



Regional Flyway Initiative · Site Study

DRAFT

November 2025

RFI Priority Site · Khurkh-Khuiten

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General Site Information

Country	Mongolia		
RFI Site Name	Khurkh Khuiten	ID045	
City/Municipality, Province, Region	Batshireet, Binder, Bayan-Adraga and Ömnödelger soum; Khentii Province		
Geographical Coordinates	48.32 N, 110.37 E	Area (has)	58,700
Key species	White-naped Crane, and four other crane species, Swan Goose		
Key habitats (biomes)	Diverse wetland habitats for migratory birds and local communities e.g. small lakes, pools, marshes and swamps, with extensive areas of reedbeds, willow groves and shrub-dominated wetlands. Steppe plant species dominate and forests on northern mountain slopes.		
Key ecosystem Services	Global and local climate regulation, flood mitigation, fresh water and cultivated food, cultural services e.g. recreation/ecotourism, and social relations), knowledge systems and education		
Key drivers of Change	Livestock grazing, solid waste pollution, expansion of settlements		
Conservation Status (mark all that applies)	☒ Protected Area ☒ Ramsar Site ☒ Flyway Network Site ☐ others ()		
IBA/KBA name (and number) and other designations	Khurkh Khuiten		
Management Stakeholders	Batshireet, Binder, Bayan-Adraga and Ömnödelger local government; Khentii aimag government, MECC, WSCC		
With management plan?	(for validation)		
Project concept themes	Grazing management and site zonation/ management; increased biodiversity protection and monitoring		
Length of project	5-7 years		
Sector/s:	Rangeland management and tourism expansion		
No. of potential beneficiaries	(for validation)		
Indigenous Peoples	☐ No ☒ Yes <u>Nomadic Pastoral Buryat</u>		
Anticipated Implementation Risks	Increase in disturbance to site, and pollution as a result of tourism expansion		
Estimated Project Budget (US\$)	12,800,000		
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
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
MAS	Mongolian Academy of Sciences
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
RFI	Regional Flyway Initiative
SPA	Strictly Protected Area
TESSA	Toolkit for Ecosystem Services Assessment
USD	United States Dollars
WCS	Wildlife Conservation Society
WSCC	Wildlife Science and Conservation Center Mongolia

Executive summary

The wetlands of eastern Mongolia lies within the northern and central edge of the East Asian-Australasian Flyway (hereafter as the 'EAAF'); its diverse landscapes provide important staging and stopover habitat for internationally important concentrations of migrating waterbirds. Much of eastern Mongolia falls within the upper catchment of the Amur River Basin and is drained by tributaries of the Amur. Khurkh-Khuiten Nature Reserve in Khentii Province is located in the Daurian forest-steppe ecoregion and spans an area of 53,000 ha of taiga-steppe, steppe lakes, grasslands, and wetlands (meadows, bogs) in the upper reaches of the Ulz, Khurkh and Khuiten rivers (all which drain into the Onon) and spans four soums: Batshireet, Binder, Bayan-Adraga and Ömnödelger. The Khurkh Khuiten landscape is recognised as being among the most important breeding sites for the threatened White-naped Crane *Antigone vipio* (VU) globally, with at about 70 pairs known (or 1.2% of the estimated population), alongside breeding Common *Grus grus* and Demoiselle Cranes *G. virgo*, staging Hooded Crane *Grus monacha* (VU) and Swan Goose *Anser cygnoid* (VU). There are also small populations of the globally threatened Eastern Imperial Eagle *Aquila heliaca* (VU), Saker Falcon *Falco cherrug* (EN) and Great Bustard *Otis tarda* (EN).

Khurkh Khuiten is protected as a nature reserve after designation in 2021 and is currently managed by MECC in collaboration with WSCC and the soum government. The wetlands here is also recognised as a Ramsar and an EAAFP Flyway Network Site. The steppe grasslands in and around Khurkh-Khuiten is grazed by several hundred households but the remoteness of the landscape means that it is not subjected to the level of grazing pressure faced by other sites in eastern Mongolia. Presently, the key ecosystem services provided by Khurkh Khuiten is the provision of freshwater and climate regulation, although stakeholders indicate that the importance of cultivated goods will increase over time as agricultural activities expand.

Given that Khurkh-Khuiten remains relatively undisturbed, the immediate priority for improved management of the site is the implementation of its site management and zonation plan, to ensure that the ecologically most sensitive parts of this wetland including the surrounding forest steppe and peatland landscape remains well protected, while adjacent areas of rangeland can be sustainably managed for grazing activities. This can be expected to involve a combination of grazing (exclusion) for the most ecologically sensitive areas, rotational grazing, and restoration of degraded steppe-taiga vegetation. The recent expansion of research and monitoring facilities at Khurkh Khuiten (e.g. research and bird banding station; accommodation facilities) led by WSCC provides the infrastructure and capacity for stronger environmental and biodiversity monitoring work, while strengthening local capacity for the environmental sciences. As a result of its relative proximity to Ulaanbaatar and accessibility from nearby towns such as Onon, Khurkh-Khuiten offers strong potential for expanding nature-based tourism, and especially specialised tourism activities for international birdwatchers and wildlife researchers.

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 organizations 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 prioritised 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 Khurkh-Khuiten

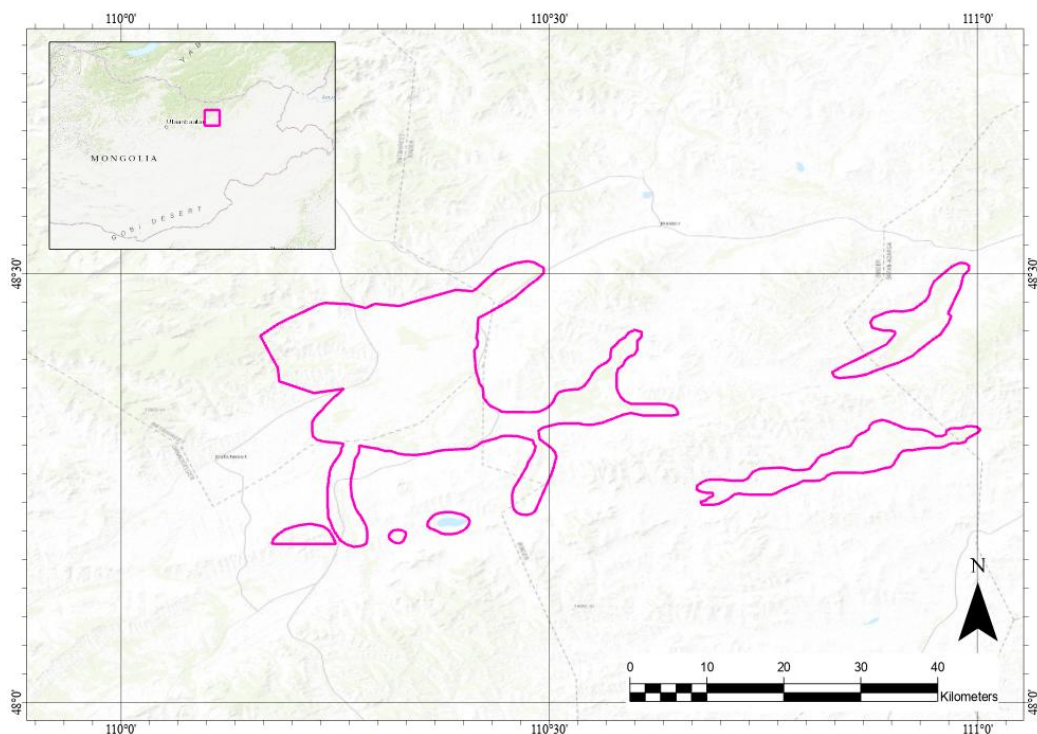
Location: The Khurkh-Khuiten RFI site is located on the boundaries of Batshireet, Binder, Bayan-Adraga and Ömnödelger *soums* in Khentii *Aimag*, about 330 km east of Ulaanbaatar. It is divided into two separate parts, Sector “A”, which includes the lakes in the Khurkh River valley, including Binder, Duut, Khulst, Bayan and Bayan Burd lakes, and Sector “B”, which includes the lakes along the Khuiten River, including Ikh Burd, Ulaan Toirom, Khulst, Tsagaan, Ulaan-Undur and Khuh lakes. These permanent lakes lie in the transition zone between the Mongolian (taiga) forest and steppe zones (in the Daurian forest-steppe ecoregion) in the basins of the Khurkh and Khuiten rivers, which are tributaries to the Onon River in the Amur Basin.

Area: 58,700 ha

Altitude: 1,074-1,361 metres a.s.l.

Geographical coordinates: 48.32°N, 110.37°E

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



Description of site: The Khurkh River valley is 15-20 km wide in its middle and lower reaches, and the Khuiten River valley around 10 km wide. The valleys include many important wetlands for migratory waterbirds, including numerous small lakes, pools, marshes and swamps, with extensive areas of reedbeds, willow groves and shrub-dominated wetlands. The valleys are bordered by mountain ranges, and they flood in the spring when the snow in the mountains melts and there is late spring rainfall. The vegetation in the valleys is dominated by steppe plant species and there are forests on the northern slopes of the mountains.

Site administration, management and land tenure: Khurkh-Khuiten was designated as a Ramsar site in 2004, as an IBA in 2009, as an EAAFP Flyway Network Site in 2016 and as a national nature reserve in 2021. The site is state owned and under the jurisdiction of Bayan-Adraga, Binder, Batshireet and Ömnödelger Counties of Khentii Province, Onon-Balj National Park Administration, Dadal County of Khentii Province, and the Ministry of Nature, Environment and Tourism. The management authorities are the local governments of Bayan-Adraga, Binder, Batshireet and Umnudelger soums of Khentii Province, in collaboration with the Wildlife Science and Conservation Center Mongolia and Onon-Balj National Park Administration.

Social and economic values: The principal land use in Khurkh-Khuiten is livestock grazing (sheep, goats, cattle and horses) and hay production, with small-scale farms cultivating wheat, barley and oats, and wood collected from coniferous (larch) forest for fuel. Large numbers of livestock graze in the valleys all year round, which has resulted in the overgrazing of pastures, as well as pollution of wetlands by bathing cattle, and other pressures on the site include unmanaged burning and expansion of agricultural areas. The climate has become drier in recent years, causing droughts which are reducing the extent of the wetlands and causing changes in the vegetation.

Khurkh-Khuiten has potential for nature-based tourism but there are currently few tourist facilities, and the only visitors are international birdwatching tours who may pass through the area in spring.

3. Biodiversity value of Khurkh-Khuiten

3.1 Importance for migratory waterbird species

Khurkh-Khuiten has been identified as a candidate RFI site because the available evidence base shows that it supports internationally important populations of more than 20 species migratory waterbirds (Table 1), defined as those species which have exceeded the 1% population estimates from the Conservation Status Review (CSR1) (see Mundkur and Langendoen 2022). Khurkh-Khuiten is widely acknowledged to be among the most important breeding sites for the White-naped Crane in the world, supporting as many as 71 pairs (Galtbalt et al. 2022), or well over the 1% of the species' population threshold based on the latest population estimate. The data used in this assessment was compiled from Batbayar and Tseveenmyadag (2009), together with the available count data from the peer-reviewed literature (e.g. Davaasuren 2018; Galtbalt et al.

2022). A review of the candidate RFI sites was conducted by panels of national and international (EAAFP, Wetlands International and BirdLife) ornithological experts.

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

Species name	IUCN	CSR1 score
Ruddy Shelduck <i>Tadorna ferruginea</i>	LC	>50%
White-naped Crane <i>Grus vipio</i>	VU	>1%
Great Crested Grebe <i>Podiceps cristatus</i>	LC	>1%
Black Stork <i>Ciconia nigra</i>	LC	>1%
Bean Goose <i>Anser fabalis</i>	LC	>1%
Swan Goose <i>Anser cygnoid</i>	EN	>1%
Whooper Swan <i>Cygnus cygnus</i>	LC	>1%
Common Crane <i>Grus grus</i>	LC	>1%
Demoiselle Crane <i>Anthropoides virgo</i>	LC	>1%
Northern Lapwing <i>Vanellus vanellus</i>	NT	>1%

The Khurkh-Khuiten wetlands support populations of the globally threatened and near threatened Swan Goose *Anser cygnoid* (EN), Lesser White-fronted Goose *A. erythropus* (VU), Siberian Crane *Leucogeranus leucogeranus* (CR), White-naped Crane *G. vipio* (VU), Hooded Crane *G. monacha* (VU), Red-crowned Crane *G. japonensis* (VU), Asian Dowitcher *Limnodromus semipalmatus* (NT) and Northern Lapwing *Vanellus vanellus* (NT). As many as 70 pairs of the White-naped Crane are known to nest in the valleys of the Khurkh and Khuiten rivers which skirts the reserve (Davaasuren 2018; Galtbalt et al. 2022). Khurkh-Khuiten also hosts Mongolia's oldest bird ringing station (established in 2015), and field work by WSCC researchers has ringed and identified more than 80 migratory landbird species during the spring and autumn months.

3.2 Other notable biodiversity

In addition to the waterbirds, Khurkh-Khuiten supports populations of the globally threatened Eastern Imperial Eagle *Aquila heliaca* (VU), Saker Falcon *Falco cherrug* (EN) and Great Bustard *Otis tarda* (EN), and Mongolian (Tarbagan) Marmot *Marmota sibirica* (EN).

4. Ecosystem services

4.1. Ecosystem services provided by Khurkh-Khuiten

The Khurkh-Khuiten landscape encompasses diverse wetland habitats, providing valuable provisioning and regulating services (Figure 2; Table 3) for local communities living within and adjacent to this landscape. The findings from the RFI workshop highlights the most important ecosystem services provided by the site, emphasising their essential and non-substitutable nature (see Table 3). These provisioning services (fresh water and cultivated food), regulating services (local climate regulation), and cultural services (recreation/ecotourism, and social relations) are considered essential or non-substitutable, benefitting the communities within the site only. Local climate regulating services are also benefitting the communities adjacent to, and distant from the site.

Table 3. List of top ecosystem services provided by Khurkh-Khuiten.

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	Decrease
Food (cultivated)	Yes	✓			Increase	Increase
Regulating services						
Local climate regulation	Yes	✓	✓	✓	No change	Decrease
Cultural services						
Recreation, ecotourism		✓			Increase	Increase
Social relations	Yes	✓			No change	Increase

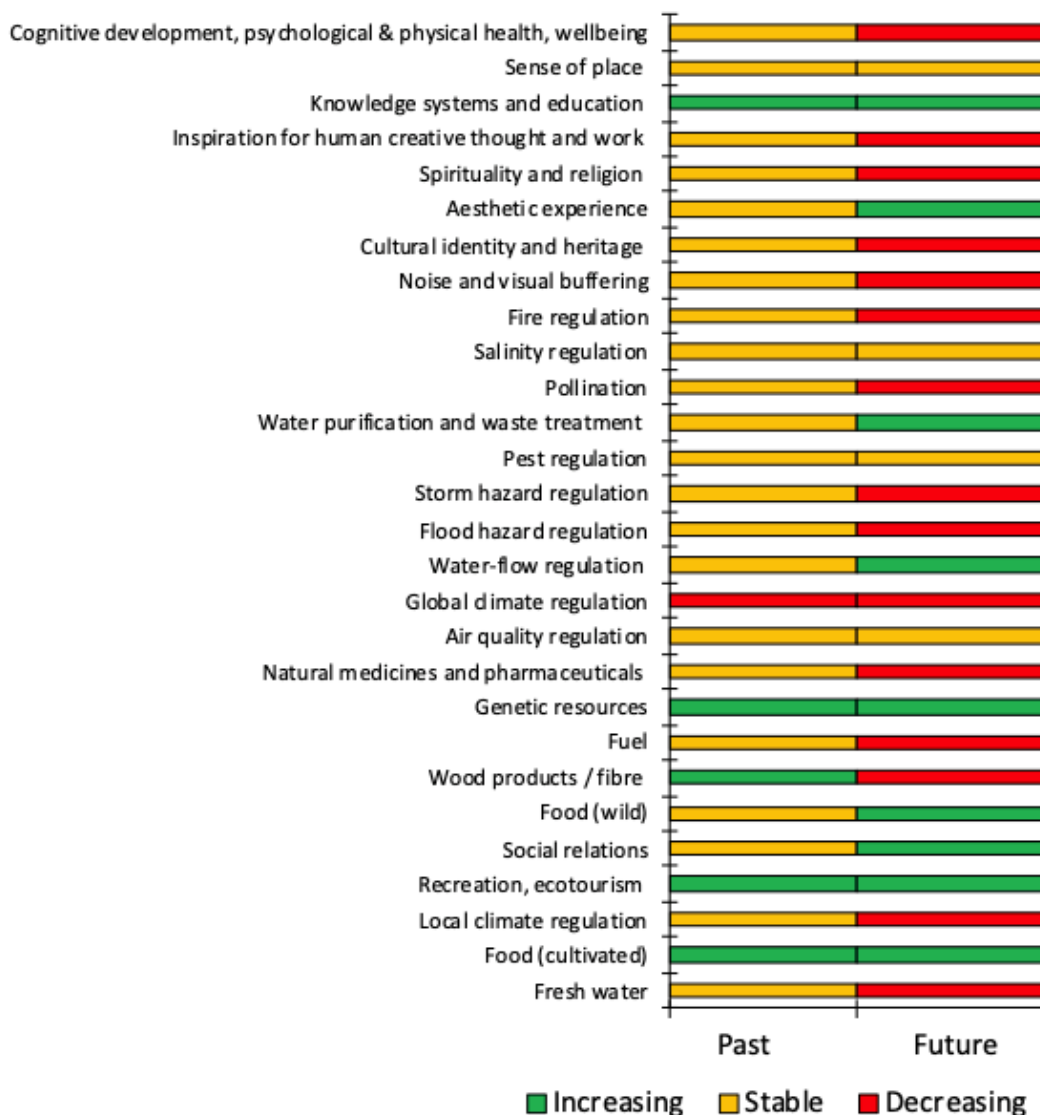


Figure 2. List of ecosystem services provided by Khurkh-Khuiten, as identified by stakeholder consultation at the Regional Flyway Initiative workshop in December 2024.

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, though the value is likely to vary with peat depth, degradation status, and landscape type (Government of Mongolia, 2018). Therefore, carbon stored in the peatlands of Khurkh-Khuiten (5,873.5 ha) is estimated to range from 587,350 to 881,025 tonnes C.

4.3. Flood mitigation services

The flood mitigation services provided by Khurkh Khuiten were assessed using biophysical values only (Table A1 and Annex 1 for details). When compared to the average of the six RFI inland sites in Mongolia for which hydrological data were available (Table A2 in Annex 1), Khurkh Khuiten shows some consistent results in terms of benefits and beneficiaries:

1. for the average green storage capacity per sq. km of wetland, Khurkh Khuiten is above average (179 vs. 160 Giga Litres of water per km²);
2. for the average population uniquely benefitting from influential green storage upstream per sq. km of wetland, Khurkh Khuiten is also above average (1.61 vs. 1.09 people/km²); and
3. for the average built-up area uniquely benefitting from influential green storage upstream per sq. km of wetland, Khurkh Khuiten is again above average (0.260 vs. 0.217 ha/km²).

5. Drivers of change and their potential impacts on Khurkh-Khuiten

5.1. Current drivers of change and their level of impact

Stakeholders identified 40 possible drivers of change impacting Khurkh-Khuiten, and their corresponding levels of impact on the wetland site (see Table 3). High-impact drivers include livestock farming and grazing. Intensive grazing pressure from local herders have caused degradation in some parts of the site.

Medium-impact drivers include increasing risk and impact drought and desertification and is synergistically linked to overgrazing and poor 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', and in part arises from poor waste management practices, alongside the expansion of settlements in and around the site, such as the growth of the town of Onon, which is located beside the site. Over time, the expansion of cultivation (potato farming; currently covering more than 7,000 ha), tourism infrastructure is also expected to impact the site.

Driver of change	Impact
Livestock farming and grazing	High
Desertification	
Drought conditions	Medium
Droughts	
Fire and fire suppression	
Garbage and solid waste	
Habitat shifting and alteration	
Household sewage and urban wastewater from outside the wetland site	
Housing and settlement	
Logging and timber harvesting	
Loss of cultural links, traditional knowledge and/or management practices	
Loss of hydrological connectivity	
Natural deterioration of important cultural wetland site values	
Recreational activities and tourism	
Storm and flooding	
Temperature extremes	
Tourism and recreation infrastructure	
Wood pulp and plantations	
Agricultural and forestry effluents	Low
Air-borne pollutants	
Annual and perennial non-timber crop production	
Collecting terrestrial plants or plant products (non-timber)	
Commercial and industrial areas	
Dams within or upstream of the wetland site, which alter the hydrological regime	
Destruction of cultural heritage buildings, gardens, sites, etc.	
Erosion and siltation/deposition	
Excess energy	
Excess ponding of water onsite	
Habitat clearing	
Increased fragmentation within the wetland site	
Invasive animal species	
Invasive plant species	
Loss of keystone species	
Mining and quarrying	
Pathogens	
Research, education and other work-related activities	
Restoration for conservation	
Roads and railroads	
Utility and service lines	
Water extraction/diversion within the wetland site or catchment	

Table 4. Drivers of change and their potential impact on the integrity of Khurkh-Khuiten based on consultations with stakeholders.

5.2. Potential alternative state of Khurkh-Khuiten under current drivers of change

Stakeholders at the RFI workshop 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 types of 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.

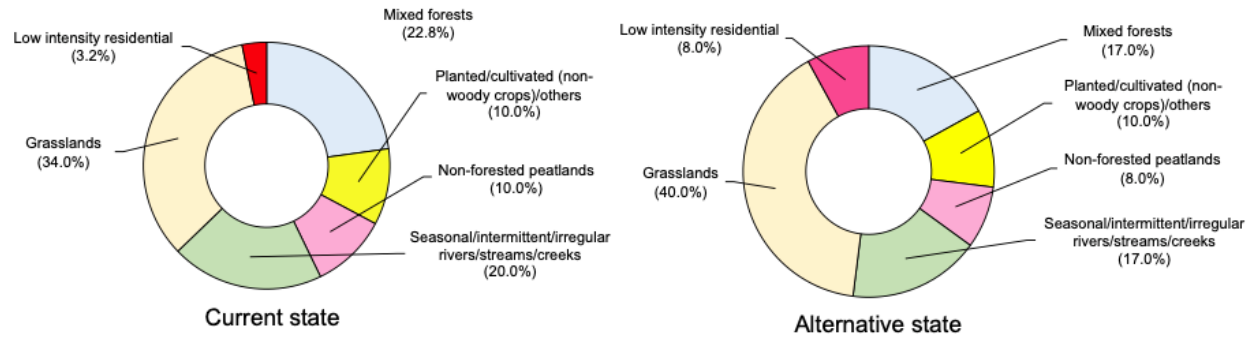


Figure 3. The proportional change in the extent of different habitat types between the current and alternative states of Khurkh Khuiten.

5.3. Expected changes in the ecosystem services of Khurkh Khuiten

Stakeholders at the RFI workshop assessed future trends in the ecosystem services provided by Khurkh-Khuiten. 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 shows that regulating services, such as local climate regulation benefit herding communities but together with provisioning services such as freshwater provision, are expected to decline over time because of unsustainable use. Cultural services, particularly recreation ecotourism and knowledge systems and education are expected to increase over time as infrastructure for tourism and human settlements expands. Similarly, crop cultivation is expected to expand in and around Khurkh-Khuiten over time.

A loss of 1,060 ha of green water habitats, including mixed forests and non-forested peatlands, as presented in Table A5, however equivalent to a little over 1.8% of the total land use for the site, is expected to result in roughly 2.4% or 4.2 Giga Litre reduction in green storage capacity per km² of wetland. This may amount to nearly 0.04 people and 0.006 hectares of built-up areas losing flood mitigation benefits per km² of wetland.

6. Capacity needs in Khurkh-Khuiten

Nine stakeholder groups were identified as important to the management of Khurkh-Khuiten Nature Reserve. Of immediate importance are stakeholders in the tourism industry, and local herders which directly benefit from the lake.

Table 4. Stakeholder capacity needs in Khurkh Khuiten Nature Reserve.

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)
MECC	Policy support (+)	Policy and monitoring	Medium (development needed)	Management planning and monitoring support through policies	Training on policy and legal frameworks
Khurkh Khuiten Protected Area administration	Implementation (+)	Implement, monitor	Medium (development needed)	Networking, skills and capacity building	Strengthening vision for improved site management
RBA	Policymaking (+)	Monitor and conserve/protect	Medium (development needed)	Capacity building, implementation monitoring	Training on policy and legal frameworks
Local (Bag) government unit	Policymaking (+)	Implement, monitor	Medium (need more develop)	Policy coordination improvement	Training on sustainable financing
Local governor/soum and aimag	Policymaking (+)	Support	Medium (need more effort)	Improving inclusiveness	Participation
Conservation organisations (NGO)	Support implementation of policies and site management	Implement and support	Medium	-	Participation
Private sector	Support management and end user (+)	Sustainable use and restore	Low need more efforts	Cooperation ability	Participation

Local community/user groups	Support management and end user (+)	Sustainable use and conserve	Low (need more efforts and development)	Responsibility, implementing in their areas	Training on sustainable use of resources; livelihoods development
International organisations	Provide support (+)	Provide support	medium	Inclusiveness, local community livelihoods	Inclusiveness, implementation monitoring and creating criteria/indicators

7. Opportunities for RFI interventions

Khurkh Khuiten Nature Reserve in north-east Mongolia is presently jointly managed by the Ministry of Environment and Climate Change and the Wildlife Science and Conservation Center, and has seen the implementation of research projects on wetland ecology and migration ecology of high-profile species such as the White-naped Crane. Although the site is relatively intact and undisturbed, an immediate priority for improved management of Khurkh Khuiten is the implementation of its site management and zonation plan, to ensure that the ecologically most sensitive parts of this wetland including the surrounding forest steppe and peatland landscape is well protected, while adjacent areas of rangeland is sustainable managed for grazing activities. This can be expected to involve a combination of grazing (exclusion) for the most ecologically sensitive areas, and rotational grazing over a period of about five years.

There has been substantial expansion of research and monitoring infrastructure at Khurkh Khuiten in recent years, and in 2024, a new research facility, with capacity to accommodate and organise research programmes was unveiled by WSCC. As a result of its relative proximity to Ulaanbaatar and accessibility from nearby towns, there is potential to expand tourism activities in Khurkh Khuiten, with a focus on high-end nature tourism.

Table 5. List of proposed interventions for Khurkh Khuiten Nature Reserve and possible project indicators.

Intervention	Output	Cost (USD)	Timeframe	Indicators	Potential Stakeholders
<i>Component 1. Strengthening site management and protection of Khurkh Khuiten and its surrounding wetland-steppe landscape</i>					
Scoping study of existing interventions and threats Khurkh Khuiten and	Assessment and scoping guidance to provide basis for	100,000	2 years	Assessment report with key threats identified and recommendatio	MECC Batshireet, Binder, Bayan-

surrounding grasslands, peatland and taiga landscapes, including targeted assessment on long-term threats (from climate change, overgrazing, tourism expansion and fisheries).	proposed RFI interventions.			ns for improved management published and disseminated to key stakeholders.	Adraga and Ömnödelger soum Khentii aimag government Khurkh Khuiten Nature Reserve Administration WSCC Mongolia ADB
Strengthen site management of Khurkh Khuiten Nature Reserve including the updating of a development of a comprehensive management plan	Site management plan over short to medium-term for Buir developed, in consultation with key stakeholders, including communities inside the site through participatory mapping. Measures to address and mitigate fire risk during the dry season defined and actively implemented. Zonation plan defines sensitive areas where grazing activities is excluded, or highly regulated	100,000	3 years	Stakeholder consultation meetings organised with local government and herding households (about 200) Meetings and workshops to strengthen engagement local stakeholders for participatory mapping for zonation, understand local livelihood needs, and engage national stakeholders. Management plan for Khurkh Khuiten expanded through participatory	Batshireet, Binder, Bayan-Adraga and Ömnödelger soum Khentii aimag government MECC Khurkh Khuiten Nature Reserve Administration WSCC

				processes involving and represented households within site. Establishment and installation of boundary markers of protected area.	
<i>Component 2. Expand grassland and forest steppe restoration in the landscapes surrounding (and within) Khurkh Khuiten Nature Reserve (linked to component 1)</i>					
Undertake a comprehensive assessment of grazing pressure and land degradation in Khurkh Khuiten, and the landscape immediately surrounding the site	Remote sensing and participatory mapping of overgrazed areas Development of a road-map and action plan for grassland restoration activities and grazing management	50,000	1 year	Stakeholder consultation meetings organised with local government and herding households (about 200) Meetings and workshops to strengthen engagement local stakeholders for participatory mapping for zonation, understand local livelihood needs, and engage national stakeholders. Grassland degradation map of Khurkh Khuiten produced.	Khentii aimag government Batshireet, Binder, Bayan-Adraga and Ömnödelger soum Khurkh Khuiten Nature Reserve Administration WSCC

Restoration of degraded and overgrazed areas of grassland and forest steppe (see also component 4 on grazing management, and sustainable herding practices)	Degraded areas of steppe grassland damaged resulting from overgrazing restored. Degraded areas of steppe-taiga damaged resulting from overgrazing restored.	200,000	5 years	Nurseries for steppe and woodland restoration established. At least two pilot plots for steppe-taiga restoration established. At least 1,000 ha of grassland and 20 ha of woodland restored over a five-year period.	
<i>Component 3. Wildlife research and monitoring, with a focus on White-naped Crane</i>					
Strengthening wildlife protection and enforcement at Khurkh Khuiten Nature Reserve	Strengthening co-management framework, with greater involvement of local stakeholders (see also component 1) Increased patrol and enforcement efforts for wildlife protection and encroachment activities.	200,000	5 years	Capacity of local rangers built to undertake patrol activities, using SMART approaches strengthened against baselines. Co-management framework with local communities strengthened, with at least 50% of households in site engaged and actively participating in co-management activities.	Batshireet, Binder, Bayan-Adraga and Ömnödelger soum Khurkh Khuiten Nature Reserve Administration WSCC

Strengthen biodiversity and wetland monitoring, with a focus on waterbird species, focal species such as Swan Goose, and shorebirds	Increased awareness of Swan Goose, and migratory waterbird conservation amongst local households	100,000	5 years	Awareness activities (including workshops) on importance of nature protection, with a focus on charismatic bird and wildlife species. Biodiversity monitoring programmes actively implemented, and synergised with existing management plans and frameworks.	
Scale-up research on biodiversity and ecology to strengthen evidence base for management plan development (see component 1, 2)	Improved understanding of migratory species movements (and movement ecology) Improved understanding of carbon and nutrient cycles of peatlands and associated wetlands. Strengthen local research capacity on wetlands and peatland ecology.	500,000	3 years	Training programmes (including workshops) on grassland and wetland ecology, with a focus on charismatic bird and wildlife species. Improved knowledge of landscape and regional connectivity of migratory bird populations.	Batshireet, Binder, Bayan-Adraga and Ömnödelger soum Khurkh Khuiten Nature Reserve Administration MECC Research institutions (incl. academy of sciences, universities)

				Research infrastructure maintained, including construction of specialized research facilities Long-term data on changes in landscape and wetland quality to guide site management cycle.	WSCC and international conservation organisations
<i>Component 4. Upscaling tourism infrastructure and local capacity for specialized, nature-based tourism</i>					

Establish infrastructure for specialized nature-based tourism including observation towers, boardwalks, hides and shelters.	Tourism infrastructure improved, to enhance opportunities for visitors to observe waterbirds and other wildlife.	500,000	3 years	Provincial-level tourism plans and strategies updated for Khentii, in coordination with MCST, MECC, aimag government and relevant tourism stakeholders. Strengthened local capacity for specialized tourism through targeted training programmes. Ecotourism strategy and business plans and packages on specialized wildlife/nature tourism and tested with tourism operators (including international bird	MCST MECC Khentii aimag government Batshireet, Binder, Bayan-Adraga and Ömnödelger soum Khurkh Khuiten Nature Reserve Administration WSCC and international conservation organisations Conservation organisations
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Strengthening the capacity of local communities and businesses for nature-based tourism.	Improved capacity and tourist-management skills of households to support tourists benefiting at least 50 households. Framework for benefits-sharing from nature-based tourism enhanced for households and tourism operators.	300,000	5 years	and wildlife tour companies). Microfinance schemes are set up to provide loans to small businesses involved with tourism.	Tourism operators in Ulaanbaatar International development agencies
Establish new tourism infrastructure targeting specialized nature tourists.	New tourism infrastructure established for accommodation (ger camps, sanitary facilities) and access roads. New facilities established to hold and manage waste from tourism activities.	500,000	3 years	New tourist accommodation and associated facilities established at Khurkh Khuiten. Waste management infrastructure constructed to manage tourism waste.	MECC Khentii aimag government Conservation organisations Tourism operators in Ulaanbaatar
<i>Component 5. Strengthening sustainable, community-based management in Khurkh Khuiten and adjacent areas to address over-grazing (see Component 2)</i>					
Strengthening local capacity in sustainable rangeland management,	Improved conditions at Buir Lake and satellite lakes against	500,000	5 years	Stakeholder consultation meetings organised,	MOFALI Batshireet, Binder, Bayan-

and management of livestock	baselines (reduced organic waste pollution from animal waste) Improved condition of grassland (pasture) in Khurkh Khuiten (in zoned areas) and adjacent landscapes against baselines.		targeting at least 50 households. Meetings and workshops to engage local people on rangeland management, sustainable grazing practices (and use of veterinary drugs that can be harmful to wildlife, e.g. birds-of-prey) Training programmes focusing on community-based rangeland management, including livestock grazing regimes (e.g. rotational grazing) established. Training programme(s) on grazing management established with local governments and MOFALI. At least (to be verified) households in	Adraga and Ömnödelger soum Khurkh Khuiten Nature Reserve Administration WSCC International development agencies IUCN Conservation organisations Agricultural banks
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				TTL and surrounding landscapes trained with sustainable rangeland management and herding practices.	
Scaling up of sustainable rangeland use/grazing activities. Strengthening resilience of herding households.	Improved condition of grassland in degraded areas arounds Khurkh Khuiten (in zoned areas) and adjacent landscapes against baselines Microfinance mechanism (for local loans and grants) created for local households and supported by lending institutions. Incentives (and compliance mechanisms) for best practices in grazing and rangeland management.	250,000	5 years	Stakeholder consultation meetings organised, targeting XX households. Meetings and workshops to engage local people. Exchange visits for herding households to other landscapes with good grazing and livestock management in place (e.g. Hustain NP). 100 households benefiting from small grants and microloans on animal husbandry and livestock management practices.	MOFALI Khentii aimag government Batshireet, Binder, Bayan-Adraga and Ömnödelger soum Khurkh Khuiten Nature Reserve management board Conservation organisations International development agencies IUCN

The proposed interventions are expected to be implemented over a period of up to five (5) years, with the main components focusing on improved site management of the Khurkh-Khuiten Nature Reserve, strengthening local and national capacity in wetland management practices, improving biodiversity monitoring research, improving rangeland and grazing management practices (led by MECC and the soum government), and scaling up nature-based tourism with a focus on specialised nature tourism. Conservation organisations such as the Wildlife Science and Conservation Center Mongolia, which co-manages Khurkh-Khuiten with MECC; international NGOs and development agencies can be expected to play a major supporting and technical role in the project through delivering high-quality research, biodiversity monitoring, and driving local community engagement.

Assessment of impacts of project implementation has been proposed to assess how each component may benefit local communities or impact the project site (see Table 5). It is important to assess how the construction of nature-based tourism infrastructure may cause disturbance to wildlife, including breeding waterbirds such as White-naped Crane and Swan Goose.

The proposed interventions are expected to undertake activities to promote gender inclusion and participation in livelihood activities, through capacity building activities for local households. The minority ethnic group in the Khurkh-Khuiten landscape are the Buryat people.

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Annex 1. Supplementary information on flood mitigation services

To further validate the identification of the top ecosystem services by means of stakeholder consultation, an expectedly essential or non-substitutable regulating service across all RFI sites, namely coastal protection and flood mitigation (i.e., storm and flood hazard regulation), was assessed based on a combination of globally available datasets supplemented by web-based tool Co\$tingNature (Mulligan, 2022). Estimates for flood mitigation were spatially inferred in QGIS from a selection of metrics expressing different biophysical values modelled online by the Water World component of this tool. Equivalent data to assess monetary values similarly to coastal protection were not available for the RFI region.

The key metrics selected for biophysical values (Table A1) were the average green storage capacity, which is the volume of water stored by each square kilometre of wetland itself as well as its soil and vegetation, and the direct influence of this storage capacity on beneficiaries found downstream of the wetland, both as the average number of people and the average built-up area that are uniquely benefitting from the resulting flood mitigation (and not from other green storage found upstream).

Table A1. Contribution of the wetland habitats to flood mitigation in Khurkh Khuiten based on site-level (biophysical) values inferred from Mulligan (2022) and expressed as ranges to represent the resulting uncertainty.

Influence of the wetland on flood mitigation (metrics)	Benefit/Beneficiaries
Average green storage capacity per sq. km of wetland in million cubic metres (GigaLitres/km ²)	175 – 183
Average population uniquely benefitting from influential green storage upstream per sq. km of wetland (n/km ²)	1.58 – 1.65
Average built-up area uniquely benefitting from influential green storage upstream per sq. km of wetland (ha/km ²)	0.254 – 0.265

Table A2. Biophysical benefits from and beneficiaries of RFI inland wetland sites for which hydrological data (i.e., the Amur and Yenisei River Basins) were available (expressed as ranges to represent the resulting uncertainty)

Site name	Green storage capacity (GigaLitres/km ²)	Downstream population (n /km ²)	Downstream built-up area (ha /km ²)
Buir Lake	119 (±5)	0.92 (±0.04)	0.185 (±0.007)
Khurkh Khuiten	179 (±4)	1.61 (±0.04)	0.260 (±0.006)
Mongol Daguur	150 (±1)	1.25 (±0.04)	0.019 (±0.001)

Ogii Lake	169 (±13)	0.70 (±0.05)	0.316 (±0.024)
Tashgain Tavan Lakes	203 (±4)	1.49 (±0.03)	0.301 (±0.006)
Terkhiin Tsagaan Lake	138 (±5)	0.54 (±0.02)	0.219 (±0.008)

Table A5. Key habitat types in Khurkh Khuiten 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 (%)
Mixed forests	13391.6	22.8	9984.9	17.0
Planted/cultivated (non-woody crops)/others	5873.5	10.0	5873.5	10.0
Non-forested peatlands	5873.5	10.0	4698.8	8.0
Seasonal/intermittent/irregular rivers/streams/creeks	11747.0	20.0	9984.9	17.0
Grasslands	19969.9	34.0	23494.0	40.0
Low intensity residential	1879.5	3.2	4698.8	8.0
Total	58,735.0	100.0	58,735.0	100.00