly	IA PIU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	IA PIU: IA Budget IEC: IEC Budget
Socioeconomic Impacts	Visual inspection of construction site to check construction site safety, community safety, implementation of GRM, accidents involving public and workers, public complaints, etc.	Working sites near sensitive receptors	Monthly	IA PIU environmental and social staff, supported by IEC	PMU, local environmental authority at its discretion	IA PIU: IA Budget IEC: IEC Budget
	All near miss, no lost time, lost time and fatal accidents recorded and reported against a performance standard of zero incidents	Construction sites	Monthly	IA	EA, local environmental authority and MoET at their discretion	IA budget
	Compliance inspection to determine workers have appropriate PPE	All construction sites	Monthly	PMU safeguard staff supported by IEC	PMU, local environmental authority at its discretion	PMU SS: PMU Budget IEC: LICE Budget
C. Operation Phase						
Solid and Hazardous Wastes	Compliance inspection of hazardous materials management and recycling.	Storage facilities for fuels, oil, chemicals and other hazardous materials. Vehicle and equipment maintenance areas.	Annually	IA	EA, local environmental authority and MoET at their discretion	IA operating budget

Subject	Parameter	Location	Frequency	Implemented by	Supervised by	Source of Funds
Wastewater	Compliance inspection	Sanitary facilities	Annually	IA	EA, local environmental authority and MoET at their discretion	IA operating budget
Flora and Fauna	Bird strikes and deaths	Turbines	Monthly	IA	EA, local environmental authority and MoET at their discretion	IA operating budget
Health and Safety	Compliance inspection of worker and community health and safety measures	Turbines, Solar Farm	Annually	IA	EA, local environmental authority and MoET at their discretion	IA operating budget
	All near miss, no lost time, lost time and fatal accidents recorded and reported against a performance standard of zero incidents	Turbines, Solar Farms	Annually	IA	EA, local environmental authority and MoET at their discretion	IA operating budget

Note: ADB = Asian Development Bank; EA = Executing Agency; IA = Implementing Agency; PMU = Project Management Unit.