



Regional Flyway Initiative · Site Study

May 2026

RFI Priority Site · Khar-Us Lake (including Khovd River Tributary and Khar Lake)

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General Site Information

Country	Mongolia		
RFI Site Name	Khar-Us Lake (including Khovd River tributaries and Khar Lake)	ID044	
City/ Municipality, Province, Region	Buyant, Chandmani, Dörgön, Mankhand, Myangad soum, in Khovd aimag		
Geographical coordinates	47.75 N, 92.17 E	Area (has)	860,000 ha
Key species	27 waterbird species with significant flyway populations (EAAF/CAF), notably Dalmatian Pelican.		
Key habitats (biomes)	Steppe wetlands		
Key ecosystem services	Provisioning (fresh water, wild food) and regulating services (local climate, and water flow)		
Key drivers of change	Overgrazing, climate change		
Conservation status (mark all that applies)	☐ Protected Area	☐ Flyway Network Site	
	☐ Ramsar Site	☐ Others _____	
IBA/ KBA name (and number) and other designations	Khar-Us Lake		
Management Stakeholders	MECC, Khovd aimag government, Khar-Us National Park Administration		
With management plan?			
Project concept themes	Rangeland/grazing management, invasive species management, biodiversity monitoring and site management		
Length of project	5 years		
Sector/s	Livestock and agriculture; biodiversity monitoring		
No. of potential beneficiaries			
Indigenous Peoples	☐ No	☒ Yes, <u>ethnic Kazakh minority</u>	
Anticipated Implementation Risks	Increased pressure from tourism and access infrastructure		
Estimated Project Budget (US\$)	15,600,000		
Potential Source/s of Financing	☐ Loan (to be identified)	☐ Private Sector	
	☐ Grant (to be identified)	☐ Public-Private Partnership	

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Abbreviations

ADB	Asian Development Bank
AWC	Asian Waterbird Census
CAF	Central Asian Flyway
CSR	Conservation Status Review
DMC	Developing Member Country
EAAFP	East Asian-Australasian Flyway Partnership
IBA	Important Bird and Biodiversity Area
IUCN	International Union for the Conservation of Nature
KBA	Key Biodiversity Area
MECC	Ministry of Environment and Climate Change
MCST	Ministry of Culture, Sports, Tourism, and Youth
MOFALI	Ministry of Food, Agriculture, and Light Industry
NGO	Non-governmental Organisation
NP	National Park
NR	Nature Reserve
NUM	National University of Mongolia
RBA	River Basin Authority
RFI	Regional Flyway Initiative
SPA	Strictly Protected Area
TESSA	Toolkit for Ecosystem Services Assessment
USD	United States Dollars
WMBD	World Migratory Bird Day
WSCC	Wildlife Science and Conservation Center Mongolia

Executive Summary

Khar-Us Lake and its adjacent wetlands lie within the Great Lakes Depression of northwest Mongolia and is one of the largest Ramsar sites (321,360 ha) in the country. The site includes Khar-Us Lake (185,920 ha) and Khar Lake, both freshwater wetlands, together with the saline Durgun Lake, and lies at about 1,200 m asl in the Mongolian Altai. The lakes are located near the boundary of Khovd and Zavkhan aimag and lie about 20 km east of Khovd City. As a result of its geography in western Mongolia, Khar-Us Lake is located at the confluence of two of Asia's major bird migratory flyways, the East Asian-Australasian Flyway (EAAF) and the Central Asian Flyway (CAF). Khar-Us's wetlands is among the most significant wetland sites in Mongolia for migratory waterbirds with 27 species occurring regularly at levels >1% of the regional population, including Swan Goose *Anser cygnoid* (EN), Common Pochard *Aythya ferina* (VU) and Northern Lapwing *Vanellus vanellus* (NT). In particular, the site supports the single most important breeding population of the Dalmatian Pelican *Pelecanus crispus* (NT) in the EAAF, while most other waterbird species are associated with the CAF. Additionally, 13 waterbird species, seven resident and several mammal species that is Near Threatened or has a higher IUCN Red List status are known to occur. Khar-Us Lake's wetland ecosystems are protected within the Khar-Us Lake National Park, a large, protected area (and an IBA) straddling five soums, and was created in 1997.

The issues afflicting Khar-Us Lake and its adjacent wetlands, and the surrounding mountain steppe are diverse. Grasslands at the site have been overgrazed by herds of goats, sheep and horse from local households while lake-side vegetation such as reedbeds has been overharvested and degraded in several areas by local people. Invasive muskrats also substantially reduced vegetation cover of reeds and rush *Juncus* sp. along the various lake and river systems and have increased bank erosion and habitat loss for waterbird species. The Erdeneburen hydropower plant planned on the Khovd River, for example, is expected to alter the hydrology of Khar-Us Lake and reduce ecological connectivity across the wetlands, especially for migratory fish, which local communities have attributed to a decline in the lake fisheries while the overall lake area has shrunk substantially in recent history.

Key priorities for improved management of Khar-Us Lake are the strengthening of the site management and zonation plan, to ensure that the ecologically most sensitive parts of the wetlands are secured and excluded from grazing. There is scope for sustainable management of the surrounding grassland for livestock grazing and there should be a focus on protecting sensitive areas of wetlands from nutrient pollution, while restoring degraded areas of mountain steppe. Management of the muskrat population through sustainable harvest alongside anti-poaching patrols can help restore wetland vegetation and reduce the impact on threatened waterbirds such as the Dalmatian Pelican. Efforts should be made to raise awareness locally about the sites and its species' importance and to develop and increase monitoring. The site's tourism potential can be explored and developed.

1. Background of the Regional Flyway Initiative

In July 2021, the Asian Development Bank made a commitment to develop a long-term Regional Flyway Initiative (RFI) in the East-Asian Australasian Flyway (EAAF) (Sovereign Project 55056-001) to protect and restore priority wetland ecosystems and the associated ecosystem services they provide in the EAAF, the most threatened migratory bird flyway globally. The Initiative is slated for implementation in nine ADB developing member countries (DMCs) in East, South and Southeast Asia: Mongolia, People's Republic of China (PRC), Bangladesh, Viet Nam, Cambodia, Philippines, Thailand, Malaysia and Indonesia. In 2023, the geographic scope of the RFI was further extended to two DMCs in Southeast Asia and the Pacific respectively, Lao PDR and Papua New Guinea.

The primary aim of the RFI is to enhance and expand the existing efforts in conserving and managing wetlands of the highest priority for migratory birds within the EAAF through innovative loan and grant financing, and at scale. Consultations and analyses over the development period help identify key interventions to strengthen the management of wetlands, enabling the implementation of nature-based solutions while strengthening biodiversity protection. Over time, the RFI seeks to leverage collaborative opportunities by developing partnerships among important stakeholders including national governments, civil society organizations, communities, regional organizations like the East Asian-Australasian Flyway Partnership (EAAFP), development agencies, the private sector, and other relevant entities.

Through the RFI Technical Assistance (TA) implemented over the RFI's development phase from 2021 to 2024, BirdLife International takes the lead in providing and coordinating technical support for development of the RFI. This is carried out in collaboration with the EAAFP and a consortium of international non-governmental organization including Wetlands International and the Paulson Institute, as well as two universities, namely the University of Southampton, UK and the National University of Singapore. Over the development phase, the TA team undertook a site selection analysis to identify priority wetland sites in all 10 countries based on recent bird data benchmarked against internationally accepted criteria under the Convention on Wetlands of International Importance (or Ramsar Convention), EAAFP Flyway Network Sites and Important Bird and Biodiversity Areas (IBAs). The team further developed ecosystem services profiles for prioritized wetlands using a multi-pronged approach used the TESSA ecosystem services assessment tool, and data-driven modelling of water-based ecosystem services and stored carbon.

In Mongolia, a total of 48 wetland sites were initially assessed through published data in the Mongolia IBA Inventory (see Batbayar & Tseevenmyadag 2005), a review of the peer-reviewed literature, and consultations with technical experts. Of these, a total of (12) wetlands were ranked, defined and identified to be RFI priority sites on the basis that they support more than 1% the flyway population of at least one EAAF migratory waterbird species. Four (4) of the RFI wetland sites identified lie with the Amur-Heilongjiang Basin in eastern Mongolia, most notably a cluster of sites around Dornod and Sukhbaatar provinces, including Mongol Daguur SPA, Khurkh-Khuiten, Buir, and Tashgain Tavan lakes. Two of the RFI sites, including Terkhii Tsagaan and Ogii Lakes lie within the catchment of the Yenisey River, with outflows into the Selenge River. The remaining wetlands identified are endorheic lakes in the Altai or Gobi region. At least 48 EAAF species exceeded the 1% threshold at the site level in Mongolia, including nearly the entire breeding and staging population of the Swan Goose (Batbayar et al. 2013; Damba et al. 2021).

2. Site profile of Khar-Us Lake

Location: Khar-Us Lake and Khar Lake are essentially montane freshwater wetlands, which, together with the saline Durgun Lake, forms the Khar-Us wetland system in the Great Lakes Depression, a large inter-montane basin in northwest Mongolia. The lakes are located near the boundary of Khovd and Zavkhan aimag and lie about 20 km to the east of Khovd City, the administrative center of Khovd Province. The wetlands are surrounded bounded by the Mongol-Altai Mountains to the west and north, and the Khangai Mountains in the east and the Gobi-Altai in the south. Most of Khar-Us Lake's inflow is from Khovd River, which drains the Altai, and forms a large deltaic plain on the north-western shore of the lake.

Area: 860,000 ha

Altitude: 1,132-1,452 m a.s.l.

Geographical coordinates: 47.75° N, 92.17° E

Description of site: The Khar-Us wetland system comprises several large lakes and extensive reedbeds and marshes. The lakes are mostly frozen from November until April but from spring onward they provide rich habitats for migratory waterbirds. Khar-Us Lake has over 20 islands and the marshes and reed beds at Khar-Us Lake are mostly around the Shuwuun Aral peninsula. The lakes are shallow and are covered by floating and submerged vegetation (*Nymphaea* spp., *Nuphar* spp., *Potamogeton* spp.). Khar-Us Lake is fed by the Khovd, Buyant and Tsenkher Rivers, and is drained by the Chono-kharaikh River. Khar Lake is fed by the Chono-kharaikh River, which forms a river delta, and is drained by the Zawkhan River via the Teel River, which it is connected to Durgun Lake through the Khom Channel and Nagoon Lake. The habitats in the areas surrounding the wetlands are desert steppe, dry steppe, and semi-desert.

Site administration, management and land tenure: Khar-Us Lake and its adjacent wetlands are fall largely within Khar-Us Lake National Park, which was created by the Mongolian Government in 1997, and is protected by the park administration following a site management plan. The wetland spans five surrounding soums, namely Mankhan, Buyant, Myangad, Dorgon and Chandman. The wetlands and the surrounding areas are state owned with oversight from the soum government. The national park was designated as a Ramsar site in 1999, as two separate IBAs (Khar-Us Lake and Khar Lake IBAs) in 2009 and as an EAAFP Flyway Network Site in 2016. The national park administration has five rangers in the five surrounding soums, who patrol the site and have been trained to enforce the environmental legislation. The park is managed by the Khar-Us National Park Administration which falls under the jurisdiction of the Ministry of Environment and Climate Change (MECC).

Social and economic values: The main land use at the site is livestock grazing, but overgrazing is a problem along the lake shorelines, including in the reedbeds as well as in the surrounding areas, linked to a rapid increase in the numbers of livestock in recent years. Other problems affecting the reedbeds include drought and reed fires, and the destruction of lake side vegetation such as reed *Phragmites australis* and rush *Scirpus hippolitii* by introduced Muskrat *Ondatra zibethica*, which was brought in for fur production from Russia in the 1960s. The muskrat population has since grown to an estimated 80,000 individuals by 2018 (Otgonbaatar et al. 2018) and fur harvesting has been proposed to manage their population. The

steppes around the wetlands are being affected by off-road driving and clear-cutting of vegetation, resulting in desertification around the lake. There is a commercial Potanin's Osman *Oreoleuciscus potanini* fishery at the site, but this is largely unregulated, and the status of the fishery is not well assessed. There are concerns about the growth of poisonous algae (likely caused by nutrient pollution) in the lake and introduced fish species. Khar-Us Lake has high potential for tourism, because of the scenic beauty of the landscape, and the opportunities to wildlife, but at present only small numbers of guided tourists visit the site because of its remoteness from Ulaanbaatar and the lack of infrastructure and facilities. Important cultural values are that several ethnic groups such as Kazakhs live together at the site, and there are numerous sacred places and archaeological sites.

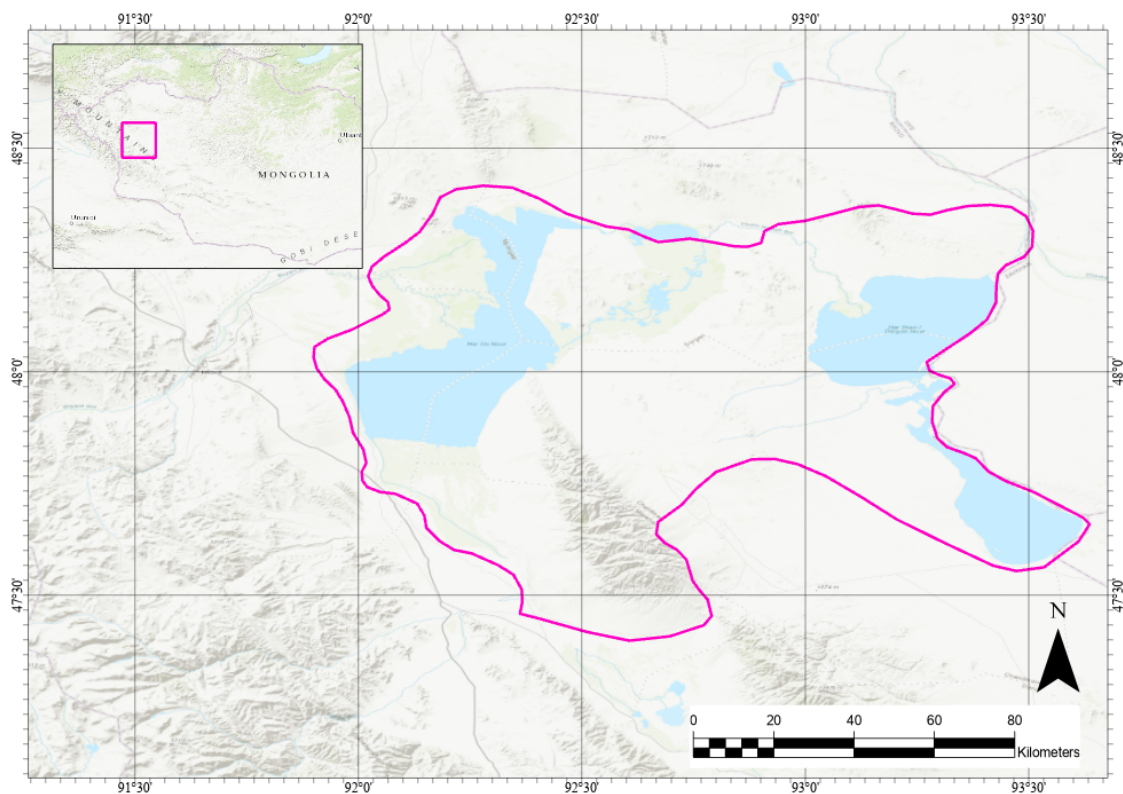


Figure 1. Map of Khar-Us Lake boundaries with inset map showing location of the site in eastern Mongolia (Map: Evelyn Pina Covarrubias).

3. Biodiversity value of Khar-Us Lake

3.1 Key habitats

The Khar-Us wetland system comprises several large lakes and extensive reedbeds and marshes. The lakes are mostly frozen from November until April but from spring onward they provide rich habitats for migratory waterbirds. The habitats in the areas surrounding the wetlands are desert steppe, dry steppe, and semi-desert.

3.2. Importance of Khar-Us Lake for migratory waterbird species

Khar-Us Lake is identified as a candidate RFI site because it is known to support internationally important populations of the migratory waterbirds (see Table 1), defined as species which have exceeded the 1% population estimates (see Mundkur & Langendoen 2022). The data used to assess these species were compiled from Batbayar & Natsagdorj (2009), together with the available bird count data from the peer-reviewed literature. An expert-led review and prioritization of candidate RFI sites in Mongolia was conducted by panels of national and international (EAAFP, Wetlands International and BirdLife International) ornithological experts.

Table 1. List of migratory species (based on the EAAFP list of species) with globally significant congregations in Khar Us Lake. See also Batbayar & Natsagdorj (2009) and Mundkur & Langendoen (2021).

Species name	IUCN	CSR1 score
Dalmatian Pelican <i>Pelecanus crispus</i>	NT	>10%
Great Crested Grebe <i>Podiceps cristatus</i>	LC	>1%
Great Cormorant <i>Phalacrocorax carbo</i>	LC ¹	>1%
Greylag Goose <i>Anser anser</i>	LC	>1%
Bar-headed Goose <i>Anser indicus</i>	LC	>1%
Ruddy Shelduck <i>Tadorna ferruginea</i>	LC	>1%
Common Goldeneye <i>Bucephala clangula</i>	LC	>1%
Goosander <i>Mergus merganser</i>	LC	>1%
Common Crane <i>Grus grus</i>	LC	>1%
Northern Lapwing <i>Vanellus vanellus</i>	NT	>1%
Caspian Tern <i>Hydroprogne caspia</i>	LC	>1%
Great White Egret <i>Ardea alba</i>	LC	>1%
Whooper Swan <i>Cygnus cygnus</i>	LC	>1%
Common Shelduck <i>Tadorna tadorna</i>	LC	>1%
Mallard <i>Anas platyrhynchos</i>	LC	>1%

¹ Recent high count of the Great Cormorant *P. carbo* from Khar-Us Lake (see [eBird list](#))

Species name	IUCN	CSR1 score
Common Teal <i>Anas crecca</i>	LC	>1%
Gadwall <i>Mareca strepera</i>	LC	>1%
Eurasian Wigeon <i>Mareca penelope</i>	LC	>1%
Northern Pintail <i>Anas acuta</i>	LC	>1%
Northern Shoveler <i>Spatula clypeata</i>	LC	>1%
Red-crested Pochard <i>Netta rufina</i>	LC	>1%
Common Pochard <i>Aythya ferina</i>	VU	>1%
Tufted Duck <i>Aythya fuligula</i>	LC	>1%
Temminck's Stint <i>Calidris temminckii</i>	LC	>1%
Pallas's Gull <i>Larus ichthyaetus</i>	LC	>1%
Eurasian Spoonbill <i>Platalea leucorodia</i>	LC	>1%
Swan Goose <i>Anser cygnoid</i>	EN	>1%

At present, Khar-Us is the only known breeding site for Dalmatian Pelican *Pelecanus crispus* (NT) in Mongolia, and by extension, the only breeding population for the species in the EAAF region. The breeding population has declined over the past ten years, and is currently estimated at 100-150 individuals (Batbayar, N., Davaasuren, B. *in litt.* 2025)

Additionally, Khar-Us Lake (including Khovd River Tributary and Khar Lake) supports potentially important populations of several globally threatened and near threatened waterbird species: White-headed Duck *Oxyura leucocephala* (EN), , Relict Gull *Larus relictus* (VU), Ferruginous Duck *Aythya nyroca* (NT), Grey Plover *Pluvialis squatarola* (VU), Black-tailed Godwit *Limosa limosa* (NT), Asian Dowitcher *Limnodromus semipalmatus* (NT), Long-billed Dowitcher *Limnodromus scolopaceus* (NT), Ruddy Turnstone *Arenaria interpres* (NT), Broad-billed Sandpiper *Calidris falcinellus* (VU), Curlew Sandpiper *Calidris ferruginea* (VU), Dunlin *Calidris alpina* (NT), Horned Grebe *Podiceps auritus* (VU).

3.3. Other notable biodiversity

Khar-Us Lake supports a small, non-breeding population of the globally threatened Pallas's Fish-eagle *Haliaeetus leucoryphus* (EN), a species that has declined considerably in Mongolia (Gilbert *et al.* 2014). Other species of interest are the Saker Falcon *Falco cherrug* (EN), Bearded Vulture *Gypaetus barbatus* (NT), Cinerous Vulture *Aegypius monachus* (NT), Himalayan Vulture *Gyps himalayensis* (NT), Steppe Eagle *Aquila nipalensis* (EN), Pallid Harrier *Circus macrourus* (NT) and Yellow-breasted Bunting *Emberiza aureola* (CR). Several fish species endemic to western Mongolia inhabit the lakes, namely Lake Osman *Oreoleuciscus angusticephalus*, Potanin's Osman *O. potanini*, Small Osman *O. humilis* and Mongolian Grayling *Thymallus brevirostris*.

Fifty-four (54) mammal species have been recorded in the vicinity of Khar-Us Lake, especially in the Altai mountains and includes 11 rare and very rare species in Mongolia, They include the Snow Leopard (*Uncia*

uncia), Altay Argali Sheep (*Ovis a. ammon*), Mongolian Saiga (*Saiga tatarica mongolica*), Eurasian Wild Pig (*Sus scrofa*), Siberian Ibex (*Capra sibirica*), and hosts one of very few populations of the Eurasian beaver (*Castor fiber*) in Mongolia.

4. Ecosystem services

4.1. Ecosystem services provided by Khar-Us Lake (including Khovd River Tributary and Khar Lake)

Khar-Us Lake and its adjacent landscapes encompass diverse wetland habitats, which provides at least 26 identifiable ecosystem services, especially provisioning and regulating services (Figure 2; Table 2) for local communities. The findings from the RFI workshop² highlights that the provisioning of freshwater and wild harvested food are the most important ecosystem services for the lake systems (see Table 2), although this is expected to decline over time. Regulating services, such as local climate and water-flow regulation directly benefit herding communities.

² Asian Development Bank. (2024, November 28-29). *Mongolia: Wetland Ecosystem Services Workshop* [Workshop]. Mongolia <https://events.development.asia/learning-events/mongolia-wetland-ecosystem-services-workshop>



Figure 2. List of ecosystem services provided by Khar-Us Lake, as identified through stakeholder consultation at the Regional Flyway Initiative workshop.

Table 2. List of top ecosystem services provided by Khar-Us Lake.

Ecosystem services	Essential or non-substitutable	Benefits to communities			Change	
		Within the site	Adjacent to the site	Distant to the site	Past	Future
Provisioning services						
Fresh water	Yes	✓	✓		No change	No change
Food (wild)	Yes	✓	✓		Decrease	Decrease
Regulating services						

Ecosystem services	Essential or non-substitutable	Benefits to communities			Change	
		Within the site	Adjacent to the site	Distant to the site	Past	Future
Global climate regulation	Yes	✓	✓	✓	No change	No change
Water-flow regulation	Yes	✓	✓	✓	No change	No change
Flood hazard regulation	Yes	✓	✓	✓	No change	No change

4.2. Global climate regulating services

While there is no definitive national average specifically for peatlands, Mongolian peatlands are estimated to store between 100 and 150 tonnes C ha⁻¹, although the value is likely variable depending on peat depth, degradation status, and landscape type (Government of Mongolia, 2018). Therefore, carbon stored in the peatlands of Khar-Us Lake (122,120 ha) is estimated to range from 12,212,000 to 18,318,000 tonnes C.

4.3. Flood mitigation services

The stakeholders at the RFI workshop did not identify flood mitigating services as important benefits provided by Khar-Us Lake. Therefore, these ecosystem services were not assessed.

5. Drivers of change and their potential impacts on Khar-Us Lake

5.1. Current drivers of change and their level of impact

Stakeholders at the RFI workshop³ identified 44 possible drivers of change impacting Khar-Us wetlands, and their corresponding levels of impact on the wetland site (see Table 3). High-impact drivers include livestock farming and grazing, as with most RFI sites in Mongolia. Intensive grazing pressure from local herders have caused grassland degradation in some parts of the site. Additionally, habitat degradation of wetland vegetation has been created as a resulting of an increasing, introduced population on muskrats (Otgonbaatar et al. 2018), which damage reedbeds and rushes due to their ecology. Planned hydropower projects (at least two planned) such as the Erdeneburen hydropower plant on the Khovd River, which will be constructed by Chinese hydropower companies, is among the largest hydropower developments in Mongolia. Over time, it is expected to alter the hydrological and ecological character of Khar-Us Lake (Dugersuren 2022).

Medium-impact drivers include increasing risk and impact drought and desertification and is synergistically linked to overgrazing and poor site management. There is also increased risk from steppe fires as a result of land degradation and overgrazing. Waste disposal (for solid waste) and sewage pollution is considered by stakeholders to be of 'medium impact'.

³ Asian Development Bank. (2024, November 28-29). *Mongolia: Wetland Ecosystem Services Workshop* [Workshop]. Mongolia <https://events.development.asia/learning-events/mongolia-wetland-ecosystem-services-workshop>

Table 3. Drivers of change and their potential impact on the integrity of Khar-Us Lake based on consultations with stakeholders.

Driver of change	Impact
Activities of site managers	High
Dams, hydrological modification and water management/use	
Energy generation, including from hydropower dams, wind farms and solar panels	
Invasive animal species	
Livestock farming and grazing	
Collecting terrestrial plants or plant products (non-timber)	Medium
Dams within or upstream of the wetland site, which alter the hydrological regime	
Drought conditions	
Droughts	
Habitat clearing	
Isolation from other natural habitats	
Recreational activities and tourism	
Roads and railroads	
Shipping lanes and canals	
Storm and flooding	
Tourism and recreation infrastructure	Low
Water extraction/diversion within the wetland site or catchment	
Agricultural and forestry effluents	
Air-borne pollutants	
Avalanches/landslides	
Desertification	
Earthquakes/tsunamis	
Erosion and siltation/deposition	
Excess ponding of water onsite	
Fire and fire suppression	
Fishing, killing and harvesting of aquatic resources	
Flight paths	
Garbage and solid waste	
Habitat shifting and alteration	
Household sewage and urban wastewater from outside the wetland site	
Hunting, killing and collecting of terrestrial animals	
Increased fragmentation within the wetland site	
Invasive plant species	
Logging and timber harvesting	
Loss of cultural links, traditional knowledge and/or management practices	
Loss of hydrological connectivity	
Loss of keystone species	
Natural deterioration of important cultural wetland site values	
Pathogens	
Research, education and other work-related activities	
Restoration for conservation	
Sewage and wastewater from wetland site facilities	
Temperature extremes	
Utility and service lines	

5.2. Potential alternative state of Khar-Us Lake (including Khovd River Tributary and Khar Lake) under current drivers of change

Stakeholders at the RFI workshop⁴ defined the most plausible future alternative state (scenario) for the site up to 2035 and converted this scenario into a net change in the cover of different wetland habitats within this site (current habitat cover vs. future alternative cover; see Figure 3). This future scenario assumes that the current drivers of change affecting the site and the existing management practices will remain unchanged.

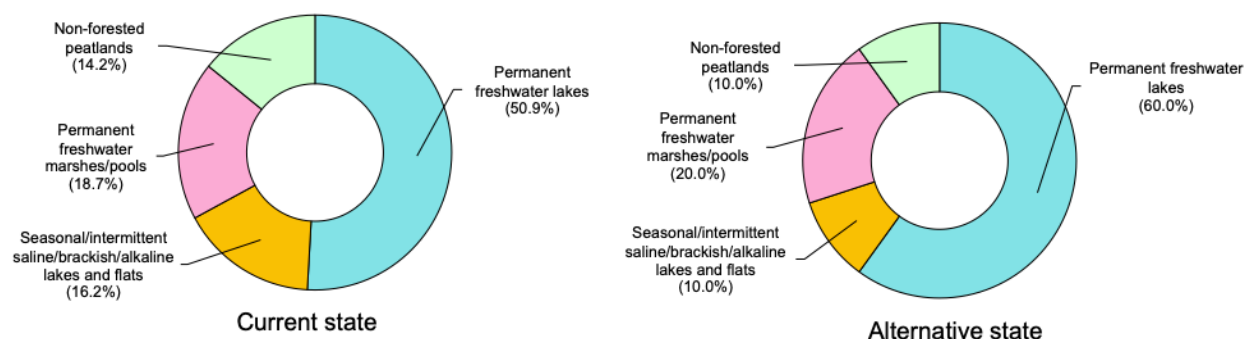


Figure 3. The proportional change in the extent of different habitat types between the current and alternative states of Khar-Us Lake.

5.3. Expected changes in the ecosystem services of Khar-Us Lake

Stakeholders at the RFI workshop⁵ assessed future trends in the ecosystem services provided by Khar-Us Lake. Based on their local knowledge, they documented whether these services are expected to increase, decrease, or remain unchanged by 2035, assuming the current drivers of change affecting the site and the current interventions remain unchanged. Figure 2 and Table 2 show that the provisioning of wild food has decreased in the past and is expected to continue decreasing in the future. The provisioning of fresh water, global climate regulation, water-flow regulation, and flood hazard regulation has remained unchanged in the past and is expected to remain stable in the future.

Mongolia has experienced a 7% drop in rainfall from 1940-2005, and over the same period average temperatures rose by 2.4°C, though anecdotal evidence suggests an increase in thunderstorms and high intensity rain events (World Bank Group 2021). Climate models suggest that under all emissions scenarios that Mongolia will warm more than the global average, and most models agree that there is likely to be a small increase in annual precipitation, with an increase in the intensity of extreme weather events (World Bank Group 2021). There is a strong likelihood of the increase of drought events and in recent

⁴ Asian Development Bank. (2024, November 28-29). *Mongolia: Wetland Ecosystem Services Workshop* [Workshop]. Mongolia <https://events.development.asia/learning-events/mongolia-wetland-ecosystem-services-workshop>

⁵ Asian Development Bank. (2024, November 28-29). *Mongolia: Wetland Ecosystem Services Workshop* [Workshop]. Mongolia <https://events.development.asia/learning-events/mongolia-wetland-ecosystem-services-workshop>

history the extent of surface water, nationwide lake area shrank by around 7% over the 2000-2025 period, a trend which has been noticed since at least 1974. Freshwater lakes and rivers in central and western Mongolia are fed by glacial meltwater from the Mongolian Altai. However, glacial cover in the Mongolian Altai is estimated to have reduced by 30% between 1940 and 2011 (World Bank Group 2021). The high population growth rate, increase in livestock, as well as a corresponding increase in energy production and industry has increased the demand for water and these pressures need to be considered for potential project interventions in the Khar-Uus Lake systems.

6. Capacity gaps and needs for the management of Khar-Uus Lake

Seven stakeholder groups were identified as important to the management of the Khar-Uus Lake wetland ecosystems. Of immediate importance are stakeholders in the national and local governments who have jurisdiction over the management of the lake resources, and local herding communities who directly benefit from the lake.

Table 4. Stakeholder capacity needs in Khar-Uus Lake.

Stakeholder group	Current role in wetland management (Positive or Negative)	Possible future role in wetland management	Current capacity for sustainable wetland management	Capacity development needed to improve wetland management	Form of capacity development (e.g. training, organizational strengthening etc.)
MECC	Government policy and coordination	Organize and integrated policymaking	Medium	-	Improve existing human resources for site management
Khovd aimag government	Coordinate policies with other government bodies	Coordinate policies across different government levels	Medium	Strengthen aimag level policy framework for wetland and water resources management	Human resources and financing
Protected Area Administration	PA law enforcement	Adapting protection and management approaches and improving them	Good	Strengthen the implementation of the regulatory framework on-site	Human resources and financing

Stakeholder group	Current role in wetland management (Positive or Negative)	Possible future role in wetland management	Current capacity for sustainable wetland management	Capacity development needed to improve wetland management	Form of capacity development (e.g. training, organizational strengthening etc.)
River Basin Authority (RBA)	Enforcement of regulations and the law on usage of water resources	Improve cooperation and coordination across river stakeholders	Medium	Improving capacity for management plan development	Improving awareness of river and wetland issues
Herding households	Pastureland overload	Pastureland management	Good	Awareness of policy advocacy for site management	Awareness of wetlands and biodiversity
Development and conservation projects/programmes	Improve regulatory framework and management	Climate adaptation and mitigation	Good	Support and strengthen implementation of projects and initiatives	Provide training to target groups
(Over time) hydroelectric Power Plant administration	(Negative) change in lake eco-system (fish)	Drop in emissions and positive effect on climate	Poor	Environmentally friendly advanced technology to mitigate impacts on biodiversity and wetlands	Training on compliance with international standards

7. Opportunities for RFI interventions

7.1. Recommended Interventions

The lake and river systems in Khar-Uus is among the most significant wetland sites in Mongolia for migratory waterbirds with 27 species occurring regularly at levels exceeding 1% of the regional population. However, the diverse steppe-wetland landscape is expected to come under increasing pressure in the future due to the impacts of an increasing human population and correspondingly increased livestock grazing, increased water demand and from the long-term effects of climate change.

At the local level, stakeholders assessed that the main threats to Khar-Us relate to site management, water infrastructure, energy generation, livestock, land clearance, vegetation collection, off-road driving, invasive species and poaching has traditionally been a problem. Specific threats known from Khar-Us include a well-established population of the introduced Muskrats *Ondatra zibethicus*, which is known to cause damage to reed beds and has worsened bank erosion the wetlands. Other challenges faced includes the development of hydropower projects and illegal hunting. For instance, the construction of a fish bypass at the Durgun hydropower plant is thought to prevent Mongolian Greyling from migrating through the lake system. The breeding population of the Dalmation Pelicans have been hunted although this has declined significantly and may no longer be a threat due to successful engagement with the local stakeholders by conservation organizations such as WSCC Mongolia. While livestock over-grazing has been raised as an issue; water pollution is not seen as being a problem, but livestock defecation and nutrient run-off is likely an important contributor to causing algal blooms to have been reported at the lakes.

Interventions are largely focused on improving the management of the site, through zonation, grazing control and habitat restoration. Livelihoods are considered through investigating how fish stocks can be maintained through ensuring fish migration routes are open and investigating the potential for eco-tourism.

Table 5. List of proposed interventions for Khar-Us Lake and possible project indicators.

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
<i>Component 1. Strengthening site management and protection of Khar-Us and its surrounding wetland-steppe landscape</i>					
Undertake scoping study of existing interventions and threats at Khar-Us and surrounding grasslands, including targeted assessment on long-term threats (from climate change, hydropower, overgrazing, tourism expansion and fisheries).	Assessment and scoping guidance to provide basis for proposed RFI interventions. Threats faced by the lake ecosystem better understood, and potential interventions identified.	Assessment report with key threats identified and recommendations for improved management published and disseminated to key stakeholders. Number of stakeholder meetings conducted in the scoping study. Number of stakeholder groups engaged in the scoping study, ensuring a	100,000	2 years	MECC Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum Khovd aimag government Khar-Us National Park Administration WSCC Mongolia ADB

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		participatory assessment of existing interventions and threats.			
Strengthen site management of Khar-Us National Park including the development of a comprehensive management and zonation plan	Khar-Us National Park is better managed through the development of the site management and zonation plans, and installation of boundary markers for zones.	Site management plan (with zonation of sensitive areas where grazing activities are excluded or highly regulated) over short to medium-term developed, in consultation with key stakeholders, including communities inside the site through participatory mapping. Number of stakeholder consultation meetings organized with local government and herding households in all four soums (at least 200 households) to strengthen engagement local stakeholders for participatory mapping for zonation, understand local livelihood needs, and engage national stakeholders. Management plan for Khar-Us expanded through participatory	200,000	3 years	MECC Khovd aimag government Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments Khar-Us National Park Administration Local community groups Conservation organizations

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		processes involving and represented households within site. Establishment and installation of boundary markers of zones under grazing exclusion and managed grazing.			
<i>Component 2. Expand grassland and vegetation management and restoration in the landscapes (linked to component 1)</i>					
Undertake a comprehensive assessment of grazing pressure, vegetation cutting and degradation in Khar-Us and the landscape immediately surrounding the key lake systems. The assessment to include mapping of sensitive areas and hotspots of nutrient pollution (from animal defecation).	Khar-Us and the landscape are better managed through roadmap and action plan development for roadmap and action plan for grassland restoration activities guided by remote sensing and participatory mapping of overgrazed areas, and mapping of hotspots for overgrazing and water pollution (from animal waste)	Grassland / vegetation degradation map of Khar-Us National Park produced. Roadmap and action plan for grassland restoration activities and grazing management drafted, guided by remote sensing, participatory mapping of overgrazed areas, hotspots of overgrazing and water pollution (from animal waste) mapping, and grassland/ vegetation degradation maps of Khar-Us. Number of stakeholder groups engaged, targeting the local government and herding households (about 200 households)	50,000	1 year	Khovd aimag government Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments Khar-Us National Park Administration Local community groups Conservation organizations

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		Number of meetings and workshops organized to strengthen engagement local stakeholders for participatory mapping for zonation, understand local livelihood needs, and engage national stakeholders.			
Restore the degraded and overgrazed/ over-exploited areas of grassland / vegetation (see also component 4 on grazing management, and sustainable herding practices)	Degraded areas of steppe grassland / vegetation damaged resulting from overgrazing restored.	Nurseries for vegetation restoration established. At least two pilot plots for grassland restoration established, with grazing exclusion structures and signage in place. At least 1,000 ha of grassland restored over a five-year period.	200,000	5 years	

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
<i>Component 3. Wildlife research, monitoring and management</i>					
Strengthen the management and control of the invasive Muskrat population in Khar-Us Lake	Khar-Us Lake better managed through an assessment of the ecological impact of invasive muskrat on the Khar-Us landscape, and a Muskrat management strategy (involving incentives for trapping. Significant (XX% against baselines) reductions in the muskrat population. Significant reduction (XX% against baselines) in bank erosion and reedbed damage caused by muskrats Recovery and restoration of XX ha of reed and rush vegetation	Muskrat management and harvest strategy developed including hunting incentives in consultation with local stakeholders. Number of activities implemented from the muskrat management and harvest strategy Number of stakeholders involved in management and controlling the invasive Muskrat population in Khar-Us Lake. Percentage reduction of the muskrat population Percentage reduction of bank erosion and reedbed damage caused by muskrats XX has of reed and rush vegetation restored.	300,000	5 years	MECC MOFALI Khar-Us National Park Administration Research institutions, including technical experts on invasive species control Hunting associations and meat/fur traders Local community groups Conservation organizations

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
Mitigate (potential) impact on fish movements on the Chono-Kharaih and Khovd rivers due to hydropower development	Fish movements on the Chono-Kharaih and Khovd rivers improved through impact assessment and restorative plan and activities.	Impact assessment of the fish bypass at the Durgun Hydropower facility conducted, published and disseminated to management stakeholders. Restoration strategy and plan for fish migration passageways on the Chono-Kharaih River. Number of stakeholders engaged in mitigating impact on fish movements on the Chono- Kharaih River Number of activities implemented in the drafted restoration strategy and plan Number of facilities established to allow fish movements (e.g., fish migration ladder constructed in the hydropower facility)	500,000	2 years	MECC Khar-Us National Park Administration Research institutions, including technical experts on fisheries. Conservation organizations

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
Strengthen wildlife protection and enforcement at Khar-Us	Improved wildlife protection and enforcement at Khar-Us Lake through co-management framework, increased patrol and enforcement efforts for landscape, wildlife protection and encroachment activities, and increased capacity of local rangers	Co-management framework with local communities developed. Number of households (target of at least 50% households in site) engaged and actively participating in co-management activities. Training program and modules on patrol and enforcement developed Number of training activities conducted Number of local rangers trained on patrolling and enforcement.	200,000	5 years	MECC Khovd aimag government Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments Khar-Us National Park Administration Conservation organizations Local community groups EAAFP
Strengthen biodiversity and wetland monitoring, with a focus on waterbird species such as Dalmatian Pelican, and wildfowl species.	Better monitoring of biodiversity and wetland ecosystems in the landscape through a locally engaged biodiversity monitoring program and increased awareness of Dalmatian Pelican, Swan Goose (as examples) and migratory waterbird conservation amongst local households.	Monitoring mechanism for the site established Number of monitoring activities conducted using the established biodiversity and wetland monitoring scheme. A locally led conservation group organized Number of awareness-raising activities (including workshops and WMBD activities) on	100,000	5 years	

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		importance of nature protection, with a focus on charismatic bird species, implemented. Number of stakeholder groups engaged in the awareness-raising activities.			
Scale-up research on biodiversity and ecology to support evidence base for management plan development (see component 1, 2)	Khar-Us Lake is better managed through improved understanding of migratory species movements (and movement ecology), improved understanding of carbon and nutrient cycles associated with wetlands and strengthened local research capacity on wetland and lentic ecology. Long-term data on changes in landscape and wetland quality to guide site management cycle.	Training programmes (including workshops) on grassland and wetland ecology, with a focus on charismatic bird and wildlife species developed Number of training activities implemented Number of local researchers and stakeholder groups trained. Number of locally led research on wetland and lentic ecology.	500,000	3 years	Khar-Us National Park Administration Conservation organizations Local community groups

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
<i>Component 4. Strengthen tourism infrastructure and local capacity for specialized, nature-based tourism</i>					
Establish infrastructure for specialized nature-based tourism (depending on the findings of scoping study)	Impact of habitat degradation caused by tourism activities in the landscape reduced through specialized and planned nature-based tourism, strengthened capacity, and microfinancing. Basic tourism infrastructure developed to enhance opportunities for visitors to observe waterbirds and other wildlife.	Provincial-level tourism plans and strategies updated in coordination with MCST, MECC, aimag government and relevant tourism stakeholders. Number of training activities to strengthen local capacity for sustainable specialized tourism Number of stakeholders engaged in tourism-related activities engaged. Nature-based tourism strategy and business plans and packages on specialized wildlife/nature tourism developed Number of business plans tested with tourism operators (including international bird and wildlife tour companies) Number of facilities established/ upgraded, in line with the tourism infrastructure plan	500,000	3 years	MCST Khar-Us National Park Administration Khovd aimag government Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments Conservation organizations Local community groups Tourism operators in Khovd and Ulaanbaatar

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		and ecotourism strategy Number of stakeholder groups engaged in the upgrading of tourism infrastructure and local planning Number of people benefiting from the upgraded tourism infrastructure Microfinance schemes to provide loans to small tourism businesses to improve sustainability and reduce impact created. Number of small tourism businesses benefiting from the established microfinancing scheme.			
Strengthen the capacity of local communities and businesses for nature-based tourism.	Impact of habitat degradation caused by tourism activities in the landscape reduced through increased local capacity of local communities and businesses for nature-based tourism.	Framework for benefits-sharing from nature-based tourism enhanced for households and tourism operators. Number of stakeholder groups engaged in the framework development for nature-based tourism	300,000	5 years	

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		Training program on nature-based tourism developed Number of stakeholders trained on tourist management (target of at least 50 households)			
Establish new tourism infrastructure targeting nature tourists.	Impact of habitat degradation caused by tourism activities in the landscape reduced through well-regulated development of tourism infrastructure established for accommodation and access roads, and to hold and manage waste from tourism activities.	Number of facilities established/ maintained for tourist accommodation and associated facilities established at Khar-Us, and waste management infrastructure for managing tourism waste. Number of people benefiting from nature-based tourism	500,000	3 years	MCST MECC Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments Khar-Us National Park Administration Conservation organizations
<i>Component 5. Strengthening sustainable, community-based management in Khar-Us and adjacent areas to address over-grazing (see also Component 2)</i>					
Strengthen the local capacity in sustainable rangeland management, and management of livestock	Improved conditions at Khar-Us against baselines (reduced organic waste pollution from livestock waste) Improved condition of grassland (pasture) in Khar-Us (in zoned areas) and adjacent landscapes against baselines.	Number of stakeholder consultation meetings organized, targeting at least 50 households. Number of meetings and workshops to engage local people on rangeland management, sustainable grazing practices Training programmes focusing on	500,000	5 years	MOFALI MECC Khovd aimag government Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
		community-based rangeland management, including livestock grazing regimes (e.g. rotational grazing) created. Training programmed(s) on grazing management established with local governments and MOFALI created. Number of capacity-building activities implemented. At least XX households at Khar-Us Lake trained with sustainable rangeland management and herding practices. Number of trained stakeholders adopting the sustainable rangeland management and herding practices			Khar-Us National Park Administration Conservation organizations International development agencies (including IUCN)
Scale up the sustainable rangeland use/grazing activities to strengthen the resilience of herding households.	Improved condition of grassland in degraded areas around Khar-Us (in zoned areas) and adjacent landscapes against baselines through microfinance mechanisms, benchmarking activities, and	Number of stakeholder consultation meetings organized, targeting XX households. Number of exchange visits organized for herding households to other landscapes with good grazing	250,000	5 years	MOFALI MECC Khovd aimag government Buyant, Chandmani, Dörgön, Mankhand, and Myangad soum governments

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential Stakeholders
	incentive mechanisms.	and livestock management. Microfinance mechanism (for local loans and grants) created for local households and supported by lending institutions. 100 households benefiting from small grants and microloans on animal husbandry and livestock management practices. Incentives (and compliance mechanisms) for best practices in grazing and rangeland management created. Number of stakeholders trained and engaged who adopted sustainable rangeland use/ grazing activities			Khar-Us National Park Administration Conservation organizations International development agencies (including IUCN)
Total investment for five years			15,600,000		

7.2. Potential Financing

The estimated project cost is USD 15,600,000 over a 5-year period. This project supports the development of plans for site management, zonation, and tourism, creation of a co-management framework, training programs on patrol and enforcement, biodiversity monitoring, nature-based tourism, grassland and wetland ecology, solid waste management, and sustainable rangeland management and management of livestock, establishment of infrastructure for tourism and solid waste management, restoration of degraded grassland and riparian woodland, and creation of microfinance mechanisms.

7.3. Proposed Institutional Arrangements

The proposed project is expected to be implemented over a period of at least five (5) years, with the main project components focusing on improving management of the Khar-Us Lake National Park, biodiversity monitoring, enhancing rangeland and grazing management practices (led by MECC and the soum government) for local grazing households, and the development of a fledgling tourism industry. Conservation and research organizations such as the Wildlife Science and Conservation Center Mongolia can be expected to play a major supporting and technical role in the project, drawing from extensive experience working with local communities in Khar-Us Lake on the conservation of the Dalmatian Pelican.

7.4. Project Beneficiaries

This proposed project is expected to undertake activities to promote gender inclusion and participation in livelihood activities, through capacity building activities for local households.

7.5. Anticipated Implementation Risks

Environment: Nature-based tourism has been identified as a key project concept theme. The proposed interventions include establishing tourism infrastructure to improve the tourism experience at Khar-Us Lake. Building these infrastructures, however, would generate noise that may disturb wildlife, including breeding waterbirds such as Dalmatian Pelican. Moreover, increasing tourism activities bring other human-induced impact, such as waste pollution. Planning with the stakeholders is critical before any infrastructure development and tourism management.

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Annex 1. Supplementary information on flood mitigation services

Table A5. Key habitat types in Khar-Us Lake based on stakeholder-based assessment at the Regional Flyway Initiative workshop in November 2024.

Habitat type	Current state		Alternative state (2035)	
	Area (ha)	Cover (%)	Area (ha)	Cover (%)
Permanent freshwater lakes	438062.8	50.9	516380.5	60.0
Seasonal/intermittent saline/brackish/alkaline lakes and flats	139422.7	16.2	86063.4	10.0
Permanent freshwater marshes/pools	160938.6	18.7	172126.8	20.0
Non-forested peatlands	122210.0	14.2	86063.4	10.0
Total	860634.1	100.0	860634.1	100.00