

Improving Adaptive Capacity and Risk
Management of Rural Communities in
Mongolia

Environmental and Social Management
Framework

16 January 2020

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1 INTRODUCTION

1. This Environmental and Social Management Framework (ESMF) has been prepared in support of a project proposal for “Improving Adaptive Capacity and Risk Management of Rural communities in Mongolia” by the Government of Mongolia to the Green Climate Fund (GCF). As this project is supported by UNDP in its role as a GCF Accredited Entity, the project has been screened against UNDP’s Social and Environmental Standards Procedure and deemed a Moderate Risk (World Bank/International Finance Corporation Category B) project. As such, an Environmental and Social Management Framework has been prepared for the project.

1.1 BACKGROUND

2. The Government of Mongolia (GoM) with support from UNDP, is formulating a project on adaptation to climate change impacts on rural communities for submission to the GCF. The project will seek to strengthen the resilience of resource-dependent herder communities in four aimags vulnerable to climate change.
3. Mongolia is a landlocked country in East Asia and it is located between China and Russia. The total land area of Mongolia is 1,564,116 square kilometers and it is the 18th largest and the most sparsely populated country in the world, with a population of around 3 million people (population density of 1.9).
4. The country contains very little arable land, and its territory is covered by grassy steppe, with mountains to the north and west and the Gobi Desert to the south per sq. km in 2015). Approximately 30% of the population is nomadic or semi-nomadic.
5. The climate is harsh continental with sharply defined seasons, high annual and diurnal temperature fluctuations and low rainfall. The annual mean temperature is -8°C to 8°C, the summer average is 10°C to 26°C and the winter average is -15°C to -30°C. The annual precipitation is about 50-400mm and 85% out of it falls in the warm season.
6. A major long-term extreme weather/climate phenomena are drought in spring-summer season and zud (severe weather condition) in winter-spring season in Mongolia. Climate change impact assessments predict the country’s average precipitation is likely to very slightly increase, while potential evaporation is likely drastically increase in the future¹. This will exacerbate the already extreme weather variability and the impact of droughts, zud, land degradation and desertification, water scarcity and floods which already threaten a population that is highly dependent on natural resources.
7. Mongolian herders are nomadic. Winter and spring camps are chosen for availability of some shelter and access to forage and water. Access to summer and autumn pasture is less contested than to winter camps and, traditionally within a soum or similar sub-unit, are usually communally used. Migration circuits and extent depend on the availability of water and adequate grazing. The availability of water and lower numbers in the past meant that with nomadic rotational grazing, the pasture had ample time to recover. However now, with limited water sources, herders’ migration is restricted by access to water.
8. Mongolian livestock obtains over 90% of its annual feed intake from the natural pastures. Pasture yields are strongly affected by climate and weather conditions. The peak of pasture biomass has declined by 20 to 30% during the past 40 years and is projected to continue to decline as climate conditions change.
9. The impact of climate change is expected to heighten the existing vulnerability of livestock sector in Mongolia and reinforce existing factors that are affecting livestock production systems. For rural communities, losing livestock assets could trigger a collapse into chronic poverty, have a lasting effect on livelihoods and affect social development and promote urban migration.

¹ IPCC (2014) Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. *Clim. Chang. 2014 Synth. Rep.* DOI: 10.1017/CBO9781107415324

1.2 OVERVIEW OF THE PROJECT

10. The project will target four aimags (provinces): Zavkhan, Khovd, Dornod and Sukhbaatar (Figure 1). These aimags cover steppe, desert steppe, mountain, mountain steppe and forest steppe zones).

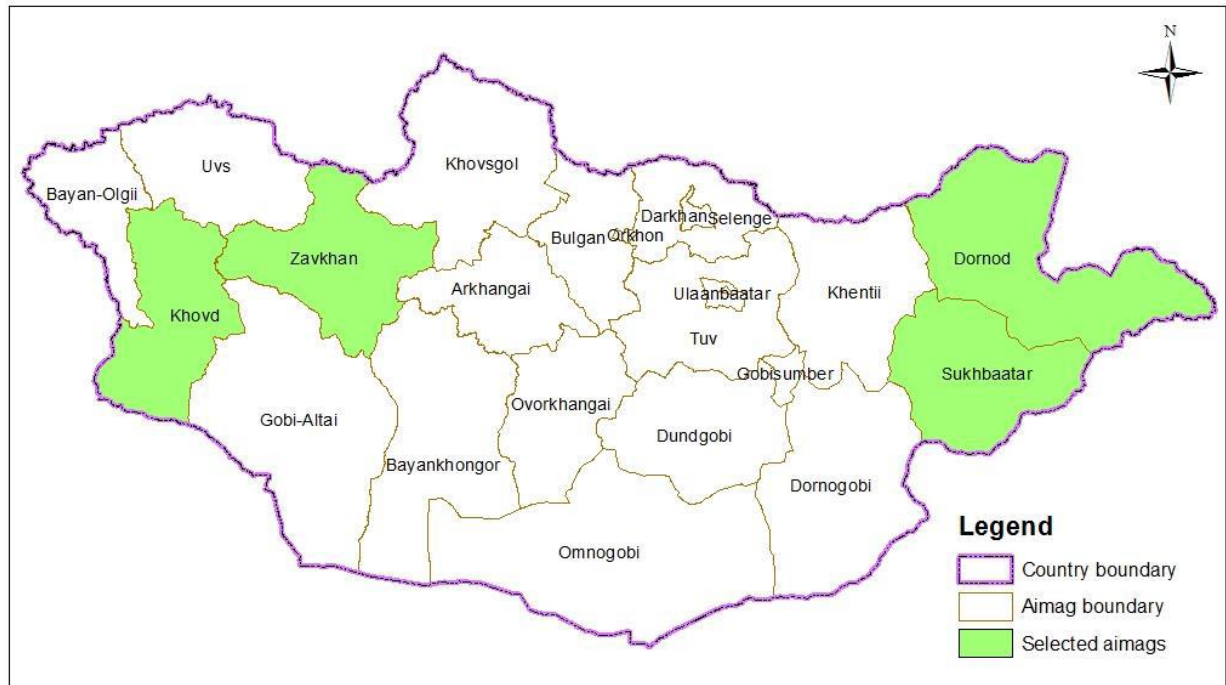


Figure 1 Map showing areas to be targeted by project

11. These four aimags were selected due to:
- High vulnerability to climate change impacts and slow onset disasters
 - Fragile catchment areas that need protection/rehabilitation
 - Representation of diverse ecological zones to maximize impact of interventions
 - Availability of previously generated adaptation best practices in similar eco-regions
 - Isolation or distance from the central area and support

1.2.1 Summary of Activities

12. The proposed project will have the following activities:
13. **Output 1: Integrate climate information into land and water use planning at the national and sub-national levels**
14. Output 1 is focused on supporting the Government of Mongolia to move beyond emergency preparedness and response, and towards climate-informed planning. This will include developing the technical capacity to forecast medium-to-long term climate change, then apply that information to predict related changes to water and land resources. Support will be provided at both the national and sub-national levels to effectively integrate this climate change and related impacts into climate-resilient planning.
15. Activity 1.1. Enhanced technical capacity for long-term climate resilient development planning, and medium-term response planning capacity
16. Under this activity, the GCF project will invest in developing the computing and human resources capacity at National Agency for Meteorology, Hydrology and Environment Monitoring (NAMEM) to

accurately forecast medium term and long-term weather and longer-term climate change impacts. The project will then train personnel at the central and aimag level to use this information in disaster management and long-term development planning.

- 1.1.1. Validation of specifications for NAMEM technical capacity and computing equipment
 - 1.1.2. Strengthen the technical and human resources capacity within NAMEM to produce seasonal to long term climate models
 - 1.1.3. Support development of guidelines for climate risk informed land, water and livestock planning
 - 1.1.4. Support to MoFALI to integrate climate change and risks and plan for long-term climate resilient development (dissemination and application following Development Planning Law)
 - 1.1.5. Support to NEMA planning, applying projected seasonal extreme weather events
 - 1.1.6. Integrate seasonal forecasts into aimag level systems and planning to respond extreme events (e.g. drought, dzud)
17. Activity 1.2 Integration of climate change and climate-informed carrying capacity into aimag and soum level development plan (incl. Integrated River Basin Management Plans (IRBMP))
18. Integrated River Basin Management Plans are either underway or completed for 12 river/lake basins pertinent to this project. The planning process starts with these IRBMPs, develops River Basin climate risk and adaptation profiles and options, and then downscales that to Soum level development plans and Resource User Agreements at the herder level.
19. The inputs under this Activity are:
- 1.2.1. Develop River Basin climate risk and adaptation profiles and options
 - 1.2.2. Development of soum level resilience-based land and water use and management plans
20. Activity 1.3. Analytical products to support policy and regulatory transformation promoting sustainable land and water
21. In this activity GCF funds will be used to inform and influence policy-makers to transform livestock policies that promote climate maladaptation. The project will sponsor events and produce policy briefs to raise awareness of new MP's and key ministry staff climate change impacts on agriculture and provide technical support when required to draft new policy and regulations.
22. There will be four inputs under Activity 1.3:
- 1.3.1. Review of current livestock policy, investments and related public/private programmes which could inadvertently contribute to land degradation by incentivizing maintenance of large herds (e.g. dzud relief programmes, insurance schemes, etc.)
 - 1.3.2. Informed by results of Activity 1.1, conduct scenario analyses
 - 1.3.3. Drafting of changes in policies to support sustainable use of natural resources and climate-resilience in the livestock sector and submission for approval by appropriate ministerial party
 - 1.3.4. Sensitization on climate change impacts on natural resources and the livestock sector for decision-makers to enable the necessary reforms
23. **Output 2: Scaling up climate-resilient water and soil management practices for enhanced small scale herder productivity**
24. Community based Resource User Groups (RUGs) will be the key point of focus for the implementation of activities under this Output. The Green Gold project established and capacitated Pasture User Groups in Khovd and Zavkhan and initiated activities in Dornod in 2016 – three of the four target Aimags for this project. This proposed GCF project will strategically scale the methods and best practices from this project to expand their coverage and deepen impact.
25. The project activities on the ground will be planned and implemented based on Resource Use Agreements. The Green Gold project facilitated Rangeland Use Agreements for the sustainable management of pasture by enforcing seasonal rotational grazing and resting schedules, long term agreements for the maintenance of rangeland health and plans to adjust and reduce stocking rate to

rangeland carrying capacity agreed between RUGs and soum governments. This proposed GCF project will build on these agreements by including;

- Investments required to reduce livestock mortality due to seasonal extreme events such as droughts and dzuds. This will include fodder cultivation projects, and fodder storage capacity.
- Investments required to promote the sustainable use of rangelands including livestock access ways and fencing,
- Sustainable watershed management including designation and protection of critical catchments, designation and management water abstraction points and allocation of existing water points amongst RUGs.
- New water infrastructure (e.g. livestock wells, hand wells)

26. Therefore, a comprehensive Resource Use Agreement will include the following components;

- Rangeland Use Agreement,
- Watershed use and management agreements, and
- Community Infrastructure development and Operation and Maintenance agreements.

27. In the Zavkhan and Khovd aimags where the Green Gold project has already facilitated Rangeland User Agreements in all soums, the proposed GCF project will augment the Agreements by including water and infrastructure agreements. In the four soums in the Dornod aimag where the next phase of the Green Gold project will facilitate Rangeland Use Agreements, the proposed GCF project will provide technical assistance to augment the Rangeland Use Agreements by again incorporating including water and infrastructure agreements. In the rest of the Dornod aimag and in the Sukbataar aimag, the proposed GCF project will facilitate comprehensive Resource Use Agreements.

28. The Resource Use Agreements will also include an Operation and Maintenance Agreement. This will include commitments towards the O&M from both the herder groups and the soum government for upkeep of the infrastructure.

29. Activity 2.1 Enhanced cooperation among herders on sustainable use and stewardship of shared land and water resources, formalized through Resource User Agreements

30. Community based Resource User Groups (RUGs) will be the key point of focus for the implementation of activities under this Output. The project activities on the ground will be planned and implemented based on Resource Use Agreements developed by RUGs which will include the following components; Rangeland Use Agreement, Watershed use and management agreements, and a Community Infrastructure development and O&M agreements.

31. The project will facilitate, help register the RUGs with local authorities, define their operating procedure and legitimize their user rights and responsibilities as required. The RUGs will lead the development and management of land and water resources as per the Resource Use Agreements.

32. The inputs are:

- Input 2.1.1: Formalize and/or strengthen Resources User Groups.
- Input 2.1.2: Development, consolidation and registration of resilience-based Resource Use Agreements (RUA) by RUGs.

33. Activity 2.2: Ecosystems-based adaptation measures to protect land and water resources.

34. The project will promote both structural and ecosystem based measures to promote fodder and water security including use and exclusion agreements and infrastructure measures and in measures to increase the capacity and resilience of herders to cope with climate change impacts and manage pastoral risks.

35. Inputs under Activity 2.2 are:

- Input 2.2.1. Validate identified investments through RUAs

- Input 2.2.2. Ensure appropriate, climate-informed siting for investments, based on Output 1
 - Input 2.2.2. Implementation of Rangeland User Agreements
 - 1,598ha catchment reforestation
 - 2,890ha of haymaking or pasture reserve areas
 - 51 emergency fodder storage facilities
 - Input 2.2.3. Implementation of resiliency-based Watershed Agreements through Public Private Community Partnerships
 - 88 natural springs protected
 - 285 wells rehabilitated or constructed
 - 18 water harvesting structures
36. **Output 3: Build herder capacity to access markets for sustainably sourced, climate-resilient livestock products**
37. Activity 3.1: Identify public-private-community partnerships for sustainably sourced, climate resilient livestock products
38. Through this activity GCF funds will leverage private sector investments to facilitate large-scale integrated climate-smart projects in the agricultural sector led jointly by private sector players and herder producer groups to aggregate herders and promote backward integration in key selected value chains. GCF resources will be used to provide technical assistance to herder groups strengthen their capacities to enter into sustainable and equitable partnerships with private sector players. The project will act as an arbitrator to facilitate private sector linkages with herder groups and promote PPCP-CRADs that are technically and economically viable and equitable.
39. The following inputs are included in Activity 3.1:
- 3.1.1. Consultations with private sector to assess the type/level of information needed to further engagement and investment in climate-resilient livestock products
 - 3.1.2. Promotion and conduct of livestock investment fairs to identify PPCP opportunities
 - 3.1.3. Based on identified opportunities, facilitation and finalization of PPCP Agreements
40. Activity 3.2: The establishment and training of Herder Producer Organizations:
41. Based on the needs of the PPCPs agreed above, the project will facilitate the setting up of Herder Producer Organizations (HPOs). Support will include general business and market specific training in production, post-harvest processing, post-harvest value addition and on-site storage specific to the commodity value chain.
42. Inputs for this Activity will be:
- Input 3.2.1. Readiness assessment to gauge existing decision-making and community governance mechanisms, as a pre-condition for a fair and equal involvement of all interested members of the community to participate in the HPOs
 - Input 3.2.2. Market specific training in production, post-harvest processing, post-harvest value addition and on-site storage
 - Input 3.2.3. Small upfront investments to support business needs (e.g. equipment to assess microns for wool and cashmere)
 - Input 3.2.4. Impact evaluation of project interventions on herder households
43. Activity 3.3: Improve traceability for sustainably sourced, climate resilient livestock products

44. Inputs focused on improving traceability include:

- Input 3.3.1 Surveying and analysis of traceability of sustainably sourced climate resilient livestock products
- Input 3.3.2 Review/Drafting standards for climate-resilience products certification process
- Input 3.3.3 Drafting agreements in PPCP to support traceable products development (linked to Activity 3.1.3.)
- Input 3.3.4 Develop a demo traceable livestock product (informed by 3.3.1)
- Input 3.3.5 Analyze and document traceability system results, disseminated for knowledge sharing

45. Activity 3.4: Generation and dissemination of knowledge products to support private-sector engagement and herder enfranchisement in climate-resilient and sustainable production in Mongolia

46. The project will support the knowledge and information needs to support further upscaling and replication, as well as innovative market-driven financing mechanisms for climate change adaptation to catalyze impact financing, and commercial funding from financial markets

47. The inputs under Activity 3.4 include:

- Input 3.4.1. Generate knowledge products detailing best practices for innovative financing mechanisms (e.g. sustainable sourcing platforms, impact investment fund)
- Input 3.4.2. Promotion of project achievements to raise awareness of private sector and/or potential investors and consumer/public awareness about need for sustainable practice

1.3 ENVIRONMENTAL AND SOCIAL RISK ASSESSMENT

48. As this project is supported by UNDP in its role as a GCF Accredited Entity, the project has been screened against UNDP’s Social and Environmental Standards Procedure. The Social and Environmental Screening Template was prepared and the project deemed to be a moderate risk (Category B) project. Discussions on the impact assessment are provided in the Social and Environmental Screening Template, which provided the rationale for the project being classified as a moderate risk. This ESMF provides further discussion below.
49. An impact risk assessment was undertaken to assess the impact (Table 1) and the probability of each impact (Table 2). From this, a significance value was attributed to the potential impact (low, medium, high) (Table 3).

Table 1 Rating the 'impact' of a risk

Score	Rating	Social and environmental Impacts
5	Critical	Significant adverse impacts on human populations and/or environment. Adverse impacts high in magnitude and/or spatial extent (e.g. large geographic area, large number of people, transboundary impacts, cumulative impacts) and duration (e.g. long-term, permanent and/or irreversible); areas impacted include areas of high value and sensitivity (e.g. valuable ecosystems, critical habitats); adverse impacts to rights, lands, resources and territories of indigenous peoples; involve significant displacement or resettlement; generates significant quantities of greenhouse gas emissions; impacts may give rise to significant social conflict
4	Severe	Adverse impacts on people and/or environment of medium to large magnitude, spatial extent and duration more limited than critical (e.g. predictable, mostly temporary, reversible). The potential risk impacts of projects that may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially severe.
3	Moderate	Impacts of low magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures
2	Minor	Very limited impacts in terms of magnitude (e.g. small affected area, very low number of people affected) and duration (short), may be easily avoided, managed, mitigated
1	Negligible	Negligible or no adverse impacts on communities, individuals, and/or environment

Table 2 Rating the 'Probability' of a risk

Score	Rating
5	Expected
4	Highly likely
3	Moderately likely
2	Not likely
1	Slight

Table 3 Risk matrix

Impact	5	H	H	H	H	H
	4	M		H	H	H
	3	L	M	M	M	M
	2	L	L	M	M	M
	1	L	L	L	L	L
		1	2	3	4	5
Probability						

50. When undertaking the risk assessment, all activities were assessed, including, hard/soft infrastructure and livelihood interventions. Specific measures for each matter eg water, erosion, noise etc are discussed along mitigation measures later in this ESMF

Table 4 Impact and Mitigation Risk Assessment

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
Output 1: Integrate climate information into land and water use planning at the national and sub-national levels				
<u>Activity 1.1: Enhanced technical capacity for long-term climate resilient development planning, and medium-term response planning</u>				
Input 1.1.1: Validation of specifications for NAMEM technical capacity and computing equipment	Activity involves review of capacity and needs. No adverse impacts are likely	Likelihood: 1 Consequence: 1 Risk: Low	No mitigation measures required	Likelihood: 1 Consequence: 1 Risk: Low
Input 1.1.2: Strengthen the technical and human resources capacity within NAMEM to produce seasonal to long term climate models	<p>This activity primarily involves the purchase and installation of a computing equipment and provision of training.</p> <p>This activity is capacity development and training. As such, there are unlikely to be any significant or even negligible impacts.</p> <p>Potential risks include:</p> <ul style="list-style-type: none"> • Trainees inappropriate or poor quality training • Staff turnover negates benefits of training (skill loss from department) 	Likelihood: 2 Consequence: 3 Risk: Moderate	<p>Specifications for super computer well understood and is similar to that used in other parts of the world. The facilities to house the computer already exist.</p> <p>Training of multiple employees at different levels. Transference of skills to other officers.</p>	Likelihood: 1 Consequence: 1 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
Input 1.1.3: Support development of guidelines for climate risk informed land, water and livestock planning	Products developed are inappropriate eg messages not understood by end users or rely on technology not readily available to end users. End users remain distrustful of forecasts and EWS messages	Likelihood: 2 Consequence: 3 Risk: Moderate	Participatory design of products and assessment of acceptance/effectiveness. Awareness raising and validation of forecasts Commercially viable model based on mobile phone technology that is widely used already by herders and farmers.	Likelihood: 1 Consequence: 2 Risk: Low
Input 1.1.4: Support to MoFALI to integrate climate change and risks and plan for long-term climate resilient development (dissemination and application following Development Planning Law)	This activity involves assisting government in developing plans and laws. No physical infrastructure involved. Environmental or social risks are considered minimal. Risk of not including all appropriate stakeholders.	Likelihood: 1 Consequence: 3 Risk: Low	Planning process already established, this activity enhances existing process. Ensure that planning process is participatory and involves appropriate levels of government and community.	Likelihood: 1 Consequence: 1 Risk: Low
Input 1.1.5. Support to NEMA planning applying projected	Lack of or inappropriate technical expertise	Likelihood: 2 Consequence: 3 Risk: Moderate	Provide appropriate technical expertise for integration and application of climate information	Likelihood: 2 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
seasonal extreme weather events				
Input 1.1.6: Integrate seasonal forecasts into aimag level systems and planning to respond extreme events (e.g. drought, dzud)	<p>This activity involves provision of support for climate informed planning and emergency planning.</p> <p>It will build the existing capacity and builds on existing activities. It is a low risk activity.</p>	<p>Likelihood: 1 Consequence: 3 Risk: Low</p>	<p>Provide appropriate technical expertise for integration and application of climate information</p>	<p>Likelihood: 1 Consequence: 2 Risk: Low</p>
<u>Activity 1.2: Incorporate long-term Climate Change concerns into Soum Level Development Plans</u>				
Input 1.2.1: Develop River Basin climate risk and adaptation profiles and options	<p>Involves downscaling of national and regional strategies and plans to Aimag and Soum levels.</p>	<p>Likelihood: 2 Consequence: 3 Risk: Moderate</p>	<p>Ensure that downscaling results in appropriate information at Aimag and Soum level.</p> <p>Output suitable for 'ready reference' to assist users when developing RUAs.</p>	<p>Likelihood: 1 Consequence: 2 Risk: Low</p>
Input 1.2.2: Development of soum level resilience-based land and water use and	<p>Watershed plans effectively set the baseline for the use and management of the hydrological and land assets of the watershed and serve as a road map for the implementation of subsequent project activities and investments.</p>	<p>Likelihood: 2 Consequence: 4 Risk: Moderate</p>	<p>Develop on a participatory basis and in close collaboration with local agencies.</p> <p>Rigorous quality review and validation process before being used to select and place investments</p>	<p>Likelihood: 1 Consequence: 3 Risk: Low</p>

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
management plans	Risk of poor baseline information or vested interests resulting in a maladaptive plan.			
<u>Activity 1.3. Analytical products to support policy and regulatory reform promoting sustainable land and water.</u>				
Input 1.3.1 Review of current livestock policy, investments and related public/private programmes which could inadvertently contribute to land degradation by incentivizing maintenance of large herds (e.g. dzud relief programmes, insurance schemes, etc.)	This is a review process, risk is primarily centred around quality and depth of review, ie risk that review is inadequate / fails to policies and programs that need to be reformed Physical risks are low.	Likelihood: 2 Consequence: 3 Risk: Low	Ensure review is sufficiently broad. Reviewers should come from a range of backgrounds/perspectives. Provide technical assistance if required	Likelihood: 2 Consequence: 2 Risk: Low
Input 1.3.2. Informed by results of Activity 1.1, conduct	Stakeholder engagement / workshops to support cross-sectoral planning – require appropriate representation.	Likelihood: 2 Consequence: 2 Risk: Low	Host events that are wide reaching and ensure that all appropriate policy makers attend/get exposure.	Likelihood: 1 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
scenario analyses			Broad representation from men/women across age profiles and sectors.	
Input 1.3.3. Drafting of policy transformations to support sustainable use of natural resources and climate-resilience in the livestock sector and submission for approval by appropriate ministerial party	Risk of reforms not being appropriate. Lack of technical skill or self-interest could bias reforms.	Likelihood: 2 Consequence: 3 Risk: Moderate	Engage wide range of policy makers/regulators in drafting/reviewing reforms. Provide technical support when required to draft new policy and regulations	Likelihood: 1 Consequence: 3 Risk: Low
Input 1.3.4. Sensitization on climate change impacts on natural resources and the livestock sector for decision-makers to enable the necessary reforms	Poor community engagement Risk is that policies may not be reformed or that policies fail to reduce maladaptation. Populace politics may come into play.	Likelihood: 2 Consequence: 3 Risk: Moderate	Engage community and identify appropriate incentives. Ensure messages appropriate and understood by community Create cross-sectoral plans	Likelihood: 2 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
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Output 2: Scaling up climate-resilient water and soil management practices for enhanced small scale herder productivity

Activity 2.1: Enhanced cooperation among herders on sustainable use and stewardship of shared land and water resources, formalized through Resource User Agreements

Input 2.1.1: Formalize and/or strengthen Resources User Groups.	Involves creation/strengthening of RUGs. Risk of in appropriate groupings or allocation of resources. Could create conflict if RUG misaligned.	Likelihood: 2 Consequence: 3 Risk: Moderate	Strengthen existing RUGs or engage with community and establish RUGs based on participatory identification of logical resource use and community groupings. Register the RUGs with local authorities, define their operating procedure and legitimize their user rights and responsibilities Training of facilitators to continuously engage with the community	Likelihood: 1 Consequence: 3 Risk: Low
Input 2.1.2: Development, consolidation and registration of resilience-based Rangeland Use Agreements (RUA) by RUGs.	Activity involves creation of RUAs that define how land is used and by whom. No physical infrastructure posed as part of project, risks are social in nature, but could result in maladaptation and conflict if not appropriately managed. Process needs to be equitable and agreed to by community. Risk of some herders not abiding by agreement and could result in conflict over resources.	Likelihood: 3 Consequence: 4 Risk: Moderate	Engage with the RUGs and facilitate the development of RUAs per each RUG Extend existing land use agreements to encompass all seasonal pastures and clearly specify herders' rights and responsibilities. Plans to be registered with government and identify key investments to enable funding from public resources to be sought (ie incentivized). Engage with multiple RUGs to get agreement on transboundary issues, where relevant.	Likelihood: 2 Consequence: 3 Risk: Moderate

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
	<p>Activity involves incorporation of watershed agreements into the RUAs. Risks similar to those above.</p> <p>Additional level of risk associated with influence of upstream/downstream users (RUGs).</p> <p>Potential for conflict over water resources.</p> <p>O&M plan not adopted or well understood</p>		<p>Watershed plans will undergo a rigorous quality review and validation process before being used to select and place investments</p> <p>Adherence to the watershed agreements will be incentivized by the phased implementation of the infrastructure components – government will share costs. Responsibility for use, protection and maintenance of new and renovated infrastructure will lie with RUGs.</p> <p>Ensure O&M plan understood by users</p>	

Activity 2.2: Ecosystems-based adaptation measures and small scale structures to protect land and water resources

Input 2.2.1. Validate identified investments through RUAs	Poor consultation results in non-acceptance of investments	Likelihood: 3 Consequence: 2 Risk: Moderate	Stakeholder engagement	Likelihood: 1 Consequence: 2 Risk: Low
Input 2.2.2. Ensure appropriate, climate-informed siting for investments, based on Output 1	Lack of technical expertise to ensure siting is climate informed. Political interference	Likelihood: 3 Consequence: 3 Risk: Moderate	Technical expertise to be provided Training to RUGS for investment Stakeholder engagement and empowerment	Likelihood: 2 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
Input 2.2.3. Implementation of Rangeland User Agreements	<p>This activity is focused on implementing plans and installation of infrastructure eg such as the fencing of hayfields for winter pasture conservation and fodder preparation, construction of winter shelters for livestock, and fodder storages structures.</p> <p>Implementation needs to consider typical construction/health and safety risks, as well as any cultural sensitivities eg taboos against piercing the ground in some areas.</p>	<p>Likelihood: 2 Consequence: 3 Risk: Moderate</p>	<p>Plans will have been previously agreed.</p> <p>Infrastructure will be installed in appropriate season using standard construction safety methods.</p> <p>Ownership of plan and oversight of implementation by RUG should avoid any culturally inappropriate actions.</p>	<p>Likelihood: 1 Consequence: 2 Risk: Low</p>
Input 2.2.4. Implementation of resiliency-based Watershed Agreements through public private community partnerships	<p>Activities include both structural and ecosystem based measures to promote water security and may include: fencing of springs ; small dams/ponds (water reservoirs) and water harvesting structures; planting of fodder crops; establishing windbreaks; soil protection (from erosion); rehabilitation of water resources; establishment of deep wells; rehabilitation/establishment of shallow wells.</p> <p>Risks similar to above. Additional risks associated with groundwater – quality and quantity exist.</p> <p>Some risk that enclosures or restrictions are not adhered to.</p>	<p>Likelihood: 3 Consequence:3 Risk: Moderate</p>	<p>Plans will have been previously agreed.</p> <p>Construction will be done in a safe manner.</p> <p>Groundwater to be tested for suitability for use and sustainable volume.</p> <p>Soum officials will be responsible for making certain enclosures are respected and enforcing any restrictions.</p>	<p>Likelihood: 2 Consequence: 3 Risk: Moderate</p>

Output 3: Build herder capacity to access markets for sustainably sourced, climate-resilient livestock products

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
<u>Activity 3.1: Identify public-private-community partnerships for sustainably sourced, climate resilient livestock products:</u>				
Input 3.1.1: Consultations with private sector to assess the type/level of information needed to further engagement and investment in climate-resilient livestock products	Limited range of businesses consulted limits feedback	Likelihood: 1 Consequence: 2 Risk: Low	Broad private sector consultation, including cross-sectoral businesses	Likelihood: 1 Consequence: 2 Risk: Low
Input 3.1.2: Promotion and conduct of livestock investment fairs to identify public-private-community partnership (PPCP) opportunities	Activity is focussed on exposure to ideas and opportunities. Risk of some herders being excluded. Lack of 'ownership' of investment fairs by herders. Preparation inadequate	Likelihood: 2 Consequence: 2 Risk: Low	Stakeholder engagement Provision of technical expertise to assist with appropriate preparation "Investment fairs" to be held regularly in all four Aimags. Events will be arranged for herders and for private sector commodity associations. Events will be well publicised and open to all stakeholders.	Likelihood: 1 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
<p>Input 3.1.3: Based on identified opportunities, facilitation and finalization of PPCP Agreements</p>	<p>This activity centres on development/finalization of agreements. Risks are contractual and/or relationship in nature. Risks and impacts considered low. Negotiation and legal skills limited</p>	<p>Likelihood: 1 Consequence: 3 Risk: low</p>	<p>Support the herder groups in their negotiations with the private sector player to ensure an equitable and fair outcome. Develop a legal template for these agreements detailing roles and responsibilities. Unified screening tool will be developed for the validation of agreements Provision of technical and legal support</p>	<p>Likelihood: 1 Consequence: 2 Risk: Low</p>
<p><u>Activity 3.2: The establishment and training of Herder Producer Organizations</u></p>				
<p>Input 3.2.1: Readiness assessment to gauge existing decision-making and community governance mechanisms, as a pre-condition for a fair and equal involvement of all interested members of the community to</p>	<p>Activity involves review of capacity and needs.</p>	<p>Likelihood: 1 Consequence: 1 Risk: Low</p>	<p>Technical support will be provided</p>	<p>Likelihood: 1 Consequence: 1 Risk: Low</p>

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
participate in the HPOs				
Input 3.2.2: Market specific training in production, post-harvest processing, post-harvest value addition and on-site storage.	Commodity specific training. Training is being provided by project, however resultant practices may have secondary impacts associated with the implementation of the training eg siting of storage or processing facilities, waste from processing facilities etc.	Likelihood: 2 Consequence: 3 Risk: Moderate	Training to include all aspects of production and post harvesting, including environmental/social aspects. Application of ESMF can continue beyond project – ie embed best practices into operations.	Likelihood:1 Consequence: 2 Risk: Low
Input 3.2.3: Small upfront investments to support business needs	Activity would provide funding to RUGs to initiate operation. Risk is financial in nature eg misappropriation of funds, inequitable provision of funds etc.	Likelihood: 3 Consequence: 2 Risk: Moderate	Funding tied to meeting obligations of a PPCP agreement. Financial and management training will be provided to RUGs. RUG operations will be clearly defined in agreements and therefore auditable and traceable.	Likelihood: 1 Consequence: 2 Risk: Low
Input 3.2.4 Impact evaluation of project interventions on herder households	Activity involves review of assessment/evaluation. Technical support will be needed.	Likelihood: 1 Consequence: 1 Risk: Low	Technical support will be provided	Likelihood: 1 Consequence: 1 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
<u>Activity 3.3: Improve traceability for sustainably sourced, climate-resilient livestock products</u>				
Input 3.3.1 Surveying and analysis of traceability of sustainably sourced climate resilient livestock products certification process	Includes desk review, consultations and research on existing and planned traceability, no adverse impacts expected. Technical support will be needed.	Likelihood: 2 Consequence: 3 Risk: Moderate	Technical support will be provided	Likelihood: 2 Consequence: 2 Risk: Low
Input 3.3.2 Review/Drafting standards for climate-resilience products	Risk of not including all appropriate stakeholders.	Likelihood: 2 Consequence: 3 Risk: Moderate	Ensure engagement with broad range of stakeholders (e.g. government, private sector, communities)	Likelihood: 2 Consequence: 2 Risk: Low
Input 3.3.3 Drafting agreements in PPCP to support traceable products development (linked to Activity 3.1.3.)	This activity centres on agreements related to traceability. Risks are contractual and/or relationship in nature. Risks and impacts considered low. Negotiation and legal skills limited	Likelihood: 1 Consequence: 3 Risk: low	Support the herder groups in their negotiations with the private sector player to ensure an equitable and fair outcome. Develop a legal template for these agreements detailing roles and responsibilities. Unified screening tool will be developed for the validation of agreements Provision of technical and legal support	Likelihood: 1 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
Input 3.3.4 Develop a demo traceable livestock product (informed by 3.3.1)	Activity is technical, expertise will be required.	Likelihood: 2 Consequence: 3 Risk: Moderate	Technical expertise will be provided	Likelihood: 2 Consequence: 2 Risk: Low
Input 3.3.5 Analyze and document traceability system results, disseminated for knowledge sharing	This activity is about documenting evidence. No project risks are perceived.	Likelihood: 1 Consequence: 2 Risk: Low	No mitigation measured needed.	Likelihood: 1 Consequence: 2 Risk: Low
<u>Activity 3.4: Generation and dissemination of knowledge products to support private-sector engagement and herder enfranchisement in climate-resilient and sustainable production in Mongolia</u>				
Input 3.4.1: Generate knowledge products detailing best practices for innovative financing mechanisms (e.g.	Products inappropriate for intended users Risks associated with this activity considered low Promotion does not reach broad range of potential investors	Likelihood: 2 Consequence: 2 Risk: Low	Consultation with target users Broad engagement of potential investors Wide ranging promotion through variety of media/avenues Highlight successes and make relevant to potential investors	Likelihood: 1 Consequence: 2 Risk: Low

Activity	Unmitigated Impacts	Likelihood of Impact and Consequence	Avoidance and Mitigation Measures	Likelihood of Impact and Consequence post mitigation
sustainable sourcing platforms, impact investment fund)	Project achievements not clear/readily appreciated by potential investors (ie successes undersold)			
Input 3.4.2: Promotion of project achievements to raise awareness of private sector and/or potential investors and consumer/public awareness about need for sustainable practice	Communication channels not appropriate Materials not appropriate User groups do not take ownership of issues	Likelihood: 2 Consequence: 3 Risk: Moderate	Wide range of communication channels to be utilised Technical expertise to develop materials Test materials with target audience Materials to engage consumer/public at a 'personal level' ie make directly relevant to readers and provide actions that they can take.	Likelihood: 1 Consequence: 2 Risk: Low

1.3.1 Assumptions Underpinning the Development of the Environmental and Social Management Framework

51. The following assumptions have been made in the preparation of this ESMF:
- none of the interventions will require the displacement of people;
 - any land required for infrastructure will either be government owned or will have had its use consented to by the land owner/s;
 - none of the infrastructure interventions will be conducted in protected areas or sensitive locations;
 - structures such as dams and reservoirs will be small and therefore low risk – larger structures will not be included as part of this project;
 - appropriate erosion and sediment control will be undertaken during all stages of the projects; and
 - there will be no release of pollution and/or chemicals as a result of the projects.

1.3.2 Purpose and Objectives of the Environmental and Social Management Framework

52. An EMSF is a management tool used to assist in minimising the impact to the environment and socially; and reach a set of environmental and social objectives. To ensure the environmental and social objectives of the projects are met, this EMSF will be used by the project implementers to structure and control the environmental management safeguards that are required to avoid or mitigate adverse effects on the environment.
53. The environmental and social objectives of the projects are to:
- improve the water supply in the targeted areas and introduce water conservation measures;
 - provide an early warning system that ensures adequate measures are undertaken prior to any event;
 - encourage good management practices through planning, commitment and continuous improvement of pasture management and environmental practices;
 - minimise or prevent the pollution of land, air and water pollution;
 - protect native flora, fauna and important ecosystems;
 - comply with applicable laws, regulations and standards for the protection of the environment;
 - adopt the best practicable means available to prevent or minimise environmental impact;
 - enhance livelihoods of herder and farming families
 - describe monitoring procedures required to identify impacts on the environment; and
 - provide an overview of the obligations of MET and MoFALI and UNDP staff and contractors in regard to environmental obligations.
54. The EMSF will be updated from time to time by the implementing Project Management Unit (PMU)/contractor in consultation with the UNDP staff and Ministry of Food and Agriculture (MoFALI) to incorporate changes in the detailed design phase of the projects.

1.3.3 Land Issues

55. Much of the land in Mongolia is yet to have registered tenure, although traditional pastoral boundaries exist and many herder groups are now in the process of registering their land tenure to secure more legal rights over the land.
56. The project, through its formation and strengthening of PUGs will assist in facilitating the process of land tenure registration.

1.3.4 Indigenous Peoples

57. As part of due diligence, an analysis and consultations were undertaken as to the likelihood of any of the project's activities involving indigenous people and/or ethnic minorities.
58. The project is based on a consultative process, particularly the activities around formalisation of Pasture Herder Groups and the development of Pasture Management Plans. Thus, minority groups (which make up approximately 4% of the population – refer to Section 5.9) will continue to be consulted and included in the project.

1.4 OVERVIEW OF INSTITUTIONAL ARRANGEMENTS FOR THE ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK PLAN

59. The EMSF will be assessed for each sub-project by the MET and UNDP prior to any works being undertaken. The EMSF identifies potential risks to the environment and social matters from the projects and outlines strategies for managing those risks and minimising undesirable environmental and social impacts. Further, the EMSF provides a Grievance Redress Mechanism for those that may be impacted by the projects that do not consider their views have been heard.
60. The MET will be responsible for the supervision of the EMSF. The UNDP will gain the endorsement of the MET and will ensure the EMSF is adequate and followed. The PMU will ensure timely remedial actions are taken by the contractor where necessary.

1.4.1 Administration

61. The MET will be responsible for the revision or updates of this document during the course of work. It is the responsibility of the person to whom the document is issued to ensure it is updated.
62. The site supervisor will be responsible for daily environmental inspections of the construction site. The MET will cross check these inspections by undertaking monthly audits.
63. The contractor will maintain and keep all administrative and environmental records which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints.
64. The contractor will be responsible for the day to day compliance of the ESMF.
65. The MET will be the implementing agency and will be responsible for the implementation and compliance with the ESMF via the collaborating partners and contractors. The ESMF will be part of any tender documentation.
66. The Supervising Engineer/Project Manager will supervise the contractor, while the MET will be responsible for environment and social issues.

1.4.2 Capacity Building

67. The project includes components that are focused on capacity building of human resources. Some of the activities include:
 - NAMEM capacity building to upgrade modelling & forecasting skills, this will include the use of advanced supercomputers and applying new methods, models and post processing approaches. This is required as the project will be upgrading computing infrastructure and assisting in improving seasonal and multi-decadal forecasts and climate change scenarios. The installation of additional weather stations will also require on-ground staff to be trained.
 - Local government staff will be trained in climate change impact, vulnerability and risk assessment and planning so that climate change can be incorporated into development plans. This is required as climate considerations have not been included in Aimag and Soum level plans, and better understanding of climate related issues and planning for resilience needed.
 - New Ministers and key ministry staff will have their understanding of climate change impacts on agriculture raised to influence policy makers to reform agriculture policies that promote climate maladaptation.

- A significant component of the project involves the formation of Resource User Groups (RUGs) to develop and implement rangeland and water resource management plans. These will be community-based management systems, co-managed by government. For the RUGs to be successful, community groups and government need to be provided with training to increase capacity in a range of areas, including facilitation, contracts and law, rights and responsibilities, negotiating, and technical aspects of rangeland and water management.
- The project hopes to increase value chains associated with agriculture. This will include facilitation of public-private-partnerships, Herder Producer Organisations, and increased market opportunities. To realise this, capacity building is going to be required. This will include: business advisory support; financial management; risk management; contract negotiation and administration; general management; market specific training in production, post-harvest processing, post harvest value addition and on-site storage; and accessing global markets.

2 LEGAL AND INSTITUTIONAL FRAMEWORK FOR ENVIRONMENTAL AND SOCIAL MATTERS

2.1 LEGISLATION, POLICIES AND REGULATIONS

68. The following legislation is relevant to the project:

- **Environmental Protection Law 1995** - This national law (approved in 1995 and amended in 2012) regulates individuals, organizations and the Government on environmental protection and sustainable use of natural resources such as water, forest, pastureland, biodiversity, etc.. A recent amendment to the Environmental Protection Law creates a more favourable condition for engaging local communities in sustainable natural resource management by providing security of tenure and giving Community Based Organizations (CBOs) legal status. CBOs that re-emerged on the pastoral commons to revive pastoral mobility were recognized in the civil law of Mongolia, a manifestation of the recognition by government of the crucial role that resource users, local communities and customary institutions play in sustainable land management and NRM in the vast territory of the country. Another amendment to the Law on Environmental Protection regulates the organizational form, tenure rights and responsibilities of user groups (Nukhurlul) for forest resources.
- **Water Law 2004** - The law was approved Apr, 2004 by the Mongolian Parliament and regulates relations pertaining to an effective use, protection, and restoration of water and water basin. The Law on Water has introduced the legal basis for basin management and the legal mandate of Water Basin Organizations was described in Article 19. The Law is quite specific on the composition of the Basin Council, as it is called. The modified law, the Law on Water (2012), further clarifies a number unresolved issues and introduces Water Basin Authorities, which are technical offices operating with professional support and guidance from the Water Authority and responsible for implementation of all water management activities within the respective water basins. It has 5 chapters including Protection of water resources and its quality, habitat restoration. Through the law, protection of water resource and quality, protection and effective use of water resources during drought and desertification periods and incentives for water protection and restoration are reflected in article 31, 32, and 35.
- **Land Law 2002** - This law regulates possession, use of land by a citizen, entity and organization, and other related issues. The primary responsibility for implementing the Land law rests with Aimag and Soum officials, and interpretation and application of the land law in allocating pastoral resources, particularly winter camp sites and winter pastures to users have been varied, random and unregulated in terms of group size, length of possession and arrangements on access by others.
- **Special Protected Area Law 1994** - This law regulates relations concerning utilization of and taking areas under special protection, preservation and protection of natural landscape in order to keep particular features of natural zones and belts, their peculiar formation, forms of rare and threatened fauna and flora, historical and cultural sites and natural sightseeing as well as studying and identifying their evolution. The law provides the establishment of protected area systems at national and local level, and establishes management regulations for nationally protected areas (State SPAs).
- **Land Fee Law 2007** - The purpose of this law is to charge fees to citizens, business entities, and organizations using state-owned land, and to regulate the fees paid to the state budget. Mongolian citizens, business entities, or organizations possessing or using land based on contracts made according to the terms and conditions of the Land law, and foreign diplomatic missions and consular offices, representative agencies of international organizations, foreign legal bodies and citizens can all enter agreements for the use of state land by paying land fees. This law is used extensively at local level by Aimags and Soums to assess and collect land fees from tour operators operating ger camps (traditional tents) and other resort facilities.
- **Environmental Assessments Law 2011** - The purpose of this Law is to protect the environment, prevent ecological imbalance, ensure minimal adverse impacts on the environment from the use of natural resources, and regulate relations that may arise in connection with the assessment of

environmental impacts of and approval decisions on regional and sectoral policies, development programs and plans and projects.

- **Law on the Enforcement of the Law on Promotion of Gender Equality 2011** - The purpose of this law is to establish the legal basis for the creation of conditions to ensure gender equality in political, legal, economic, social, cultural and family relations, and to regulate relations related to their implementation. This law applies equally to economic entities and organizations operating on the territory of Mongolia and to citizens of Mongolia, and, if an international treaty ratified by Mongolia does not provide otherwise, to all international and foreign organizations and foreign citizens and aliens operating or residing on the territory of Mongolia.

2.2 ENVIRONMENTAL IMPACT ASSESSMENT IN MONGOLIA

69. Mongolian Environmental Impact Assessment (EIA) consists of two steps - “General EIA” and “Detailed EIA”:

- General EIA (Screening Process) should be done before project implementation and during project planning period. Ministry of Nature and Environment and Local Government Office must to complete screening General environmental impact assessments must be conducted for projects intending to make use of natural resources in the construction, renovation or expansion of new or existing industries, services or structures or in other forms, and such assessments shall involve an advance determination and evaluation of the expected environmental impacts of the project.
- Detailed EIA (EIA and EIS) Authorized (or licensed) Environmental Consulting Companies must to complete EIA for the Proposed Projects

70. Four potential outcomes of general EIA:

- Direct implementing projects: small projects those are not negative impact for human health and environment.
- Implementing project with environmental conditions: projects those are low negative impacts for human health and environment
- Required to do detailed EIA: Projects those are negative impact for human health and environment or not possible to determine negative impacts during general EIA and need to do more detailed survey.
- Impossible to implement: Projects those are not conformed for relevant regulations, not considered on land management plan and with harmful technology for environment and human health.

2.3 MULTILATERAL AGREEMENTS AND BIODIVERSITY PROTOCOLS

71. The Government of Mongolia is a signatory to a number of international and regional agreements and conventions, which are related to the environment. They include:

- Charter of the United National Food and Agriculture Organization 1973
- World Meteorological Organization Convention 1947
- Universal Declaration of Human Right 1948
- Convention Against Discrimination in Education 1960
- Convention on the Political Rights of Women 1952
- Convention on Transit Trade of Land-locked States 1965
- Convention on biological diversity 1992
- United Nations Framework Convention on Climate Change 1992

- Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973
- Vienna Convention for the Protection of the Ozone Layer 1985
- Montreal Protocol on Substances that Deplete the Ozone Layer 1987
- Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer 1990
- Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer 1992
- United Nations Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification 1994
- Ramsar Convention on Wetlands of International Importance especially as waterfowl habitat 1971
- Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations 1998
- Kyoto Protocol to the United Nations Framework Convention on Climate Change 1997
- Cartagena Protocol on Biosafety to the Convention on Biological Diversity 2000

3 IMPLEMENTATION AND OPERATION

3.1 GENERAL MANAGEMENT STRUCTURE AND RESPONSIBILITIES

72. The Project Board is comprised of Implementing Partner and Responsible Parties. The Implementing Partner for this project is the Ministry of Environment and Tourism (MET). The MET is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources.
73. MET will enter into agreement with other implementing partners and co-funding organizations to assist in the successful delivery of project outputs. These organizations will be directly accountable to MET as outlined in the terms of their agreement. Output 1 will be directly implemented by MET as the National Agency for Meteorology and Environment Monitoring (NAMEM) is an agency of MET. Output 2 will be implemented by the Ministry of Food and Agriculture (MoFA) under agreement with MET. Each ministry will mobilize its aimag level offices and soum level representatives.
74. A high level Project management structure is shown in Figure 2. The key roles are discussed below.

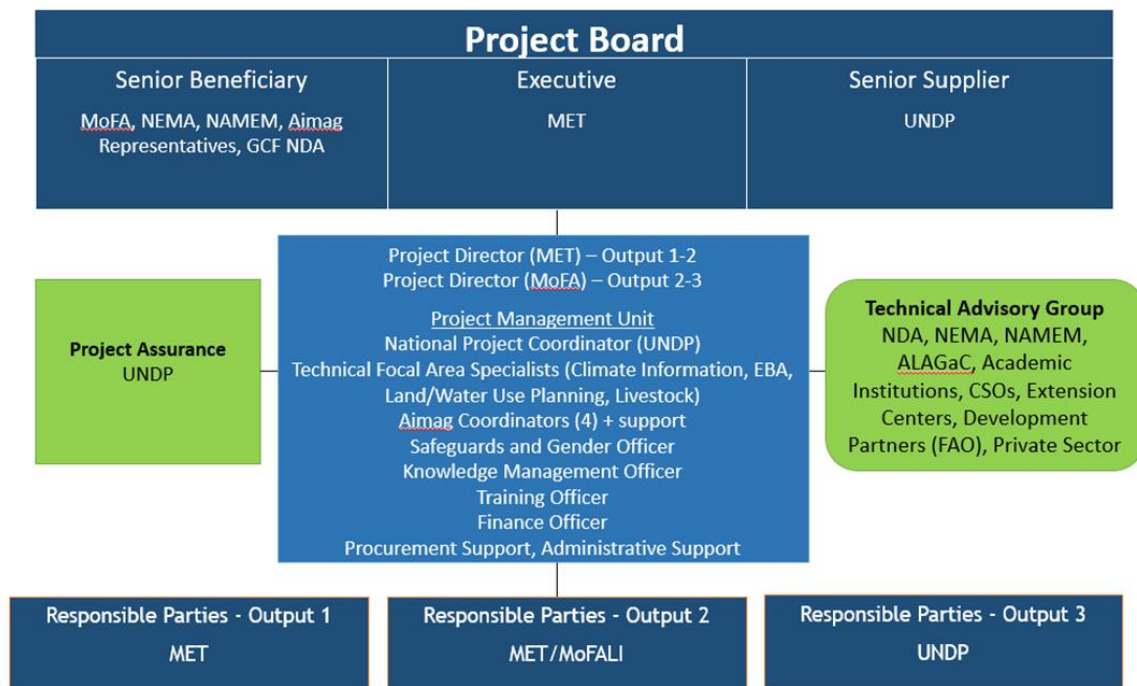


Figure 2 Project organisation structure

3.1.1 Project Board and sub-committee

75. The Project Board will be the highest decision-making and coordination body for the project and will have bi-annual regular meetings. It will be jointly led by MET and UNDP represented by the Director and Country Director respectively. A senior representative from MoFA will be a permanent member. The UNDP Chief Technical Advisor will be an observer. As the Senior Beneficiary, the implementing partner is part of the board. Furthermore, as the Senior Supplier, UNDP provides quality assurance for the project, ensures adherence to the NIM guidelines and ensures compliance with GCF and UNDP policies and procedures. The Project Board is responsible for making, by consensus, management decisions when guidance is required by the CTA and Project Directors. Project Board decisions will be made in accordance with standards that shall ensure management for development results, best value for money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP (represented by the UNDP Country Director).

76. Specific Roles of the Project Board:

- The Board shall set strategic direction, reinforce government leadership of the program and coordinate all interventions;
- Provide guidance and agree on possible countermeasures/management actions to address specific risks;
- Authorizes the Annual Work Plan (prior to approval by UNDP);
- Conduct bi-annual meetings to review the Project Progress and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to the approved Annual Work Plan;
- Provide ad-hoc guidance when project manager's is unable to come to a decision;
- Review and approve all activities that are supported by the program based on the program objectives, work plan and availability of funding;
- Provide technical advice to create synergy and uniformity between program supported activities and policy;
- Guide and support program delivery at sectoral level;
- Provide support in resource mobilization to support program funding gaps;
- Monitoring and evaluation of program activities through periodic meetings and occasional site visits;
- Receive reports on all activities supported by the program to serve as an additional basis to assess and monitor the program performance and delivery.

3.1.2 National Project Management Unit

77. The National Project Coordinator (NPC) will lead the Project Management Unit and run the project on a day-to-day basis on behalf of UNDP and MET within the constraints laid down by the Project Board. The NPC function will end when the final project terminal evaluation report and other documentation required by the GCF and UNDP has been completed and submitted to UNDP.
78. S/he is responsible for day-to-day management and decision-making for the project and has the responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The annual work plan is prepared by the NPC and reviewed and approved by Project Board. However, the final approval is provided by the Regional Technical Advisor, Global Environmental Finance Unit of UNDP as part of the quality assurance role. The Project Manager is also responsible for managing and monitoring the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required and update the status of these risks by maintaining the project risks log according to the NIM Guidelines.
79. The Project Management Unit (PMU) will implement the project as per the work plan approved by the Project Board. The PMU will have two project directors linked to MET, MoFA and UNDP, tasked with oversight to implement Output 1 and Outputs 2 and 3 respectively. They will ensure coordination and mobilize project implementation support from their respective ministries and partner organizations, and manage inter-sectoral coordination required in project implementation. In addition, the project will have key staff tasked with the following: safeguards and gender, communications, M&E, training, finance, procurement and admin support. When fully staffed, the total number of key staff and support staff in the PMU will be approximately twenty. In addition, the PMU will recruit consultants as needed.
80. As aimag level extensions of the PMU, four Project Coordination Offices (PCUs) will be set up. These offices will be responsible for the field implementation of the project. Each PCU will be headed by a coordinator and will consist of a team trained to facilitate RUGs and RUAs across the aimag and a team trained to set up HPO and facilitate market access. An engineer or a technical expert will be recruited to design and place infrastructure under Output 2. In additional the PCU will retain procurement and admin support..

3.2 PROJECT DELIVERY AND ADMINISTRATION

3.2.1 Project Delivery

81. The project will be delivered on the ground via the MET and MoFA through their subsidiary departments and the MET and MoFA. In addition, collaboration with atoll councils, existing NGOs and local communities is expected UNDP.

3.2.2 Administration of EMSF

82. As the implementing agency, MET and MoFA will be responsible for responsible for the implementation with the EMSF via the delivery organisations.
83. The EMSF will be part of any tender documentation. The MET and MoFA will be responsible for the revision or updates of this document during the course of work. It is the responsibility of the person to whom the document is issued to ensure it is the most up to date version.
84. The UNDP and MET and MoFA are accountable for the provision of specialist advice on environmental and social issues to the delivery organisations (eg contractors and/or NGOs) and for environmental and social monitoring and reporting. The MET and MoFA or its delegate will assess the environmental and social performance of the delivery organisations (eg contractors) in charge of delivering each component throughout the project and ensure compliance with the EMSF. During operations the delivery organisations will be accountable for implementation of the EMSF. Personnel working on the projects have accountability for preventing or minimising environmental and social impacts.
85. Field Officer/s will be appointed and will be responsible for daily environmental inspections of the project/construction site. The MET and MoFA or its delegate will cross check these inspections by undertaking monthly audits.
86. The delivery organisation eg contractor will maintain and keep all administrative and environmental records, which would include a log of complaints together with records of any measures taken to mitigate the cause of the complaints.
87. The delivery organisation will be responsible for the day to day compliance of the EMSF

3.2.3 Environmental procedures, site and activity-specific work plans/instructions

88. Environmental procedures provide a written method describing how the management objectives for a particular environmental element are to be obtained. They contain the necessary detail to be site or activity-specific and are required to be followed for all construction works. Site and activity-specific work plans and instructions are to be issued and will follow the previously successful work undertaking similar projects by the UNDP, IFAD and Swiss Development Cooperation.

3.2.4 Environmental incident reporting

89. Any incidents, including non-conformances to the procedures of the EMSF are to be recorded using an Incident Record and the details entered into a register. For any incident that causes or has the potential to cause material or serious environmental harm, the Field Officer shall notify the Project Manager as soon as possible. The delivery organisation/contractor must cease work until remediation has been completed as per the approval of MET and MoFA.

3.2.5 Daily and weekly environmental inspection checklists

90. A daily environmental checklist is to be completed at each work site by the relevant Field Officer and maintained within a register. A weekly environmental checklist is to be completed and will include reference to any issues identified in the daily checklists completed by the Field Officers. The completed checklist is to be forwarded to MET and MoFA for review and follow-up if any issues are identified.

3.2.6 Corrective Actions

91. Any non-conformances to the EMSF are to be noted in weekly environmental inspections and logged into the register. Depending on the severity of the non- conformance, the Field Officer may specify a corrective action on the weekly site inspection report. The progress of all corrective actions will be

tracked using the register. Any non-conformances and the issue of corrective actions are to be advised to MET and MoFA.

3.2.7 Review and auditing

92. The EMSF and its procedures are to be reviewed at least every two months by UNDP staff and MET and MoFA. The objective of the review is to update the document to reflect knowledge gained during the course of project delivery/construction and to reflect new knowledge and changed community standards (values).
93. The EMSF will be reviewed and amendments made if:
 - There are relevant changes to environmental conditions or generally accepted environmental practices; or
 - New or previously unidentified environmental risks are identified; or
 - Information from the project monitoring and surveillance methods indicate that current control measures require amendment to be effective; or
 - There are changes to environmental legislation that are relevant to the project; or
 - There is a request made by a relevant regulatory authority; or
 - Any changes are to be developed and implemented in consultation with UNDP Staff and MET and MoFA. When an update is made, all site personnel are to be made aware of the revision as soon as possible eg through a tool box meeting or written notification.

3.3 TRAINING

94. Delivery organisations have the responsibility for ensuring systems are in place so that relevant employees, contractors and other workers are aware of the environmental and social requirements for construction, including the EMSF.
95. All project personnel will attend an induction that covers health, safety, environment and cultural requirements.
96. All workers engaged in any activity with the potential to cause serious environmental harm (e.g. handling of hazardous materials) will receive task specific environmental training.

4 COMMUNICATION

4.1 PUBLIC CONSULTATION AND ENVIRONMENTAL AND SOCIAL DISCLOSURE

97. The EMSF includes public consultation as part of the stakeholder engagement plan. The project was discussed with a wide range of stakeholders including relevant government departments, industry groups, NGOs, and individual community members and approved by Government. Extensive on-ground consultation has been undertaken during the design of the project (as well as during the earlier projects that this project is aiming to upscale) and it is expected that consultation with any affected communities will continue. It is anticipated that based on the communities' needs, the projects will be fully accepted.
98. The UNDP and MET and MoFA will develop and release updates on the project on a regular basis to provide interested stakeholders with information on project status. Updates may be via a range of media eg print, radio, social media or formal reports. A publicized telephone number will be maintained throughout the project to serve as a point of contact for enquiries, concerns and complaints. All enquiries, concerns and complaints will be recorded on a register and the appropriate manager will be informed. All material must be published in Mongolian and English as appropriate.
99. Where there is a community issue raised, the following information will be recorded:
- time, date and nature of enquiry, complaint or concern;
 - type of communication (e.g. telephone, letter, personal contact);
 - name, contact address and contact number;
 - response and investigation undertaken as a result of the enquiry, complaint or concern; and
 - actions taken and name of the person taking action.
100. Some enquiries, complaints and concerns may require an extended period to address. The complainant(s) will be kept informed of progress towards rectifying the concern. All enquiries, complaints and concerns will be investigated and a response given to the complainant in a timely manner. A grievance redress mechanism has been included in the ESMF to address any complaints that may not be able to be resolved quickly.
101. Nominated PMU/contractor staff will be responsible for undertaking a review of all enquiries, complaints and concerns and ensuring progress toward resolution of each matter.

4.2 COMPLAINTS REGISTER AND GRIEVANCE REDRESS MECHANISM

102. During the construction and implementation phases of any project, a person or group of people can be adversely affected, directly or indirectly due to the project activities. The grievances that may arise can be related to social issues such as eligibility criteria and entitlements, disruption of services, temporary or permanent loss of livelihoods and other social and cultural issues. Grievances may also be related to environmental issues such as excessive dust generation, damages to infrastructure due to construction related vibrations or transportation of raw material, noise, traffic congestions, decrease in quality or quantity of private/ public surface/ ground water resources during irrigation rehabilitation, damage to home gardens and agricultural lands etc.
103. Should such a situation arise, there must be a mechanism through which affected parties can resolve such issues in a cordial manner with the project personnel in an efficient, unbiased, transparent, timely and cost-effective manner. To achieve this objective, a grievance redress mechanism has been included in EMSF for this project.
104. The project allows those that have a complaint or that feel aggrieved by the project to be able to communicate their concerns and/or grievances through an appropriate process. The Complaints Register and Grievance Redress Mechanism set out in this EMSF are to be used as part of the project and will provide an accessible, rapid, fair and effective response to concerned stakeholders, especially any vulnerable group who often lack access to formal legal regimes.

105. While recognising that many complaints may be resolved immediately, the Complaints Register and Grievance Redress Mechanism set out in this EMSF encourages mutually acceptable resolution of issues as they arise. The Complaints Register and Grievance Redress Mechanism set out in this EMSF has been designed to:

- be a legitimate process that allows for trust to be built between stakeholder groups and assures stakeholders that their concerns will be assessed in a fair and transparent manner;
- allow simple and streamlined access to the Complaints Register and Grievance Redress Mechanism for all stakeholders and provide adequate assistance for those that may have faced barriers in the past to be able to raise their concerns;
- provide clear and known procedures for each stage of the Grievance Redress Mechanism process, and provides clarity on the types of outcomes available to individuals and groups;
- ensure equitable treatment to all concerned and aggrieved individuals and groups through a consistent, formal approach that, is fair, informed and respectful to a complaint and/or concern;
- to provide a transparent approach, by keeping any aggrieved individual/group informed of the progress of their complaint, the information that was used when assessing their complaint and information about the mechanisms that will be used to address it; and
- enable continuous learning and improvements to the Grievance Redress Mechanism. Through continued assessment, the learnings may reduce potential complaints and grievances.

106. Eligibility criteria for the Grievance Redress Mechanism include:

- Perceived negative economic, social or environmental impact on an individual and/or group, or concern about the potential to cause an impact;
- clearly specified kind of impact that has occurred or has the potential to occur; and explanation of how the project caused or may cause such impact; and
- individual and/or group filing of a complaint and/or grievance is impacted, or at risk of being impacted; or the individual and/or group filing a complaint and/or grievance demonstrates that it has authority from an individual and or group that have been or may potentially be impacted on to represent their interest.

107. Local communities and other interested stakeholders may raise a grievance/complaint at all times to the MET and MoFA. Affected local communities should be informed about the EMSF provisions, including its grievance mechanism and how to make a complaint.

4.2.1 Complaints register

108. Where there is a community issue raised, the following information will be recorded:

109. A complaints register will be established as part of the project to record any concerns raised by the community during construction. Any complaint will be advised to the UNDP and MET and MoFA within 24 hours of receiving the complaint. The complaint will be screened. Following the screening, complaints regarding corrupt practices will be referred to the UNDP for commentary and/or advice along with the MET and MoFA.

110. Wherever possible, the project team will seek to resolve the complaint as soon as possible, and thus avoid escalation of issues. However, where a complaint cannot be readily resolved, then it must be escalated.

111. A summary list of complaints received and their disposition must be published in a report produced every six months.

4.2.2 Grievance mechanism

112. The Grievance Redress Mechanism has been designed to be problem-solving mechanism with voluntary good-faith efforts. The Grievance Redress Mechanism is not a substitute for the legal process. The Grievance Redress Mechanism will as far as practicable, try to resolve complaints and/or

grievances on terms that are mutually acceptable to all parties. When making a complaint and/or grievance, all parties must act at all times, in good faith and should not attempt to delay and or hinder any mutually acceptable resolution.

113. In order to ensure smooth implementation of the Project and timely and effectively addressing of problems that may be encountered during implementation, a robust Grievance Redress Mechanism, which will enable to the Project Authorities to address the grievances of the stakeholders of the Project has been established.
114. All complaints regarding social and environmental issues can be received either orally (to the field staff), by phone, in complaints box or in writing to the UNDP, MET and MoFA or the construction contractor. A key part of the grievance redress mechanism is the requirement for the project proponent and construction contractor to maintain a register of complaints received at the respective project site offices. All complainants shall be treated respectfully, politely and with sensitivity. Every possible effort should be made by the project proponent and construction contractor to resolve the issues referred to in the complaint within their purview. However, there may be certain problems that are more complex and cannot be solved through project-level mechanisms. Such grievances will be referred to the Grievance Redress Committee. It would be responsibility of the MET and MoFA to solve these issues through a sound / robust process.
115. The Grievance Redress Mechanism has been designed to ensure that an individual and/or group are not financially impacted by the process of making a complaint. The Grievance Redress Mechanism will cover any reasonable costs in engaging a suitably qualified person to assist in the preparation of a legitimate complaint and/or grievance. Where a complaint and/or grievance is seen to be ineligible, the Grievance Redress Mechanism will not cover these costs.
116. Information about the Grievance Redress Mechanism and how to make a complaint must be placed at prominent places for the information of the key stakeholders.
117. The Safeguards and Gender Officer in the PMU will be designated as the key officer in charge of the Grievance Redress Mechanism. The Terms of Reference for these positions (as amended from time to time) will have the following key responsibilities:
 - a. coordinate formation of Grievance Redress Committees before the commencement of constructions to resolve issues;
 - b. act as the focal point at the PMU on Grievance Redress issues and facilitate the resolution of issues within the PMU;
 - c. create awareness of the Grievance Redress Mechanism amongst all the stakeholders through public awareness campaigns;
 - d. assist in redress of all grievances by coordinating with the concerned parties;
 - e. maintain information on grievances and redress;
 - f. monitor the activities of MET and MoFA on grievances issues; and
 - g. prepare the progress for monthly/quarterly reports.
118. A two tier Grievance Redress Mechanism structure has been developed to address all complaints in the project. The first trier redress mechanism involves the receipt of a complaint at the Soum and/or Aimag level. The stakeholders are informed of various points of making complaints (if any) and the PMU collect the complaints from these points on a regular basis and record them. This is followed by coordinating with the concerned people to redress the Grievances. The CTA will coordinate the activities at the respective District level to address the grievances and would act as the focal point in this regard. The Community Development Officer of the Local Authority or in the absence of the Community Development Officer, any officer given the responsibility of this would coordinate with the CTA and MET and MoFA in redressing the grievances. The designated officer of the Local Authorities is provided with sufficient training in the procedure of redress to continue such systems in future.
119. The complaints can be made orally (to the field staff), by phone, in complaints box or in writing to the UNDP, MET and MoFA or the Construction Contractor. Complainants may specifically contact the National Project Coordinator and request confidentiality if they have concerns about retaliation. In cases where confidentiality is requested (i.e. not revealing the complainant's identity to UNDP, MET and MoFA

and/or the Construction Contractor). In these cases, the National Project Coordinator will review the complaint, discuss it with the complainant, and determine how best to engage project executing entities while preserving confidentiality for the complainant.

120. As soon as a complaint is received, the CTA would issue an acknowledgement. The officer receiving the complaint should try to obtain relevant basic information regarding the grievance and the complainant and will immediately inform the CTA in the PMU.
121. The PMU will maintain a Complaint / Grievance Redress register at the Aimag Level. Keeping records collected from relevant bodies is the responsibility of PMU.
122. After registering the complaint, the CTA will study the complaint made in detail and forward the complaint to the concerned officer with specific dates for replying and redressing the same. The CTA will hold meetings with the affected persons / complainant and then attempt to find a solution to the complaint received. If necessary, meetings will be held with the concerned affected persons / complainant and the concerned officer to find a solution to the problem and develop plans to redress the grievance. The deliberations of the meetings and decisions taken are recorded. All meetings in connection with the Grievance Redress Mechanism, including the meetings of the Grievance Redress Committee, must be recorded.
123. The resolution at the first tier will be normally be completed within 15 working days and the complaint will be notified of the proposed response through a disclosure form. The resolution process should comply with the requirements of the Grievance Redress Mechanism in that it should, as far as practicable, be informal with all parties acting in good faith. Further, the Grievance Redress Mechanism should, as far as practicable, achieve mutually acceptable outcomes for all parties.
124. Should the grievance be not resolved within this period to the satisfaction of the complainant, the grievance will be referred to the next level of Grievance Redress Mechanism. If the CTA feels that adequate solutions can be established within the next five working days, the officer can decide on retaining the issue at the first level by informing the complainant accordingly. However, if the complainant requests for an immediate transfer to the next level, the matter must be referred to the next tier. In any case, where the issue is not addressed within 20 working days, the matter is referred to the next level.
125. Any grievance related to corruption or any unethical practice should be referred immediately to the Mongolian Office of the Attorney General and the Office of Audit and Investigation within the UNDP in New York.
126. The Grievance Redress Committee formed at every Aimag level would address the grievance in the second tier. A Grievance Redress Committee will be constituted for every Aimag by the circulars issued by the Commissioner of Local Government, who would also be the Chairman of the Committee.
127. The CTA from the PMU will coordinate with the respective Commissioner of Local Government in getting these Committees constituted for each Aimag and get the necessary circulars issued in this regard so that they can be convened whenever required.
128. The Terms of Reference for the Grievance Redress Committee are:
 - a. providing support to the affected persons in solving their problems;
 - b. prioritize grievances and resolve them at the earliest;
 - c. provide information to the PMU and MET and MoFA on serious cases at the earliest opportunity;
 - d. Coordinate with the aggrieved person/group and obtain proper and timely information on the solution worked out for his/her grievance; and
 - e. study the normally occurring grievances and advise PMU, National and District Steering Committee on remedial actions to avoid further occurrences.
129. The Grievance Redress Committee will hold the necessary meetings with the aggrieved party/complainant and the concerned officer and attempt to find a solution acceptable at all levels. The Grievance Redress Committee would record the minutes of the meeting.
130. Grievance Redress Committee will communicate proposed responses to the complainant formally. If the proposed response satisfies the complainant, the response will be implemented and the complaint

closed. In cases where a proposed response is unsatisfactory to the complainant, the Grievance Redress Committee may choose to revise the proposed response to meet the complainant's remaining concerns, or to indicate to the complainant that no other response appears feasible to the Grievance Redress Committee. The complainant may decide to take a legal or any other recourse if s/he is not satisfied with the resolutions due to the deliberations of the three tiers of the grievance redress mechanism.

131. In addition to the project-level and national grievance redress mechanisms, complainants have the option to access UNDP's Accountability Mechanism, with both compliance and grievance functions. The Social and Environmental Compliance Unit investigates allegations that UNDP's Standards, screening procedure or other UNDP social and environmental commitments are not being implemented adequately, and that harm may result to people or the environment. The Social and Environmental Compliance Unit is housed in the Office of Audit and Investigations, and managed by a Lead Compliance Officer. A compliance review is available to any community or individual with concerns about the impacts of a UNDP programme or project. The Social and Environmental Compliance Unit is mandated to independently and impartially investigate valid requests from locally impacted people, and to report its findings and recommendations publicly.
132. The Stakeholder Response Mechanism offers locally affected people an opportunity to work with other stakeholders to resolve concerns about the social and environmental impacts of a UNDP project. Stakeholder Response Mechanism is intended to supplement the proactive stakeholder engagement that is required of UNDP and its Implementing Partners throughout the project cycle. Communities and individuals may request a Stakeholder Response Mechanism process when they have used standard channels for project management and quality assurance, and are not satisfied with the response (in this case the project level grievance redress mechanism). When a valid Stakeholder Response Mechanism request is submitted, UNDP focal points at country, regional and headquarters levels will work with concerned stakeholders and Implementing Partners to address and resolve the concerns. Visit www.undp.org/secu-srm for more details. The relevant form is attached at the end of the EMSF.

5 KEY ENVIRONMENTAL AND SOCIAL INDICATORS

133. This section identifies the key environmental and social indicators identified for the project and outlines respective management objectives, potential impacts, control activities and the environmental performance criteria against which these indicators will be judged (i.e. audited).
134. This section further addresses the need for monitoring and reporting of environmental performance with the aim of communicating the success and failures of control procedures, distinguish issues that require rectification and identify measures that will allow continuous improvement in the processes by which the projects are managed.

5.1 CLIMATE

135. Due to its inland location and mountainous topography the climate of Mongolia is continental, harsh and arid. The climate is characterized by long winters and short summers, large fluctuations in both daily and seasonal temperatures, a relatively high number of cloudless days and low precipitation falling predominantly (85%) in summer.
136. The average annual precipitation is about 250-350 mm in the Khangai, Khentii, and Khuvsgul mountain regions; 150-300 mm in the Mongol Altai area; and 50-150 mm in the Gobi Desert (Figure 3). Most of the country is hot in the summer and extremely cold in the winter, with January averages dropping as low as -30°C. The average annual temperature is between -7.8°C and -8.5°C.

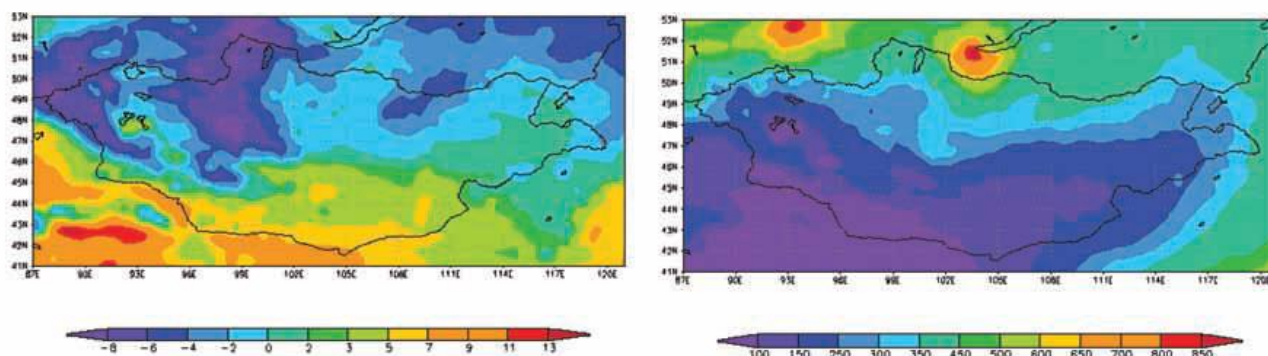


Figure 3 Geographical distribution of annual temperature in °C and annual precipitation in mm²

Temperature:

	UB	Central part	Northern	Eastern part	Western part	Gobi
January	-15 / -32	-10 / -22	-17 / -30	-15 / -27	-18 / -30	-11 / -24
August	8 / 22	8 / 20	8 / 22	11 / 24	9 / 23	9 / 23

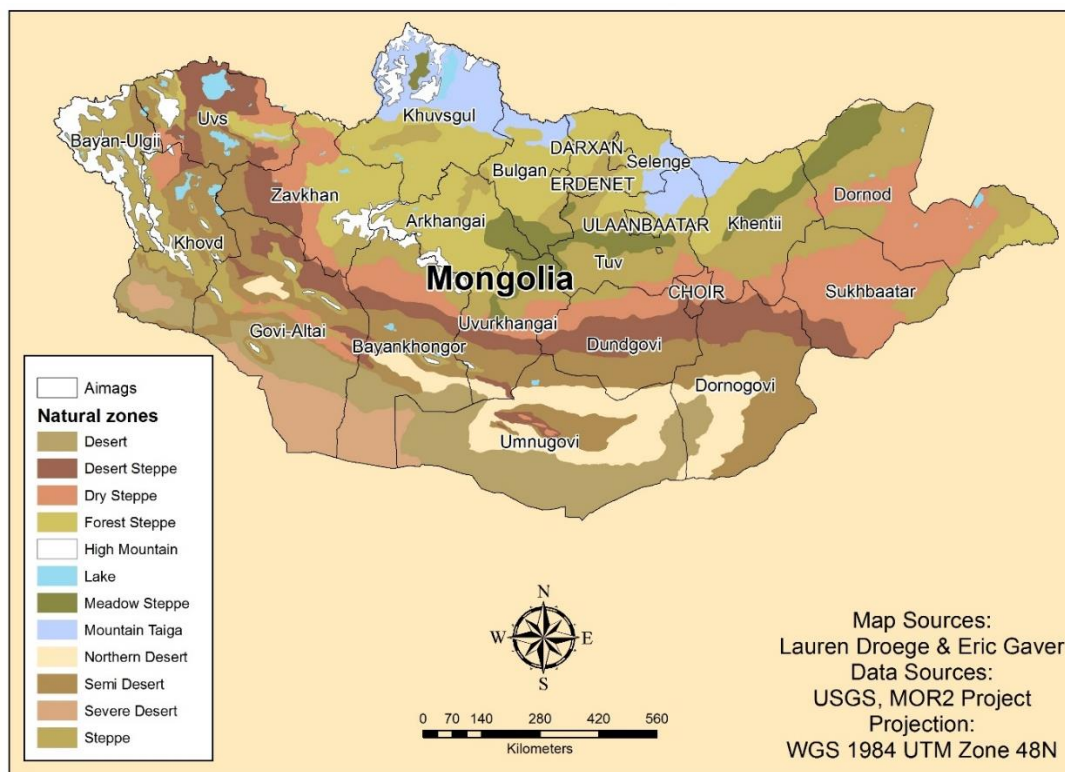
Table 5 Maximum and minimum temperatures for different parts of Mongolia

² Ministry of Environment and Green Development (2013) Integrated Water Management Plan of Mongolia

5.2 ECOLOGY

5.2.1 Background

137. In physical geography, a steppe (grassland) is an ecoregion, in the montane grasslands and shrublands and temperate grasslands, savannas, and shrublands biomes, characterized by grassland plains without trees apart from those near rivers and lakes. The term is also used to denote the climate encountered in regions too dry to support a forest, but not dry enough to be a desert.
138. Most of the country is steppe and as a result livestock grazing is the main activity and source of support for countryside people. Nomadic herders tend mixed herds of sheep, goats, horses, cows, yaks or camels; the people of the Mongolian steppe have been dependent on nomadic livestock grazing for over 3000 years
139. In Mongolia, healthy rangelands can contribute to the resilience of livestock production and the herder community in the face of drought and natural disasters. Healthy rangelands promote greater overall forage and better nutrition for animals. In addition to increasing animal production, healthy rangelands promote well-fed, healthy animals coming into winter that are better able to survive dzuds.³
140. The Mongolian-Manchurian grassland covers an area of 887,300 square kilometers. The Palearctic temperate grasslands, savannas, and shrublands ecoregion of the Temperate grasslands, savannas, and shrublands biome, forms a large crescent around the Gobi Desert, extending across central and eastern Mongolia into the eastern portion of Inner Mongolia and eastern and central Manchuria, and then southwest across the North China Plain. This ecoregion supports a diverse grassland community with small populations of wild ungulates such as the Mongolian gazelle.
141. To the northeast and north, the Selenge-Orkhon and Daurian forest steppes form a transition zone between the grassland and the forests of Siberia to the north. The dominant flora consists of medium to tall grasslands, dominated by feather grass (*Stipa baicalensis*, *S. capillata*, and *S. grandis*), sheep's fescue (*Festuca ovina*), *Aneurolepidium chinense*, *Filifolium sibiricum*, and *Cleistogenes squarrosa*. The drier regions surrounding the Gobi host drought-tolerant grasses, together with forbs and low, spiny shrubs.



³ https://jornada.nmsu.edu/files/Mongolia-Rangeland-health-Report_EN.pdf

Figure 4 Natural Zones of Mongolia

5.2.2 Upland ecosystem types – Steppe Grasslands

142. The *Dry Steppe*, *Moderately Dry Steppe* and *Meadow Steppe* compose the great grasslands of Mongolia's Eastern Steppe. Characteristic animal species include: Mongolian gazelle, Marmot, Great bustard, Steppe eagle, Saker falcon, Mongolian lark.
143. The grassland steppes have been heavily grazed over the centuries, and this has had serious implications for the structure, composition, and ecological function (nutrient cycling, succession, disturbance regimes) of the system. Overgrazed areas are indicated by high densities of *Cleistogenes squarrosa*, *Carex duriuscula*, and some prostrate forbs, replacing less resilient grasses. The most severe degradation could steer some sites toward complete type conversion to annual vegetation without grasses.

5.2.2.1 Dry Steppe

144. This grassland system occurs in flat or gently sloping valleys the lower elevations of the study area, 550 – 1200 meters above sea level. The dry steppe ecosystem forms a landscape mosaic of grass communities that are characterized by *Stipa krylovii*, *Stipa grandis*, *Agropyron cristatum*, *Cleistogenes squarosa*, *Elymus chinensis*, shrubs such as *Caragana* and *Anabasis* species, and forbs which are well adapted to arid conditions.
145. In moderately grazed areas, grass species are commonly replaced by *Artemisia*. Heavily grazed areas or areas recovering from droughts will be dominated by annual forbs mainly by *Chenopodium* spp, and *Bassia dasyphylla*. In closed basins, the dry steppe mosaic includes patchy salty depressions characterized by *Achnatherum* spp, *Reamuria*, *Salsola*, *Nitraria* and *Allium* (mainly *A. scenescens* A. *mongolicum*) at the edges. In small rolling hills, there are sparse patches of *Populus*, *Betula*, and *Salix*.

5.2.2.2 Moderately Dry Steppe

146. Like the Dry Steppe, this grassland system occurs in flat or gently sloping valleys, but at slightly higher elevations, from 550 – 1600 meters above sea level. The mosaic of plant communities include *Stipa*, *Festuca*, *Agropyron*, *Cleistogenes*, *Poa*, *Elymus*, *Koeleria* species and other grasses in shifting proportions depending on the subregion of occurrence, soil moisture, level of grazing, and other factors. One community dominated by *Filifolium sibiricum* and *Stipa baicalensis* typifies this ecosystem type in the very northeast. Another widely occurring community is typified by the tall grasses *Stipa grandis* and *Elymus chinensis*. *Caragana* shrubs shift in community importance across the steppe region, but favor drier sites and coarser soils; less dry sites share many forbs with the upland meadow steppe, and are often underlain by a darker kastanozem with a thicker, strongly organic upper horizon than drier examples.

5.2.2.3 Meadow Steppe

147. This meadow system often occurs at hilly landscapes at elevations just below the forest steppe, from lows of about 650 meters in the northeast of the study area, to more than 1700 meters in the south and west. Meadow Steppe represents a transition zone between forest and forest steppe systems and the vast areas of drier grasslands in the Mongolian-Manchurian Grassland Ecoregion. Broad occurrences of this system type also occur in the Pre-Khyangan foothills of eastern Mongolia and on the high hills of the upper Orkhon and Tarnyn Gol watersheds in the very west of the region. Annual precipitation, approximately 300mm, is high enough to support only small scattered occurrences of trees (*Ulmus* and *Betulus* species), but do support vegetation communities rich in forbs, sedges, and mesophytic grasses and shrubs. A relatively moister variant occurs at higher elevations and on northern slopes, and a drier variant at lower elevation and on warmer exposures with shallower soils. *Festuca lenensis* and *F. sibirica*, *Poa attenuata*, and *Helictotrichon schellianum* are well- represented. The wide variety of forbs make this a botanically diverse system, including species from the *Artemesia*, *Thalictrum*, *Aster*, *Polygonum*, *Potentilla*, *Carex*, and *Gallium* genera. Some of these are characteristic of larch forests or elm bush, indicating that much of this system may well have been converted from forests by cutting and overgrazing – and that a return to a more wooded system would be possible if tree cutting and grazing were limited.

5.2.2.4 Desert Steppe

148. The Desert Steppe ecosystem type covers 2% of the study area at its southern edge, where it represents a transitional zone between the Mongolian-Manchurian Grassland Ecoregion and the Eastern Gobi Desert Steppe Ecoregion.

149. This ecosystem type is characteristic of Eastern Gobi Desert Steppe Ecoregion, which lies between the Alashan Plateau Semi-Desert and the relatively moist Mongolian-Manchurian Grasslands. The vegetation tends to be homogenous, consisting of drought-adapted shrubs and thinly distributed low grasses.

5.2.3 Other upland ecosystem types

5.2.3.1 Sand Massives

150. This dynamic sand dune system is stabilized to varying degrees by patchy embedded vegetation including willows, elm and psammophytic forbs and grasses. Species include *Filifolium sibiricum*, *Stipa baicalensis*, *koeleria mukdenesis*, *Cleistogenes kitagawae*, *Armeniaca sibirica*, *Ulmus japonicas*, *Iris dichotomoa*, *Hemerocallis minor*, *Leymus chinensis*, *Bupleurum sorzonerifolium*, *Galium verum*. Hollows formed between dunes capture significant amounts of blowing debris and can sustain moisture from trapped snow drifts – thereby providing microhabitats conducive to more mesic vegetation communities than would otherwise be found in typical dune habitats. Dunes formed by trees and shrubs essentially anchoring the sand mounds can provide essential habitat for numerous burrowing animals that rely on the structural stability provided by the root systems within the dunes.

5.2.3.2 Cinder Cones

151. Cinder cones are historic inactive volcanic vents. Rich volcanic soils greatly increase plant diversity beyond the surrounding grassland steppe ecosystems, and support 28 botanical families, 75 genera and 180 species of both forage and medicinal plants. Cinder cones provide critical habitat for numerous small mammals, reptiles and bird species while also supporting a wide variety of predators, including wolf, foxes and raptors. Ungulates such as Argali sheep and many rodent species can be found on the cones themselves, with Gazelle and Marmots in the valley floors between them. Evidence of the importance of these formations to humans are the “man-stones”. One cinder cone has already been designated as a Special Protected Area to protect these historic artifacts.

5.2.3.3 Boreal Forest:

152. The following six Montane and Alpine Boreal Forest ecosystem types are described in the National Gap Assessment published by WWF (2010).

- High mountain tundra
- Alpine meadow and sub-alpine woodland
- High mountain steppe
- Mountainous boreal coniferous forest
- High mountain deciduous-coniferous woodland
- Sub-boreal coniferous-deciduous forest

5.2.4 Lake and wetland ecosystem types

5.2.4.1 Large River Floodplains

153. The large rivers and major tributaries often create wide floodplains. Historically, these floodplains support a broadleaf forest of riverine trees and shrubs. In the absence of overgrazing by domestic livestock or physical disturbance by natural flooding or scouring, succession to gallery *Salix* shrubs is likely. Species of poplar, birch, and larch are most common in the tree layer, and of willow in the shrub layer. Forbs and grasses typically associated with moist or periodically moist sites can be dense below the trees. Floodplains systems are productive, critical habitat for many terrestrial and aquatic species

and critical for maintaining water quality, and are easily damaged by over-grazing, mining and infrastructure development.

5.2.4.2 Small river riparian areas:

154. This system forms a linear pattern of wet meadows along streams that drain into the major rivers.
155. Soils are cryic gleysols or semi-gleysols, depending on the amount of available groundwater and the length of time the soil stays moist, and are predominantly alluvial, of varying textures, with high organic matter. Vegetation cover is dense and diverse and plant productivity is high with graminoids (*Poa pratensis*, *Agrostis mongholica*, *Hordeum brevisubulatum*, *Phragmites*, *Carex*, *Eriophorum*, *Puccinellia*, and *Juncus* species) and forbs (Iris, Geranium, Vicia, Ranunculus, Polygonum, Sanguisorba, and many others). *Betula*, larch poplar and especially *Salix* shrubs and small trees can also occur in the system. In the absence of overgrazing by domestic livestock or physical disturbance by natural flooding or scouring, succession to gallery *Salix* shrubs is likely.

5.2.4.3 Ephemeral wet depressions:

156. In the dry, closed basins in the southern part of the study area, this system forms in low depressions where the water table is close to the surface. Salty soils support distinct plant communities and habitat. One common indicator plant community is identified by tall *Achnatherum* bunchgrass.

5.2.4.4 Large Lakes:

157. These are the large lakes in the study area, as mapped by Vostokova and Gunin (2005). The largest examples include Buul Nuur, Yahi Nuur and Khukh Nuur. These Lakes and associated wetlands support unique aquatic biota and are critical nesting and stopover for waterbirds including the Siberian Crane (CR), White Naped Crane (VU), Hooded Crane (VU), Swan Goose (VU), Great Bustard and Relict Gull (VU) (Nyambayar & Tsveenmyadag 2009).

5.2.4.5 Small lakes and water bodies:

158. In the dry closed basins in the southern part of the study area, these small waterbodies are often saline or alkaline. Like large lakes, these water bodies and associated wetlands typically support distinct aquatic biota and are critical nesting and stopover habitat for waterbirds.

5.2.5 Ramsar wetlands

159. Mongolia currently has 11 sites designated as Wetlands of International Importance (Ramsar sites) (Figure 5). The convention entered into force in Mongolia on 8 April 1998.



Figure 5 Ramsar sites in Mongolia

160. The five Ramsar sites that lie within the target aimags are:

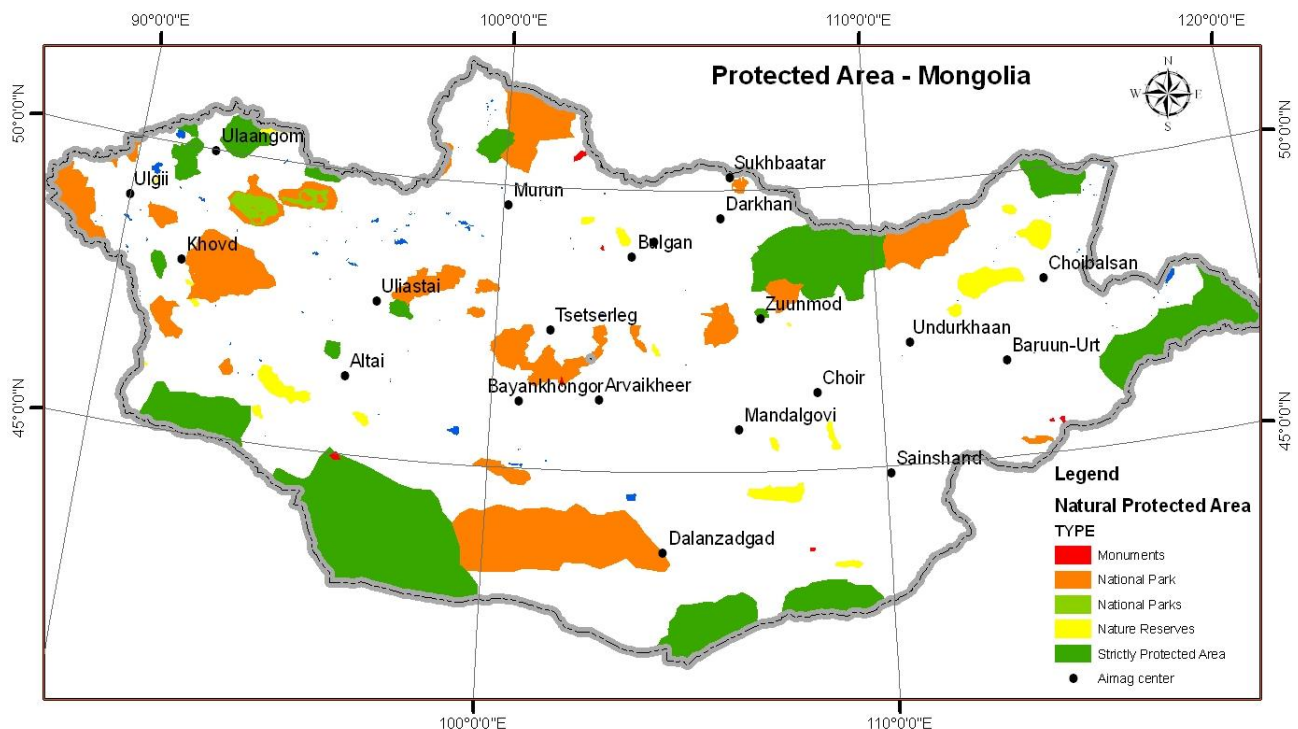
- Mongol Daguur - a steppe and wetland region listed as a UNESCO World Biosphere Reserve and Ramsar site. The area is categorised as a Strictly Protected Area within the framework of protected areas in Mongolia. It has a IUN category 1b (wilderness area)
- Buir Lake - a freshwater lake that straddles the border between Mongolia and China.
- Airag Lake lies in the Great Lakes Depression as part of a system of interconnected lakes.
- Khar-Us Lake – in the upper lake in a system of interconnected lakes (the Great Lakes Depression), which includes Airag. The primary inflow is the Khovd River.
- Ganga Lake - a saltwater lake located in Dariganga soum in Sukhbaatar. The lake lies on the transition zone between the southern steppes and the Gobi desert. The lake and its wetlands is an important breeding and resting area for endangered migratory birds.

5.2.6 Protected areas

Protected areas are classified into four categories (Figure 6). In order of importance they are:

- **Strictly Protected Areas** (pink) - Very fragile areas of great importance; hunting, logging and development is strictly prohibited and there is no established human influence.
- **National Parks** (blue) Places of historical and educational interests; fishing and grazing by nomadic people is allowed and parts of the park are developed for ecotourism.
- **Natural and Historical Monuments** (purple) - Important places of historical and cultural interests; development is allowed within guidelines.
- **Natural Reserves** (green) - Less important regions protecting rare species of flora and fauna, and archeological sites; some development is allowed within certain guidelines.

The protected areas in each of the target aimags are described below.⁴



⁴ https://www.legendtour.ru/eng/mongolia/informations/flora_and_fauna.shtml

Figure 6 Protected areas in Mongolia.

5.2.6.1 *Protected areas in Khovd aimag:*

- **Bulgan Gol Natural Reserve** (1,840 ha). On the south-western border with China, it was established to help preserve mink (beavers), sable and stone marten.
- **Great Gobi Strictly Protected Area** (also known as 'Gobi B'). Created to protect khulan (wild ass), gazelles, jerboas and takhi (wild horses).
- **Khar Us Nuur National Park** (850,272 ha). Protects the breeding grounds for antelopes and rare species of migratory pelicans, falcons and bustards.
- **Khokh Serkh Strictly Protected Area** (65,920 ha). On the north-west border with Bayan Olgii. helps protect argali sheep, ibex and snow leopards.
- **Mankhan Natural Reserve Directly**. South-east of Khovd city, preserves an endangered species of antelope.
- **Tsambagarav Uul National Park** (110,960 ha). Established in 2000, on the border with Bayan-Olgii. It protects the snow leopard habitat.

5.2.6.2 *Protected areas in Dornod:*

- **Dornod Mongol** (570,374 ha). The region was made into a preservation area under a resolution of the State Baga Khural in 1992 with the purpose of protecting the Khyalganat ecosystem and the habitat of white antelopes. This area covers 570,300 hectares of land, including Matad, Khalkh-Gol and Erdenetsagaan soums. There are sand hills and beautiful legendary mountains in the area, as well as 153 species of flora and 26 kinds of mammals. Some rare birds, like falcons, fly through the area during their migrations.
- **Nomrog (Numrug Preserve)** (311,205 ha). This preservation area covers 311,200 ha of land in the woody and steppe regions of the Khyangan mountain ranges along the border. It was established in 1992 with the purpose of protecting flora and fauna, as well as the watersheds. The area is home to some rare species of reindeer, snakes, moles, otters, brown bears, wild ducks, eagles, falcons, cranes and condors.
- **Mongol Daguur** (103,016 ha). In 1992 this region was made into a preservation area with the purpose of protecting the natural environment, the steppe, the waterways and swampy areas where flora and fauna abound, especially migrating and aquatic birds, and for conducting research. It was expanded into the joint Mongolia-Russia-China Daguur preservation area in 1994 and was included in the international network of areas for the protection of Northeast Asian cranes. The preservation area covers 103,000 ha of land, including Chuluunkhoroot, Dashbalbar and Gurvanzagal soums. Black, white and other kinds of rare Northeast Asian cranes lay their eggs here and gather in large numbers during migrations.
- **The Yakhi Lake National Park**. This region was made into a preservation area in 1998 with the purpose of protecting the land through which white antelopes and aquatic birds pass. There are 251,388 ha of land covering the areas near the borders of Choibalsan, Sergelen and Gurvanzagal soums that are part of this preservation area. There are numerous species of animals such as white antelopes, wolves, marmots and steppe foxes, as well as migratory and sedentary birds and magnificent landscapes featuring rocky hills, valleys and mountains.
- **Ugtam Mountain National Park**. The Ugtam Mountain region was made into a preservation area in 1993 with the purpose of protecting the natural environment and its flora and fauna. This mountain lies in Bayandun and Dashbalbar soums.
- **Toson Khulstai National Park**. Surrounding Toson Khulstai Lake, this 470,000 ha area in Tsagaan-Ovoo, Khulunbuir and Bayantumen soums was made into a preservation area in 1998 as the main reserve for white antelopes. There are rare herbs in the area such as prickled roses, orchids and the

Siberian stipa gobica, as well as numerous plant species and rare cranes, steppe bustards and hedgehogs.

5.2.7 Flora and Fauna

161. Mongolia's flora includes almost 150 endemic plants and nearly 100 relic species. Over 100 plant species are listed in the Mongolian Red Book as rare or endangered. Like its vegetation, fauna of Mongolia represents a mixture of species from the northern taiga of Siberia, the steppe and the deserts of Central Asia. Fauna includes 136 species of mammals, 436 birds, 8 amphibians, 22 reptiles, 75 fish and numerous invertebrates.
162. Species endemic to Central Asia are found primarily in the Gobi and desert steppe including the Mongolian subspecies of the Saiga antelope (*Tatarica mongolica*), four species of jerboa and a vole that are endemic to Central Asia. The birds include the Altai Snowcock (*Tetraogallus altaicus*) and Kozlov's accentor (*Prunella kozlovi*). Reptiles endemic to Central Asia include eight species. Endemic fish include the Altai Osman Oreoloeuciscus potanini and the Mongolian grayling (*Thymallus brevirostris*). Numerous globally threatened and endangered species occur in Mongolia.

5.2.7.1 Mongolian flora

163. There are three distinct types of ecosystem related to flora - grassland and shrubs (52% of land surface), forests (15%) and desert vegetation (32%). Crop cultivation and human settlements make up less than 1% of Mongolia's territory.
164. **Forests** - The natural regeneration of Mongolian forests is slow and the forests are often damaged by fires and insects due to the harsh climate. 8.1% of Mongolia's territory is covered by forest totaling 140 species of trees, shrubs and woody plants. Trees are used as a source of fuel, whether it is the larch, pine or birch in the north or the saxaul in the Gobi Desert. Timber is cut in the north of the country for building.
165. **Vascular and Lower Plants** - There are 2823 species of vascular plants, 445 species of moss, 930 species of lichen, 900 species of fungi and 1236 species of algae. 845 species of plants are used in Mongolian medicine, 1000 species for fodder, 173 for food and 64 for industry. There are now 128 species of plant listed as endangered and threatened in the 1997 Mongolian Red Book. These include 75 medicinal species, 11 for food and 16 used in industry.

5.2.7.2 Mongolian fauna

166. There are 133 mammals in Mongolia, many of which are endemic to Central Asia and Mongolia, including the Mongolian Vole, Mongolian Gerbil, Gobi Jerboa, Kozlov's Pygmy Jerboa, Mongolian Jerboa and the Mongolian Hamster. The white-tailed gazelle, Saiga Antelope, Przewalski horse, Beaver and Siberian Ibex have been re-introduced to the areas where they have become rare.
167. Mongolia is home to over 400 species of birds. The most common bird in Mongolia is the grey demoiselle cranes. Other steppe species include varieties of hoopoes, vulture, upland buzzard, steppe eagle, saker falcon, black kite, owls and hawks. In the mountains there are species of ptarmigan, finch, woodpecker, owl and the endemic Altai snowcock. The lakes of the west and north are visited by Dalmatian pelicans, hooded cranes, relict gulls, and bar-headed geese. Eastern Mongolia has the largest breeding population of cranes, including the hooded and Siberian varieties and the critically endangered white-naped crane, of which only 4500 remain in the wild.
168. Rivers such as the Selenge, Orkhon, Zavkhan, Balj, Onon and Egiin, as well as dozens of lakes, including Khovsgol Nuur, hold about 380 species of fish. They include trout, grayling (*khadran*), roach, lenok (*eebge*), Siberian sturgeon, pike, perch, the endemic Altai osman and the enormous taimen, a Siberian relative of the salmon, which can grow up to 1.5m long and weigh 50kg.

5.2.8 Endangered Species

169. There are 28 species of mammals that are endangered found in Mongolia. The more commonly known species are the wild ass, wild camel, Gobi argali sheep, Gobi bear, ibex and the black-tailed gazelle; others include otters, wolves, antelopes and jerboas.

170. There are 59 species of endangered birds, including many species of hawk, falcon, buzzard, crane and owl. The white-naped crane is threatened with extinction. The takhi - also known as Przewalski's horse - was actually extinct in the 1960s. It was successfully reintroduced into two national parks after an extensive breeding program overseas. In preserved areas of the mountains, about 1000 snow leopards remain.

5.2.9 Performance Criteria

171. The following performance criteria are set for the construction of the projects:

- no clearance of vegetation outside of the designated clearing boundaries;
- no death to native fauna as a result of project activities;
- no deleterious impacts on aquatic environments and terrestrial habitats;
- no introduction of new weed species as a result of construction activities ; and
- no increase in existing weed proliferation within or outside of any project footprint as a result of construction activities.

5.2.10 Monitoring

172. A flora and fauna monitoring program will be implemented (Table 6).

173. Weed monitoring will be undertaken and appropriate action taken in the event of alien or noxious species being identified.

174. The delivery organisation will when undertaking works, will compile a weekly report to MET and MoFA outlining:

- any non-conformances to this EMSF;
- the areas that have been rehabilitated during the preceding week; and
- details of the corrective action undertaken.

5.2.11 Reporting

175. All flora and fauna monitoring results and/or incidents will be tabulated and reported as outlined in the EMSF. The MET and MoFA must be notified in the event of any suspected instances of death to native fauna and where vegetation is detrimentally impacted.

Table 6 Flora and Fauna Management Measures

Issue	Control Activity (and Source)	Action Timing	Responsibility	Monitoring and Reporting
FF1. Habitat loss and disturbance of fauna	FF1.1 Limit vegetation clearing and minimise habitat disturbance through adequate protection and management of retained vegetation.	During construction	Field Officer	Daily and maintain records
	FF1.2: Minimise noise levels and lighting intrusion throughout construction and operation in the vicinity of any sensitive locations.	During construction	Field Officer	Daily and maintain records
	FF1.3: Ensure that all site personnel are made aware of sensitive fauna/habitat areas and the requirements for the protection of these areas.	During construction	Contractor	Daily and maintain records
	FF1.4 Minimise disturbance to on-site fauna and recover and rescue any injured or orphaned fauna during construction and operation.	During construction	Contractor	Daily and maintain records, report
FF2. Introduced flora and weed species	FF2.1: Implement an ESCP to reduce the spread of weeds through erosion and sediment entering any waterways and therefore spreading.	Pre and during construction	Contractor	Maintain records
	FF2.2: Revegetate disturbed areas using native and locally endemic species that have high habitat value.	During construction	Field Officer	As required and maintain records
	FF2.3: Minimise disturbance to mature remnant vegetation, particularly canopy trees.	During construction	Field Officer	Daily and maintain records
	FF2.4: Seed is to be weed free	Operation	Field Officer	Maintain records
FF3. Migratory paths and access to resources	FF3.1 Ensure that native fauna continue to have access to necessary resources eg pasture, lakes etc. Any fencing should not exclude native fauna to critical resources.	Construction / Operation	MET	Maintain records

5.3 GROUNDWATER

5.3.1 Background

5.3.1.1 Geology

176. The underlying geology of Mongolia is shown in Figure 7.

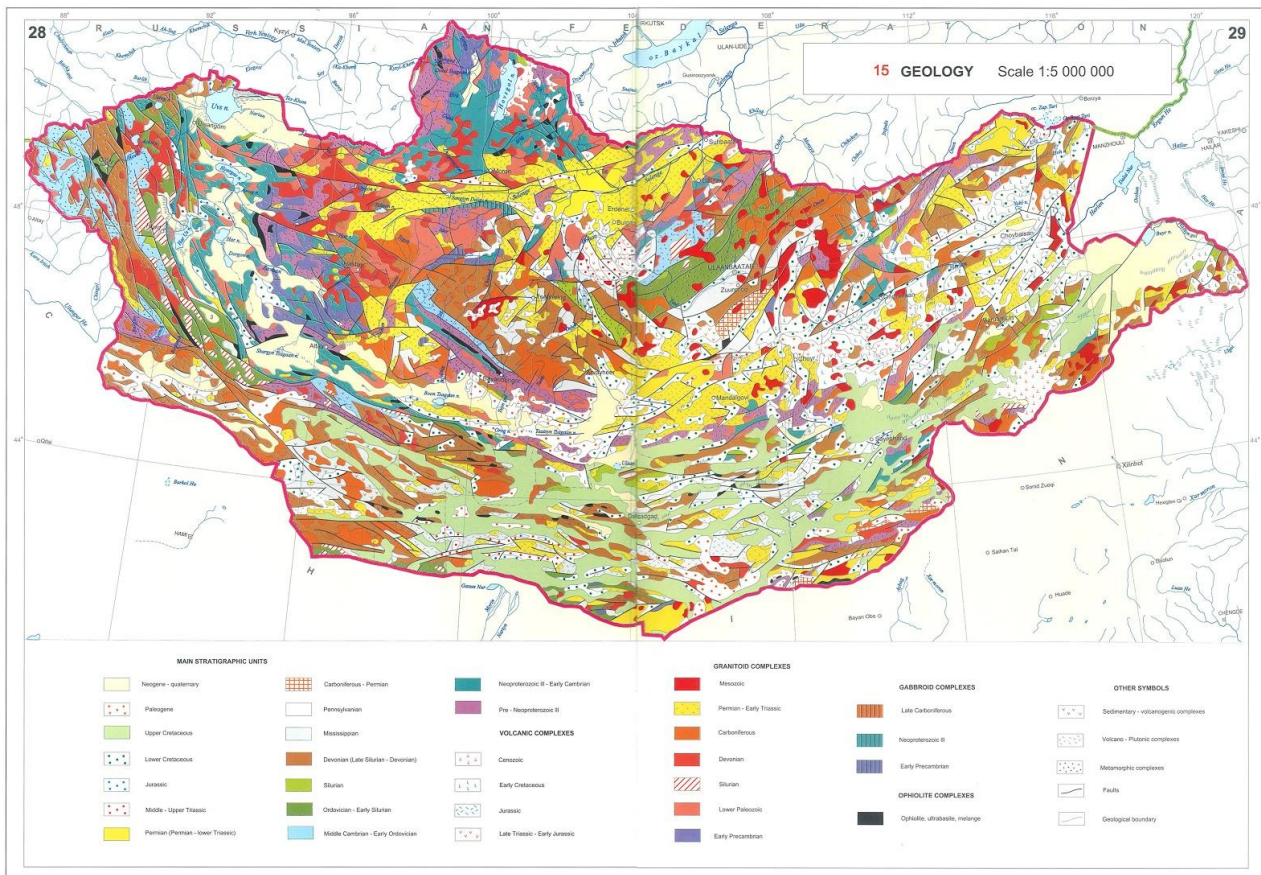


Figure 7 Geology of Mongolia

5.3.1.2 Groundwater

177. The hydrogeological map of Mongolia differentiates between (1) Basement complexes consisting of metamorphic and crystalline rocks of the Precambrian, and oceanic and volcanic rocks of the Paleozoic and (2) Platform cover with “enclosing or covering layers” of Permian, Mesozoic or Cenozoic age.

178. Groundwater is abstracted from two types of aquifers: fissured and granular. The highest yielding aquifers are the granular aquifers of the Quaternary alluvial sediments situated along river valleys. Where these sediments do not exist or where recharge is insufficient groundwater is abstracted from fissured aquifers, the Cretaceous sediments being the most important⁵.

179. Project specific groundwater studies have not been undertaken, however there have been a number of studies done that provide insight into groundwater conditions.

180. Renewable groundwater resources in Mongolia are limited. The main exploitable groundwater resources and groundwater reserves are fossil and vulnerable eg in the Gobi and Steppe dry areas of Mongolia.

⁵ Ministry of Environment and Green Development (2013) Integrated Water Management Plan of Mongolia

181. Groundwater recharge and balance depends on climatic condition and the aquifer. Shallow groundwater consists mainly of granular aquifers in river beds and depressions and is recharged from infiltration by rain fall. Rain water percolates into the upper aquifers and is discharged to springs; feeds vegetation, ponds or temporary lakes; or is abstracted by shallow wells. A small portion percolates to the deep aquifers. The deep aquifers are the permeable rock sections from which groundwater can be abstracted. In the deep aquifers located fossil water with ages from 1,000-35,000 years old can occur, for example the groundwater in Dornod province has been measured at 1,000 years old. The age of groundwater differs by region.

5.3.1 Performance Criteria

182. The following performance criteria are set for the project:

- no significant decrease in the quality and quantity of groundwater as a result of construction and operational activities in proximity to the projects;
- effective implementation of site-specific EDSCPs and other measures to protect groundwater.

183. By following the management measures set out in the EMSF the project will not have a significant impact on water quality across the broader area.

5.3.2 Monitoring

184. Refer to Table 7 for the monitoring requirements for groundwater.

185. During the project groundwater quality should be assessed initially and then at least annually. Initial assessment should cover a wide range of parameters (eg depth to water, pH, DO, conductivity, nitrates, phosphates, faecal coliforms, heavy metals, turbidity, hydrocarbons) to provide a baseline and to confirm suitability for intended use. Subsequent monitoring parameters will be determined on need.

186. Ongoing monitoring should form part of the operation of the boreholes.

5.3.3 Reporting

187. All water quality monitoring results and/or incidents will be tabulated and reported as outlined in the EMSF. The MET and MoFA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to water quality is exceeded.

Table 7 Groundwater management measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
GW 1: Increase of gross pollutants, hydrocarbons, metals and other chemical pollutants into the groundwater and/or surface water environment.	GW1.1: Conduct regular surface and groundwater quality monitoring in location where the groundwater is likely to be impacted, including assessing the changes to groundwater quality.	Construction and operation phase	Field Officer	Initial testing and as required with reporting to MET and MoFA and UNDP
	GW1.2: Prevent contaminated surface water from entering aquifers via boreholes and wells - protect from runoff and flooding and keep surrounds clean.	All phases	All Personnel	Weekly
	GW1.3: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	Entire construction and operation phase	All Personnel	Maintain records with reporting to MET and MoFA and UNDP
	GW1.4: Check all vehicles, equipment and material storage areas daily for possible fuel, oil and chemical leaks. Undertake refuelling at designated places away from water systems.	All phases	All Personnel	Daily and maintain records
	GW 1.5: Minimise the use of herbicides and use only biodegradable herbicides that have minimal impact on water quality and fauna. Use only as per directions	All phases	All Personnel	Maintain records

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
GW2: groundwater quality and quantity	GW2.1: Confirm suitability of water quality for intended use.	Construction and operation	MET	Initial testing and then as required. Reporting to MET.
	GW2.2: Determine age and likely recharge of groundwater resource to identify sustainability of use. Pump tests should be undertaken to ascertain sustainable flow rates.	Construction	MET	Maintain records
	GW2.3: Monitor groundwater levels to ensure over extraction does not occur	Operation	MET	Annually. Maintain records.

5.4 SURFACE WATER

5.4.1 Background

5.4.1.1 Rivers

188. The surface water resources of Mongolia comprise rivers, lakes, springs and glaciers. The total volume of fresh surface water is estimated at about 535 km³. Additional 90 km² surface water is stored in saline and brackish lakes.
189. The surface water resources are unevenly distributed over the country. In the northern and central part of the country the river network is denser than in the rest of the country. About seventy percent of all the surface water resources is formed in the mountain ranges, which occupy only thirty percent of the country. Figure 14 shows the network of all permanent rivers in Mongolia.
190. The surface water resources of Mongolia are monitored by IMHE with a hydrological gauging network of 126 permanent gauging stations at 110 rivers and 16 lakes. The longest records go back to 1942.

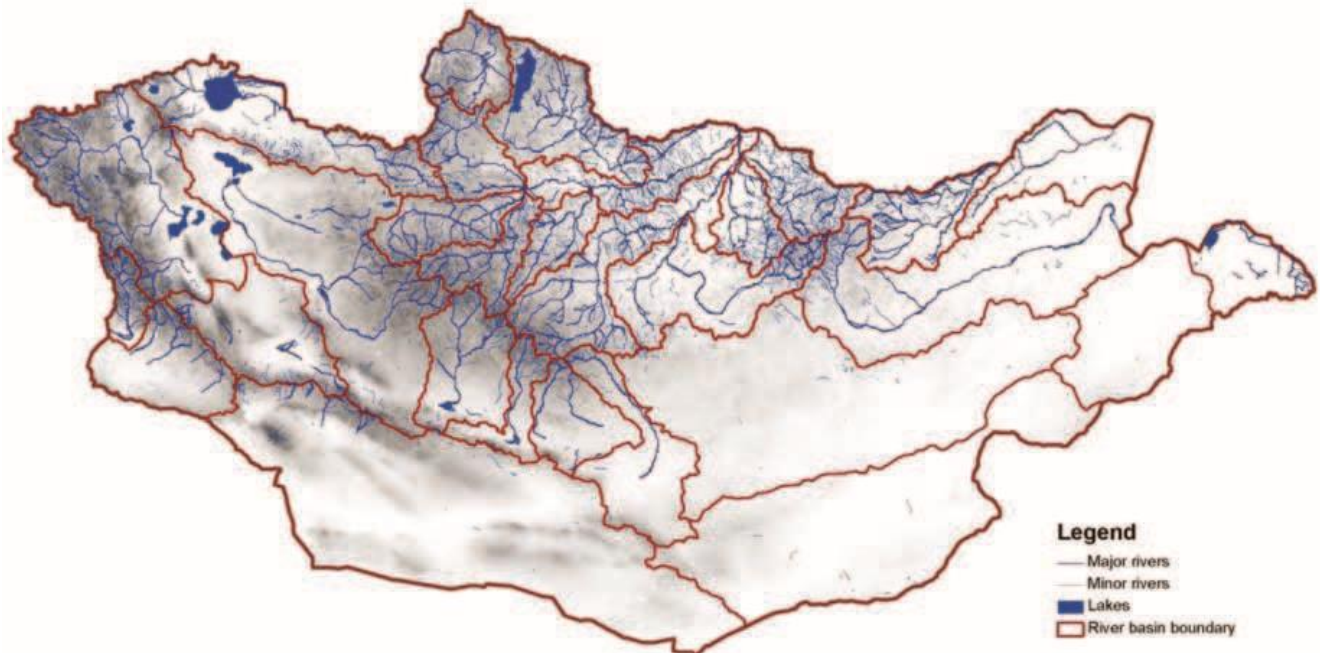


Figure 8 Surface water network of Mongolia

191. The runoff of the Mongolian rivers varies significantly from year to year and also varies over the year. During the year a distinction is made between a spring, a summer and a winter flow regime.
192. The spring flow originates from snow and ice melt. Depending on the altitude it starts from the end of March to the end of April. The spring flow is succeeded by a low flow period in June. River regimes also differ geographically according to the timing of snow and glacier melt and their relative contribution to the formation of the runoff.
193. The summer flow, the largest flow, is generated by the rainfall in July and August and may continue until the end of September. After this month rainfall quantities decrease substantially and river flows recede until November when the water starts to freeze and the winter low flow period commences. In shallow rivers the water may freeze to the river bottom and river flow comes to a halt, until the spring melt.

5.4.1.2 Lakes

194. The lakes in Mongolia cover only 0.4% of the territory but store a significant volume of water. The lakes can be distinguished in fresh water lakes and brackish water lakes.

195. The fresh water lakes have an outlet and the water is refreshed by inflow. The total volume of the fresh water lakes is 500, 000 GL. Approximately 75% of all the fresh water resources is stored in the lakes. By far the largest is Lake Khuvsgul that stores threequarter of this water volume (380,000 GL). Other large fresh water lakes are Buir Lake, Khar Lake and Khar-Us Lake. The brackish lakes have no outlet and concentrations of dissolved solids increase over time due to evaporation of the water. The total volume of the Mongolian brackish water lakes is 90, 000 GL. The largest brackish water lakes are Uvs Lake and Khyargas Lake. Both fresh and brackish water lakes provide unique habitats for flora and fauna and are therefore protected.

5.4.1.3 *Glaciers, snow and permafrost*

196. Estimates made in the past showed that Mongolia had 262 glaciers, with a total surface area of 659 km². The glaciers are a reliable source of water for the rivers running from the Altai, Khangai and Olgontenger Mountains. The melting ice provides a permanent minimum flow.

197. Snow volumes in winter are relatively small. Nevertheless, melting snow forms the main contribution to the runoff in spring when rainfall is still scarce. Snow is also important as a source of drinking water for livestock and wild animals in winter.

198. Permafrost is found in the northern part of Mongolia.

5.4.2 **Target Areas**

199. **Khovd aimag** is almost cut in half by the mighty Mongol Altai Nuur range; away from the mountains the land is a barren semi-desert dotted with salt lakes and smaller mountains. There are the Khovd, Bulgan, Buyant, Bodonch, Tsenkher rivers. Khar Us, Khar nuur, and Durgun are the biggest lakes.

200. **Sukhbaatar aimag** is situated in the eastern part of Mongolia. The territory is hilly, predominantly steppe. In the province there are 220 dead volcanos, such as Shiliin Bogda, Zotolkhan, Altan ovoo, Ayabadar, Asgat, Senjitiin Undur, Dosh, Ganga, Tsagaan ovoo and Nart. 20 springs are found in the territory of the aimag, such as Dalai bulag, Arnuur, Talbulag, Dashin and Ereen tolgoi. Lakes of Ganga nuur, Duut, Dosh are popular destinations. North and north- western part of the territory has brown soil, and the soil of the eastern part is pale, and brown. The South of the territory is semi-desert (sand deserts), and other parts of the territory is mainly steppe.

201. **Dornod aimag**: Onon, Kherulen, Khaikh, Uuiz are the biggest rivers. Numerous lakes could be found in Dornod, such as Khukh, Galuut, Bayan, Bulan and Buir. The Buir lake is the biggest, fresh water lake, others are salt lakes. In the territory of the aimag, there are many springs, the most famous ones being Tsagaan Khundii, Utaat Minjuur, Ereen, Tsagaan chuluut.

202. **Zavkhan aimag**: There are many rivers, such as Ider, Tes, Zavkhan, Khun. Small and big lakes include Otgon, Telmen, Khar, Kholboo. The longest river is Zavkhan, its length being 808 km. The largest lake is the Telmen - 200 km². Zavkhan aimag is a province of springs, such as Olgontenger, Ulaan Khaalga and Khojuul. Soil in the Western part of the territory is pale and in the eastern part it is mountain type forest soil.

5.4.3 **Performance Criteria**

203. The following performance criteria are set for the construction of the projects:

- no significant decrease in water quality as a result of construction and operational activities;
- water quality shall conform to any approval conditions stipulated by UNDP, MET and MoFA and/or other government departments, or in the absence of such conditions follow a 'no worsening' methodology; and
- effective implementation of site-specific EDSCPs.

5.4.4 **Monitoring**

204. Having water of a quality that is fit for purpose is important. Water quality can affect plant growth, livestock health, soil quality, farm equipment and domestic use. The quality of a water source is also variable depending upon weather and external inputs.

205. Evaporation increases the concentrations of salts while a flush of water dilutes salts but may increase sediment and fertilisers, and manure or nutrient runoff. Monitoring should be done regularly and more frequently in summer or in periods of prolonged moisture stress.

206. Table 8 outlines the monitoring required.

5.4.5 Reporting

207. All water quality monitoring results and/or incidents will be tabulated and reported as outlined in the EMSF. The MET and MoFA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to water quality is exceeded.

Table 8 Water Quality Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
W1: Elevated suspended solids and other contaminants in surface water systems.	W1.1: Develop and implement a site specific Erosion, Drainage and Sediment Control Plans (EDSCPs) to address drainage control, sediment and erosion controls and stockpiling of materials including soil during construction of all components of the projects. EDSCP measures to be inspected regularly to ensure all devices are functioning effectively.	Pre Earthworks	Field Officer	Initial set up and then as required with reporting to MET and MoFA and UNDP
	W1.2: Designated areas for storage of fuels, oils, chemicals or other hazardous liquids should have compacted impermeable bases and be surrounded by a bund to contain any spillage. Refuelling to be undertaken in areas away from water systems.	Entire construction and operation phase	All Personnel	Maintain records with reporting to MET and MoFA and UNDP
	W1.3: Conduct regular surface and groundwater quality monitoring in locations where the groundwater is likely to be impacted, including assessing the changes to groundwater quality.	Entire construction and operation phase	Field Officer	As required with reporting to MET and MoFA and UNDP
	W1.4: Schedule works in stages to ensure that disturbed areas are revegetated and stabilised progressively and as soon as practicable after completion of works.	Avoid undertaking bulk earthworks when rain forecast	Contractor	Maintain records
	W1.5: Construction materials will not be stockpiled in proximity to aquatic environment that may allow for release into the environment. Construction equipment will be removed from in proximity to the aquatic environment at the end of each working day or if heavy rainfall is predicted	Entire construction and operation phase	Field Officer	Maintain records

5.5 EROSION, DRAINAGE AND SEDIMENT CONTROL

5.5.1 Background

208. The geology of Mongolia is presented in Section 5.3.1.1.

5.5.2 Soils

209. Mongolian soils divided into two primary categories:

- Mountain soil
- Plain and intermountain valley soils

210. Within these 36 types are distinguished. Figure 9 provides a map of soil types across Mongolia.

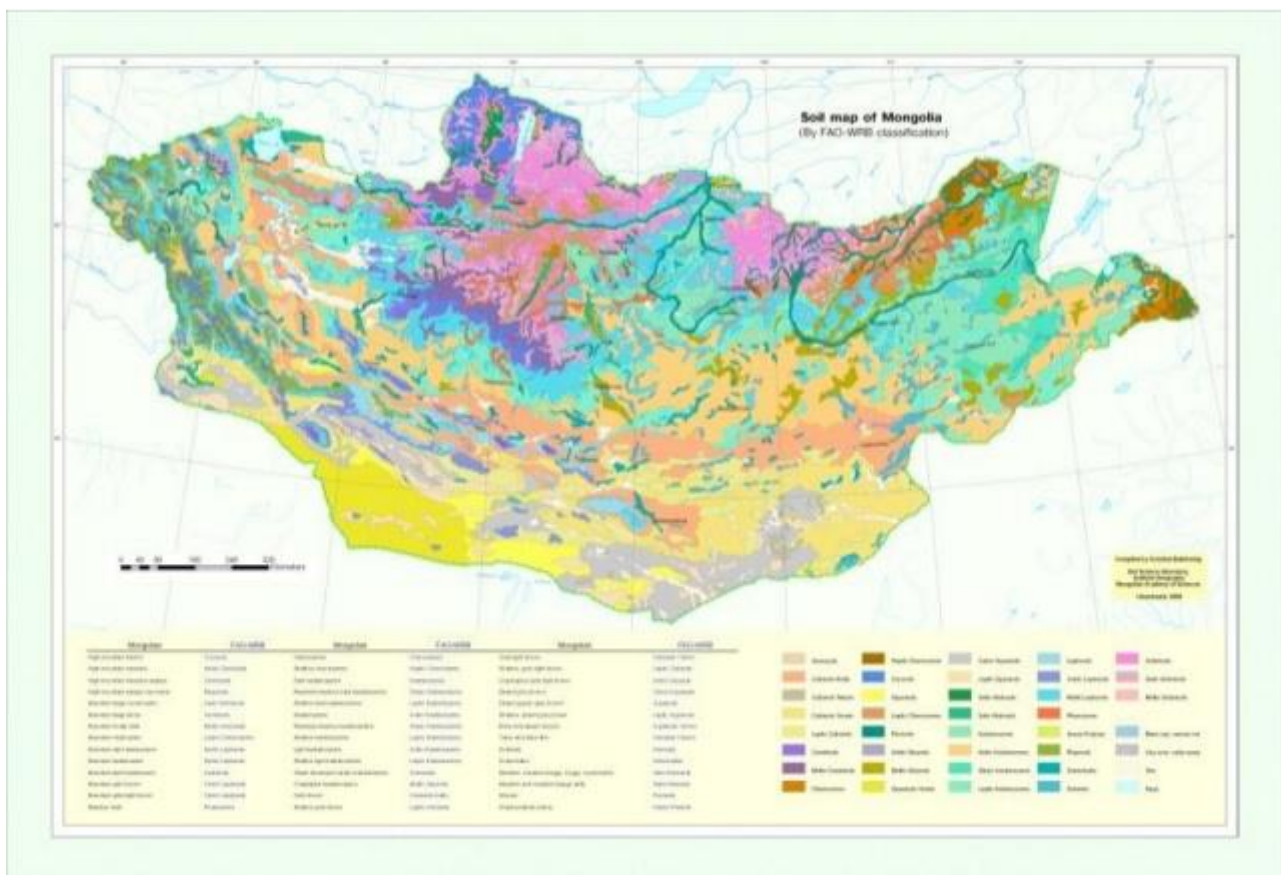


Figure 9 Soils of Mongolia

211. Soil erosion depends on several parameters such as type of soil, slope, vegetation, the nature of topography and rainfall intensity. The loss of soil stability and soil erosion can take place due to the removal of vegetation cover, and numerous construction activities. It can cause the loss of soil fertility and induce slope instability. Land preparation for the project could result in blockage or alteration of natural flow paths causing changes in the drainage patterns in the area. Effective and efficient mitigation measures can not only reduce, but could improve the conditions over the existing conditions.

212. Rainfall and melt water runoff can have a significant impact on the ability to manage environmental impacts, particularly in terms of managing drainage, erosion and sedimentation. Therefore activities which involve significant disturbance of soil or operating with drainage lines and waterways should be

undertaken with the likely weather conditions in mind. It is also important to ensure that all required erosion and sediment control mechanisms are in place before works commence.

213. Activities that have the potential to cause erosion include:

- Excavation and earthworks
- Construction activities, particularly water harvesting, protective structures around springs, wells, ponds and reservoirs
- Riparian works, including revegetation
- Overgrazing and poor vegetation management.

5.5.3 Performance Criteria

214. The following performance criteria are set for the projects:

- no build-up of sediment in the aquatic environments and/or surface and/or groundwater as a result of construction and operation activities;
- no degradation of water quality on or off site of all projects;
- all water exiting the project site and/or into groundwater systems is to have passed through best practice erosion, drainage and sediment controls; and
- effective implementation of site-specific EDSCP.

215. By following the management measures set out in the EMSF, construction and operation activities of the projects will not have a significant impact as a result of sedimentation across the broader area.

5.5.4 Monitoring

216. A standardised sediment control monitoring program has been developed for the projects (Table 9). The program is subject to review and update at least every two months from the date of issue. The Field Officer will be required to:

- conduct site inspections on a weekly basis or after rainfall events exceeding 20mm in a 24 hour period;
- develop a site-specific checklist to document non-conformances to this EMSF or any applicable EDSCPs; and
- communicate the results of inspections and/or water quality testing and ensure that any issues associated with control failures are rapidly rectified and processes are put in place to ensure that similar failures are not repeated.

5.5.5 Reporting

217. All sediment and erosion control monitoring results and/or incidents will be tabulated and reported as outlined in the EMSF. The MET and MoFA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to erosion and sediment control is exceeded.

Table 9 Erosion, Drainage and Sediment Control Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
E1: Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities	E1.1: Develop and implement an EDSCP for any surface works, embankments and excavation work, water crossings and stormwater pathways.	Construction phase	All Personnel	Maintain records
	E1.2: Ensure that erosion and sediment control devices are installed, inspected and maintained as required.	Construction phase	All Personnel	Maintain records
	E1.3: Schedule/stage works to minimise cleared areas and exposed soils at all times.	Pre and during construction	Field Officer	Maintain records
	E1.4: Incorporate the design and location of temporary and permanent EDSC measures for all exposed areas and drainage lines. These shall be implemented prior to pre-construction activities and shall remain onsite during work	Pre and during construction	Field Officer	Maintain records
	E1.5: Schedule/stage proposed works to ensure that major vegetation disturbance and earthworks are carried out during periods of lower rainfall and wind speeds.	Pre and during construction	Field Officer	Maintain records
	E1.6: Strip and stockpile topsoil for use during revegetation and/or place removed soils back on to agricultural lands.	Pre and during construction	Field Officer	Maintain records
	E1.7: Schedule/stage works to minimise the duration of stockpiling topsoil material. Vegetate stockpiles if storage required for long periods.	During construction	All Personnel	Maintain records
	E1.8: Locate stockpile areas away from drainage pathways, waterways and sensitive locations.	Pre and during construction	Field Officer	Maintain records

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring reporting &
E1: Loss of soil material and sedimentation to the surface and/or groundwater systems from site due to earthwork activities	E1.9: Design stormwater management measures to reduce flow velocities and avoid concentrating runoff.	Pre and during construction	Field Officer	Maintain records
	E1.10: Include check dams in drainage lines where necessary to reduce flow velocities and provide some filtration of sediment. Regularly inspect and maintain check dams.	Pre and during construction	Field Officer	Maintain records
	E1.11: Mulching shall be used as a form of erosion and sediment control and where used on any slopes (dependent on site selection), include extra sediment fencing during high rainfall.	During construction	All Personnel	Maintain records
	E1.12: Bunding shall be used either within watercourses or around sensitive/dangerous goods as necessary.	During construction	All Personnel	Maintain records
	E1.13: Grassed buffer strips shall be incorporated where necessary during construction to reduce water velocity.	During construction	Field Officer	Maintain records
	E1.14: Silt fences or similar structures to be installed to protect from increased sediment loads.	During construction	Contractors	Maintain records
E2: Soil Contamination	E1.15: Excess sediment in all erosion and sediment control structures (eg. sediment basins, check dams) shall be removed when necessary to allow for adequate holding capacity.	During construction	Contractors	Maintain records
	E2.1: If contamination is uncovered or suspected (outside of the project footprints), undertake a Stage 1 preliminary site contamination investigation. The contractor should cease work if previously unidentified contamination is encountered and activate management procedures and obtain advice/permits/approval (as required).	Construction phase	All Personnel	Maintain records

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
E2: Soil Contamination	E2.2: Adherence to best practice for the removal and disposal of contaminated soil/ material from site (if required), including contaminated soil within the project footprints.	Construction phase	All Personnel	Maintain records
	E2.3: Drainage control measures to ensure runoff does not contact contaminated areas (including contaminated material within the project footprints) and is directed/diverted to stable areas for release.	Construction phase	All Personnel	Maintain records
	E2.4: Avoid importing fill that may result in site contamination and lacks accompanying certification/documentation. Where fill is not available through on site cut, it must be tested in accordance with geotechnical specifications.	Construction phase	All Personnel	Maintain records

5.6 WASTE MANAGEMENT

5.6.1 Background

218. As the implementing agency, the MET and MoFA advocate good waste management practice. The preferred waste management hierarchy and principles for achieving good waste management is as follows:

- waste avoidance (avoid using unnecessary material on the projects);
- waste re-use (re-use material and reduce disposing);
- waste recycling (recycle material such as cans, bottles, etc.); and
- waste disposal (all petruscible and/or contaminated waste to be dumped at approved landfills).

219. The key waste streams generated during construction and operation are likely to include residual sediment and wastes such as:

- the excavation wastes unsuitable for reuse during earthworks;
- wastes from construction and drilling equipment maintenance. Various heavy vehicles and construction equipment will be utilised for the duration of the construction and drilling phase. Liquid hazardous wastes from cleaning, repairing and maintenance of this equipment may be generated. Likewise leakage or spillage of fuels/oils within the site needs to be managed and disposed of appropriately;
- packaging
- used oil and machinery parts eg oil filters
- non-hazardous liquid wastes will be generated through the use of workers' facilities such as toilets; and
- general wastes including scrap materials and biodegradable wastes.

220. Workers involved in construction and operational activities should be familiar with methods minimising the impacts of clearing vegetation to minimise the footprint to that essential for the works and rehabilitate disturbed areas. By doing these activities, the projects should minimise the impact of waste generated by the project.

5.6.2 Performance Criteria

221. The following performance criteria are set for the construction of the projects:

- waste generation is minimised through the implementation of the waste hierarchy (avoidance, reduce, reuse, recycle);
- no litter will be observed within the project area or surrounds as a result of activities by site personnel;
- no complaints received regarding waste generation and management;
- waste oils will be collected and disposed or recycled off-site, local oil companies or shipped for recycling.

5.6.3 Monitoring

222. A waste management monitoring program has been developed for the projects (Table 10). The program is subject to review and update at least every two months from the date of issue.

5.6.4 Reporting

223. The MET and MoFA as implementing agency must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to waste is exceeded.

Table 10 Waste Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
WT1: Production of wastes and excessive use of resources	WT1.1: Preference shall be given to materials that can be used to construct the project that would reduce the direct and indirect waste generated.	Pre and during construction	Contractor	Maintain records
	WT1.2: Daily waste practices shall be carried out unless these are delegated to the activities of external waste management bodies.	During construction	Field Officer	Daily and maintain records
	WT1.3: The use of construction materials shall be optimised and where possible a recycling policy adopted.	During construction	Field Officer	Weekly and maintain records
	WT1.4: Separate waste streams shall be maintained at all times i.e. general domestic waste, construction and contaminated waste. Specific areas on site shall be designated for the temporary management of the various waste streams.	During construction	Field Officer	Weekly and maintain records
	WT1.5: Any contaminated waste shall be disposed of at an approved facility.	During construction	Field Officer	Weekly and maintain records
	WT1.6: Recyclable waste (including oil and some construction waste) shall be collected separately and disposed of correctly.	During construction	Field Officer	Weekly and maintain records
	WT1.7: Waste sites shall be sufficiently covered to ensure that wildlife does not have access.	During construction	Field Officer	Daily
	WT1.8: Disposal of waste shall be carried out in accordance with the Government of WHERE requirements.	During construction	Field Officer	Weekly and maintain records
	WT1.9: Fuel and lubricant leakages from vehicles and plant shall be immediately rectified.	During construction	Field Officer	Daily and maintain records

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
WT1: Production of wastes and excessive use of resources	WT1.10: Major maintenance and repairs shall be carried out off-site whenever practicable.	During construction	Field Officer	Maintain records
	WT1.11: Where possible, fuel and chemical storage and handling shall be undertaken at central fuel and chemical storage facilities, such as petrol stations.	During Construction	Field Officer	Maintain records
	WT1.12: On-site storage of fuel and chemicals shall be kept to a minimum.	During Construction	Contractor	Maintain records and report any incidents
	WT1.13: Any waste oils and lubricants are to be collected and transported to recyclers or designated disposal sites as soon as possible.	During Construction	Field Officer	Maintain records
	WT1.14: Any dangerous goods stored on site shall be stored in accordance with Mongolian regulations.	During Construction	Contractor	Maintain records

5.7 NOISE AND VIBRATION

5.7.1 Background

224. Due to the limited urban development and heavy industry, environmental noise is relatively low.
225. All construction and operation activities have the potential to cause noise nuisance. Vibration disturbance to nearby residents and sensitive habitats is likely to be caused through the use of vibrating equipment. Blasting is not required to be undertaken as part of this project.
226. The use of machinery or introduction of noise generating facilities could have an adverse effect on the environment and residents if not appropriately managed.
227. Contractors involved in construction activities should be familiar with methods of controlling noisy machines and alternative construction procedures as contained within specific Mongolian legislation or in its absence, international good practice may be used if the legislation has not been enacted.

5.7.2 Performance Criteria

228. The following performance criteria are set for the construction of the projects:

- noise from construction and operational activities must not cause an environmental nuisance at any noise sensitive place;
- undertake measures at all times to assist in minimising the noise associated with construction activities;
- no damage to off-site property caused by vibration from construction and operation activities; and
- corrective action to respond to complaints is to occur within 48 hours.

5.7.3 Monitoring

229. A standardised noise monitoring program has been developed for the projects (Table 8). The program is subject to review and update at least every two months from the date of issue. Importantly, the contractor will:

- ensure equipment and machinery is regularly maintained and appropriately operated; and
- carry out potentially noisy construction activities during 'daytime' hours only.

5.7.4 Reporting

230. All noise monitoring results and/or incidents will be tabulated and reported as outlined in the EMSF. The MET and MoFA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to noise is exceeded

Table 11 Noise and Vibration Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring reporting &
N1: Increased noise levels	N1.1: Select plant and equipment and specific design work practices to ensure that noise emissions are minimised during construction and operation including all pumping equipment.	All phases	Contractor	Maintain records
	N1.2: Specific noise reduction devices such as silencers and mufflers shall be installed as appropriate to site plant and equipment.	Pre and during construction	Contractor	Maintain records
	N1.3 Minimise the need for and limit the emissions as far as practicable if noise generating construction works are to be carried out outside of the hours: 7am-5.30pm	Construction phase	All Personnel	Daily and maintain records
	N1.4: Consultation with nearby residents in advance of construction activities particularly if noise generating construction activities are to be carried out outside of 'daytime' hours: 7am-5.30pm.	Construction phase	All Personnel	Daily and maintain records
	N1.5 The use of substitution control strategies shall be implemented, whereby excessive noise generating equipment items onsite are replaced with other alternatives.	Construction phase	All Personnel	Daily and maintain records
	N1.6 Provide temporary construction noise barriers in the form of solid hoardings where there may be an impact on specific residents.	Construction phase	Field Officer	Daily and maintain records
	N1.7 All incidents complaints and non-compliances related to noise shall be reported in accordance with the site incident reporting procedures and summarised in the register.	Construction phase	Field Officer	Maintain records
	N1.8 The contractor should conduct employee and operator training to improve awareness of the need to minimise excessive noise in work practices through implementation of measures.	Pre and during construction	Contractor	Maintain records

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
N2. Vibration due to construction	N2.1: Identify properties, structures and habitat locations that will be sensitive to vibration impacts resulting from construction and operation of the project.	Pre and during construction	Contractor	Maintain records
	N2.2: Design to give due regard to temporary and permanent mitigation measures for noise and vibration from construction and operational vibration impacts.	Pre-construction	Contractor	Maintain records
	N2.3: All incidents, complaints and con-compliances related to vibration shall be reported in accordance with the site incident reporting procedures and summarised in the register.	Construction phase	Field Officer	Maintain records
	N2.4: During construction, standard measure shall be taken to locate and protect underground services from construction and operational vibration impacts.	Construction phase	Field Officer	Maintain records

5.8 AIR QUALITY

5.8.1 Background

231. All construction activities have the potential to cause air quality nuisance.
232. The project areas are predominantly village or rural in character. Existing air quality reflects those environments, with dust being the main air quality nuisance. Significant adverse impacts as a result of the project are not expected.
233. Workers involved in construction and operation activities should be familiar with methods minimising the impacts of deleterious air quality and alternative construction procedures as contained in Mongolian legislation or international good practice.

5.8.2 Performance Criteria

234. The following performance criteria are set for the construction of the projects:
- release of dust/particle matter must not cause an environmental nuisance;
 - undertake measures at all times to assist in minimising the air quality impacts associated with construction and operation activities; and
 - corrective action to respond to complaints is to occur within 48 hours.

5.8.3 Monitoring

235. A standardised air monitoring program has been developed for the projects (Table 12). The program is subject to review and update at least every two months from the date of issue. Importantly:
- the requirement for dust suppression will be visually observed by site personnel daily and by MET and MoFA and UNDP staff when undertaking routine site inspections; and
 - Vehicles and machinery emissions – visual monitoring and measured when deemed excessive.

5.8.4 Reporting

236. All air quality monitoring results and/or incidents will be tabulated and reported as outlined in the EMSF. The MET and MoFA must be notified immediately in the event of any suspected instances of material or serious environmental harm, or if a determined level with respect to air quality is exceeded.

Table 12 Air Quality Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
A.1 Increase in dust levels at sensitive receptors	A1.1: Implement effective dust management measures in all areas during design, construction and operation.	Pre and during construction	All Personnel	Daily and maintain records
	A1.2: Restrict speeds on roads and access tracks.	During construction	Field Officer	Daily
	A1.3: Manage dust/particulate matter generating activities to ensure that emissions do not cause an environmental nuisance at any sensitive locations	During construction	Field Officer	Daily and maintain records
	A1.4: Construction activities should minimise risks associated with climatic events (check forecasts).	During construction	Field Officer	Daily and maintain records
	A1.5: Implement scheduling/staging of proposed works to ensure major vegetation disturbance and earthworks are minimised.	Entire construction	Contractor	Daily and maintain records
	A1.6: Locate material stockpile areas as far as practicable from sensitive receptors. Cover if appropriate.	During construction	Field Officer	Daily and maintain records
	A1.7: Source sufficient water of a suitable quality for dust suppression activities complying with any water restrictions.	During construction	Field Officer	Maintain records
	A1.8: Schedule revegetation activities to ensure optimum survival of vegetation species.	During construction	Field Officer	Maintain records
	A1.9: Rubbish receptacles should be covered and located as far as practicable from sensitive locations	During construction	Field Officer	Maintain records

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
A2. Increase in vehicle / machinery emissions	A2.1 Ensure vehicles/machines are switched off when not in use.	During construction	Field Officer	Daily
	A2.2 Ensure only vehicles required to undertake works are operated onsite.	During construction	Field Officer	Maintain records
	A2.3 Ensure all construction vehicles, plant and machinery are maintained and operated in accordance with design standards and specifications.	During construction	Field Officer	Maintain records
	A2.4 Develop and implement an induction program for all site personnel, which includes as a minimum an outline of the minimum requirements for environmental management relating to the site.	Pre and during construction	Contractor	Maintain records
	A2.5 Locate construction vehicle/plant/equipment storage areas as far as practicable from sensitive locations.	During construction	Field Officer	Daily and maintain records
	A2.6 Direct exhaust emissions of mobile plant away from the ground.	During construction	Field Officer	Daily
		During construction	Field Officer	Daily and maintain records

5.9 SOCIAL MANAGEMENT

5.9.1 Background

237. Approximately 78 percent of people are Khalkha Mongols. Minority groups include Kazakh, Dorvod, Bayad, Buriad, Dariganga, Zahchin, Urianhai, Oold. and Torguud. The largest of these minority groups, Kazakhs make up 4 percent of the total population. Small numbers of Russians and Chinese permanently live in Mongolia⁶.
238. Khovd is one of Mongolia's most heterogeneous aimags, with a Khaikh majority and minorities of Khoton, Kazakh, Uriankhai, Zakhchin, Myangad, Oold and Torguud peoples.
239. Dornod aimag borders on the North with the Russian Federation and on the East and South-East with the People's Republic of China. The population is predominantly Khalkha, but Buryat and Barga nationalities live in Ereentsav of Bayan Uul, Bayandun, Dashbalbar, and Tsagaan-Ovoo somons. Gurvan-zagal, and Khuluunbuir somons are populated by the Uzemchin.
240. Dornod's population is comprised of a range of ethnic groups, including Khalkh, Buriad, Barga, Uzemchin, Uriankhay, Ould and Kazakh.
241. Zavkhan aimag: The main ethnic group residing in the aimag are the Khalkh
242. Sukhbaatar: three ethnic groups that inhabit the region: the majority Khaikh, Dariganga (30,000 live in the South of Sukhbaatar aimag) and Uzemchin (about 2000 live in Dornod aimag and Sukhbaatar aimag).
243. The project has been designed with the assistance of stakeholders and aims to provide benefits to the broader community. Notwithstanding, as with any project that involves construction, some dissatisfaction can occur and conflicts may arise. It is important that potential areas of tension are recognised early and appropriate actions taken to avoid or minimise conflict.
244. The project and its sub-projects do not require involuntary resettlement or acquisition of land although they may impact on land during construction activities which will be temporary in nature.

5.9.2 Cultural Heritage

245. Cultural heritage can take both physical and non-physical forms. Consultation with communities is required to identify location specific cultural heritage and/or any issues that the project may represent in terms of impacts to cultural heritage.
246. For example, in some areas of Mongolia, traditional taboos prohibit the penetration/piecing soils so as to avoid hurting earth spirits. This coincides with hydrological findings, that the sub-ground is covered by a dense network of water veins, which is very sensitive and should not be punctured. Therefore, instead of digging the ground for fencing, past projects have applied alternate culturally compatible technology, by weighting down the fence posts by putting big stones as ballast into their lateral fastenings to fix them. Fences themselves are attached in a slight sloppy angle, which makes them more resilient against damages by animal movements from outside than a straight angle would be which coincides with the considerations.

5.9.3 Performance Criteria

247. The following performance criteria are set for the project:
- the community has been consulted and project elements have been designed with their informed consultation and participation throughout the project;
 - all stakeholders are appropriately represented;
 - avoid adverse impacts to local community during construction and operations and where not possible, minimise, restore or compensate for these impacts;

⁶ <http://www.everyculture.com/Ma-Ni/Mongolia.html>

- cultural heritage is not adversely impacted;
- community health and safety is protected and overall well-being benefits derived from the project;
- complaint and grievance mechanisms are put in place and proactively managed; and
- long-term social benefits are achieved.

248. Local stakeholders and community members have a key role to play in the implementation and monitoring of the project.

249. Consultation with stakeholders will continue. This will help ensure that stakeholders continue to be aware of the project, its progress and any changes in the project. It will also assist in identifying any issues as they arise.

250. MET and MoFA will be responsible for advisory support and extensions services to local beneficiaries along with being responsible for distributing material inputs and providing technical training and backstopping in the implementation of programme activities.

5.9.4 Reporting

251. Records of all consultations are to be kept and reported on monthly basis.

252. The MET and MoFA must be notified in the event of any individual or community complaint or dissatisfaction and ensure the Grievance Redress Mechanism is complied with.

Table 13: Social Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring reporting	&
SM1: Stakeholder engagement	SM 1.1: Carry out community consultation on the purpose and benefits of making changes to land use	Pre-construction	MET	Maintain records	
	SM 1.2: Get community buy-in on any change of land use	Pre-construction	MET	Maintain records	
	SM 1.3: Ensure compliance with the Grievance Redress Mechanism process	Entire construction and operation phase	MET	Maintain records	
SM2: Public nuisance caused by construction/operation activities (eg noise, dust etc)	SM 2.1: Carry out community consultation prior to undertaking activities	Pre-construction	MET	Maintain records	
	SM 2.2: Implement appropriate management plans (refer to Noise, Air, ESCP, and Waste sections of the ESMF)	Construction and operation	Site supervisor and MET	Daily and maintain records	
	SM 2.3: Ensure compliance with the Grievance Redress Mechanism process	All phases	MET	Maintain records	

5.10 EMERGENCY MANAGEMENT MEASURES

253. In the event of actions occurring, which may result in serious health, safety and environmental (catastrophic) damage, emergency response or contingency actions will be implemented as soon as possible to limit the extent of environmental damage.

254. The delivery organisation will need to incorporate emergency responses into the project complying with the requirements under the Occupational, Health and Safety Policy of the delivery organisation and the relevant Mongolian legislation.

5.10.1 Performance Criteria

255. The following performance criteria are set for the construction of the projects:

- no incident of fire outbreak;
- no failure of water retaining structures;
- no major chemical or fuel spills;
- no preventable industrial or work related accidents;
- provide an immediate and effective response to incidents that represent a risk to public health, safety or the environment; and
- minimise environmental harm due to unforeseen incidents.

5.10.2 Monitoring

256. An emergency response monitoring program has been developed for the projects (Table 14). The program is subject to review and update at least every two months from the date of issue. Importantly, visual inspections will be conducted by Field Officer daily with reporting to MET and MoFA and UNDP staff on a weekly basis (minimum) noting any non-conformances to this EMSF.

5.10.3 Reporting

257. The MET and MoFA and UNDP staff must be notified immediately in the event of any emergency, including fire or health related matter including those that have resulted in serious environmental harm.

Table 14 Emergency Management Measures

Issue	Control activity (and source)	Action timing	Responsibility	Monitoring & reporting
E1. Fire and Emergency management and prevention strategies implemented	E1.1: Flammable and combustible liquids bunding/storage areas to be designed in accordance with appropriate international standards	Pre and during construction	Contractor	Maintain records
	E1.2: Fire extinguishers are to be available on site	During construction	Contractor	Daily and maintain records
	E1.3: No open fires are permitted within the project area	During construction	Field Officer	Daily and maintain records
	E1.4: Communication equipment and emergency protocols to be established prior to commencement of construction activities.	During construction	Contractor	Maintain records
	E1.5: Train all staff in emergency preparedness and response (cover health and safety at the work site). Coordinate with NDMO.	During construction	Field Officer	Maintain records
	E1.6: Check and replenish First Aid Kits	During construction	Field Officer	Monthly and maintain records
	E1.7: Use of Personal Protection Equipment	During construction	All Personnel	Daily

6 BUDGET FOR ESMF IMPLEMENTATION

258. A budget estimate has been prepared for the implementation of the ESMF as follows:

Item	Cost
ESMF Updating and Auditing	\$20,000
General ESMF Expenses	\$20,000
Ecological Monitoring	\$80,000
Water Quality Monitoring	\$120,000
Water Quality Sample Laboratory Analysis	\$100,000
Sediment Sample Field Testing	\$30,000
Sediment Sample Laboratory Analysis	\$40,000
Erosion, Drainage and Sediment Control	\$200,000
Stakeholder Engagement	\$100,000
Training	\$100,000
Grievance Redress Mechanism	\$50,000
Total	\$860,000

Note – monitoring to be undertaken as required throughout life of the project.

Appendices



*Empowered lives.
Resilient nations.*

Guidance for Submitting a Request to the Social and Environmental Compliance Unit (SECU) and/or the Stakeholder Response Mechanism (SRM)

Purpose of this form

- **If you use this form, please put your answers in bold writing to distinguish text**
- **The use of this form is recommended, but not required. It can also serve as a guide when drafting a request.**

This form is intended to assist in:

- (1) Submitting a request when you believe UNDP is not complying with its social or environmental policies or commitments and you believe you are being harmed as a result. This request could initiate a 'compliance review', which is an independent investigation conducted by the Social and Environmental Compliance Unit (SECU), within UNDP's Office of Audit and Investigations, to determine if UNDP policies or commitments have been violated and to identify measures to address these violations. SECU would interact with you during the compliance review to determine the facts of the situation. You would be kept informed about the results of the compliance review.

and/or

- (2) Submitting a request for UNDP "Stakeholder Response" when you believe a UNDP project is having or may have an adverse social or environmental impact on you and you would like to initiate a process that brings together affected communities and other stakeholders (e.g., government representatives, UNDP, etc.) to jointly address your concerns. This Stakeholder Response process would be led by the UNDP Country Office or facilitated through UNDP headquarters. UNDP staff would communicate and interact with you as part of the response, both for fact-finding and for developing solutions. Other project stakeholders may also be involved if needed.

Please note that if you have not already made an effort to resolve your concern by communicating directly with the government representatives and UNDP staff responsible for this project, you should do so before making a request to UNDP's Stakeholder Response Mechanism.

Confidentiality If you choose the Compliance Review process, you may keep your identity confidential (known only to the Compliance Review team). If you choose the Stakeholder Response Mechanism, you can choose to keep your identity confidential during the initial eligibility screening and assessment of your case. If your request is eligible and the assessment indicates that a response is appropriate, UNDP staff will discuss

the proposed response with you, and will also discuss whether and how to maintain confidentiality of your identity.

Guidance

When submitting a request please provide as much information as possible. If you accidentally email an incomplete form, or have additional information you would like to provide, simply send a follow-up email explaining any changes.

Information about You

Are you...

1. A person affected by a UNDP-supported project?

Mark "X" next to the answer that applies to you: Yes: No:

2. An authorized representative of an affected person or group?

Mark "X" next to the answer that applies to you: Yes: No:

If you are an authorized representative, please provide the names of all the people whom you are representing, and documentation of their authorization for you to act on their behalf, by attaching one or more files to this form.

3. First name:

4. Last name:

5. Any other identifying information:

6. Mailing address:

7. Email address:

8. Telephone Number (with country code):

9. Your address/location:

10. Nearest city or town:

11. Any additional instructions on how to contact you:

12. Country:

What you are seeking from UNDP: Compliance Review and/or Stakeholder Response

You have four options:

- Submit a request for a Compliance Review;
 - Submit a request for a Stakeholder Response;
 - Submit a request for both a Compliance Review and a Stakeholder Response;
 - State that you are unsure whether you would like Compliance Review or Stakeholder Response and that you desire both entities to review your case.
13. Are you concerned that UNDP's failure to meet a UNDP social and/or environmental policy or commitment is haWHEREng, or could harm, you or your community? Mark "X" next to the answer that applies to you: Yes: No:

14. Would you like your name(s) to remain confidential throughout the Compliance Review process?

Mark "X" next to the answer that applies to you: Yes: No:

If confidentiality is requested, please state why:

15. Would you like to work with other stakeholders, e.g., the government, UNDP, etc. to jointly resolve a concern about social or environmental impacts or risks you believe you are experiencing because of a UNDP project?

Mark "X" next to the answer that applies to you: Yes: No:

16. Would you like your name(s) to remain confidential during the initial assessment of your request for a response?

Mark "X" next to the answer that applies to you: Yes: No:

If confidentiality is requested, please state why:

17. Requests for Stakeholder Response will be handled through UNDP Country Offices unless you indicate that you would like your request to be handled through UNDP Headquarters. Would you like UNDP Headquarters to handle your request?

Mark "X" next to the answer that applies to you: Yes: No:

If you have indicated yes, please indicate why your request should be handled through UNDP Headquarters:

18. Are you seeking both Compliance Review and Stakeholder Response?

Mark "X" next to the answer that applies to you: Yes: No:

19. Are you unsure whether you would like to request a Compliance Review or a Stakeholder Response?
Mark "X" next to the answer that applies to you: Yes: No:

Information about the UNDP Project you are concerned about, and the nature of your concern:

20. Which UNDP-supported project are you concerned about? (if known):

21. Project name (if known):

22. Please provide a short description of your concerns about the project. If you have concerns about UNDP's failure to comply with its social or environmental policies and commitments, and can identify these policies and commitments, please do (not required). Please describe, as well, the types of environmental and social impacts that may occur, or have occurred, as a result. If more space is required, please attach any documents. You may write in any language you choose

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23. Have you discussed your concerns with the government representatives and UNDP staff responsible for this project? Non-governmental organisations?

Mark "X" next to the answer that applies to you: Yes: No:

If you answered yes, please provide the name(s) of those you have discussed your concerns with

Name of Officials You have Already Contacted Regarding this Issue:

First Name	Last Name	Title/Affiliation	Estimated Date of Contact	Response of Individual	from the
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24. Are there other individuals or groups that are adversely affected by the project?

Mark “X” next to the answer that applies to you: Yes: No:

25. Please provide the names and/or description of other individuals or groups that support the request:

First Name	Last Name	Title/Affiliation	Contact Information
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Please attach to your email any documents you wish to send to SECU and/or the SRM. If all of your attachments do not fit in one email, please feel free to send multiple emails.

Submission and Support

To submit your request, or if you need assistance please email: project.concerns@undp.org