



Regional Flyway Initiative · Site Study

May 2026

RFI Priority Site · Airag Lake

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General Site Information

Country	Mongolia			
RFI Site Name	Airag Lake	ID049		
City/ Municipality, Province, Region	Uvs			
Geographical coordinates	48.9 N, 93.43 E	Area (has)	144,700 ha	
Key species	Great Cormorant <i>Phalacrocorax carbo</i> , Pallas's Gull <i>Larus ichthyaetus</i> , Great Crested Grebe <i>Podiceps cristatus</i> , Dalmatian Pelican <i>Pelecanus crispus</i> , Ruddy Shelduck <i>Tadorna ferruginea</i> , Common Pochard <i>Aythya farina</i> , Greater Sandplover <i>Charadrius leschenaultia</i> , Kentish Plover <i>Charadrius alexandrinus</i> , Northern Lapwing <i>Vanellus Vanellus</i> , Eurasian Spoonbill <i>Platalea leucorodia</i>			
Key habitats (biomes)	extensive freshwater marshes and pools, with emergent vegetation dominated by <i>Phragmites</i> , and sparse floating and submerged vegetation			
Key ecosystem services	provisioning services (fresh water and harvested wild food), regulating services (water purification and waste treatment), and cultural services (recreation/ecotourism, and knowledge systems/education)			
Key drivers of change	desertification; drought conditions; droughts; garbage and solid waste; livestock farming and grazing; storm and flooding; and temperature extremes			
Conservation status (mark all that applies)	<input type="checkbox"/>	Protected Area	<input type="checkbox"/>	Flyway Network Site
	<input type="checkbox"/>	Ramsar Site	<input type="checkbox"/>	Others _____
IBA/ KBA name (and number) and other designations	Airag Lake			
Management Stakeholders	MECC, Uvs aimag, Zavkhan soum administration			
With management plan?	Yes			
Project concept themes	regulating human activities to reduce their impact, improving water management across the wider landscape, to protect ecological function and to restore degraded habitat			
Length of project	5 years			
Sector/s				
No. of potential beneficiaries				
Indigenous Peoples	<input type="checkbox"/>	No	<input type="checkbox"/>	Yes, _____
Anticipated Implementation Risks	Impact of tourism			
Estimated Project Budget (US\$)	15,350,000			
Potential Source/s of Financing	<input type="checkbox"/>	Loan	<input type="checkbox"/>	Private Sector
	<input type="checkbox"/>	Grant	<input type="checkbox"/>	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

The Airag Lake RFI site (including Khyargas Lake) is in the Khyargas Lake Depression, in the northern part of the Great Lakes Depression. It is based around a National Park, Ramsar site and IBA covering 144,700 ha. The lakes lie at 1,030–1,079 m asl and are surrounded by the Mongol-Altai mountains to the west, the Sayan Mountains to the north, the Khangai mountain range to the east and the Gobi-Altai to the south. The site is located in Uvs Province (*Aimag*), about 150 km southeast of Ulaangom, the capital of Uvs Province and about 150 km northeast of Hovd City, Hovd Province. As a result of its geography in western Mongolia, Airag and Khyargas Lakes are 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). The site is significant in the lifecycle and migration of 10 waterbird species occurring regularly at levels >1% of the regional population, including; Dalmatian Pelican *Pelecanus crispus* (NT), Common Pochard *Aythya farina* (VU), and Northern Lapwing *Vanellus vanellus* (NT). In addition, it supports a smaller population of 16 globally threatened or near threatened resident and migratory waterbirds including White-headed Duck *Oxyura leucocephala* (EN), Swan Goose *Anser cygnoid* (EN), and Pallas's Fish-eagle *Haliaeetus leucoryphus* (EN). The lakes are protected Khyargas Lake National Park established in 2000.

The issues affecting Airag and Khyargas Lakes, and the surrounding area are multiple. These are primarily the result of human activities, though the changing climate has also had impacts. Grasslands at the site have been overgrazed by livestock, lake-side vegetation such as reedbeds has been overharvested and degraded as has the vegetation along the various river systems in the catchment of the lake. Upstream hydropower projects have likely affected the site and that situation is likely to become more significant as further infrastructure is planned, noting that the overall lake area has shrunk substantially in recent history. Mining is taking place close to the site, with multiple exploration permits also issued in the last 20 years, and of particular impact and as highlighted in a recent study (Munkhtur *et al.* 2025), has been the development of tourism camps and the expansion of the unpaved road network across the area.

Key priorities for improving the management of the site are strengthening management and zonation of both land and water resources. There is scope to use an integrated water management approach to ensure ecological function is maintained, though this will need to extend beyond the site boundaries into the catchment and feeder rivers. Further aspects will include reducing the impacts from grazing, unpaved roads, and tourism through zonation and codes of conduct for use, and for some activities, a permit system. Especially sensitive and degraded habitats can be restored alongside efforts to raise awareness locally about the site, its sensitivities, its species' importance, and to develop and increase monitoring.

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 Airag Lake

Location: Airag Lake and neighbouring Khyargas Lake lie in the Khyargas Lake Depression, in the northern part of the Great Lakes Depression. These lakes are bounded by the Mongol-Altai Mountains in the west, the Sayan Mountains in the north, the Khangai mountain range in the east and the Gobi-Altai to the south. Both lakes are located in Uvs Aimag, about 150 km southeast of Ulaangom, the capital of Uvs Province and about 150 km northeast of Hovd City, Hovd Province. The small settlement of Dzavkan is about 20 km west of the lake.

Area: 144,700 ha

Altitude: 1,030–1,079 m asl.

Geographical coordinates: 48.9° N, 93.43° E

Description of site: Airag Lake is a shallow freshwater lake in the Mongolian Great Lakes Basin. The site includes the wide and deep channel that connects it to the nearby Khyargas Lake, the second largest saline lake in Mongolia (Munkhtur et al. 2025), the wet meadows of the Zavkhan River delta, and the surrounding, sparsely vegetated, semi-desert landscape. Airag Lake is fed by the Zavkhan and Hungui rivers, which drains the Khangai mountains. The maximum depth of Airag Lake is about 10 m, while Khyargas Lake is up to 80 m deep. The precipitation is overall very low, but there is relatively high rainfall from June to August, when the water level in the lakes may change rapidly as the muddy oxbows are filled by rainwater. The wetland habitats include extensive freshwater marshes and pools, with emergent vegetation dominated by *Phragmites*, and sparse floating and submerged vegetation.

Site administration, management and land tenure: Airag Lake was designated as a Ramsar site in 1999 and recognised as an IBA in 2009. Together with the nearby Khyargas Lake, it was designated as an EAAFP Flyway Network Site in 2016. Khyargas Lake was established as a National Park by the Mongolian government in 2000, and a management plan has been prepared for this lake. The site is state owned and under the jurisdiction of Khyargas Lake National Park Administration, Uvs Province, and the Ministry of Environment and Climate Change. The management authorities are the local government, in collaboration with the MECC and the protected area administration.

Social and economic values: The main land use at Airag Lake is semi-nomadic animal husbandry, by local herders who breed sheep, goats, camels, horses and cattle, and graze their livestock in the pastures around the lake throughout the year. As with most landscapes in northern Mongolia, the number of livestock in the area has increased in recent years, causing overgrazing which degrades the wetland habitats and causing disturbance to breeding birds. There is seasonal small-scale commercial fishing in the lake, and wildlife hunting may be a threat. This area has high potential for tourism and scientific research;

however poorly regulated tourism has been raised as a potential problem (Munkhtur et al. 2025). Airag Lake is in an internal drainage basin and is therefore of fundamental importance for the ground water recharge of the area.

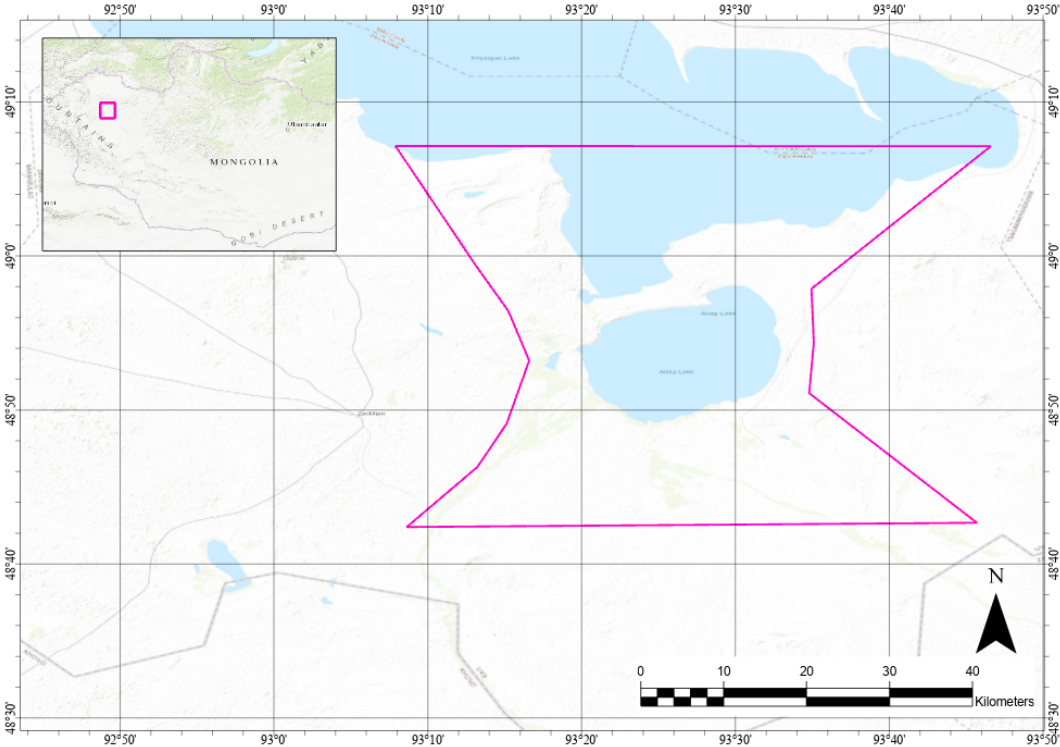


Figure 1. Map of Airag Lake, showing its location near to Khyargas Lake to the north (Map: Evelyn Pina Covarrubias)

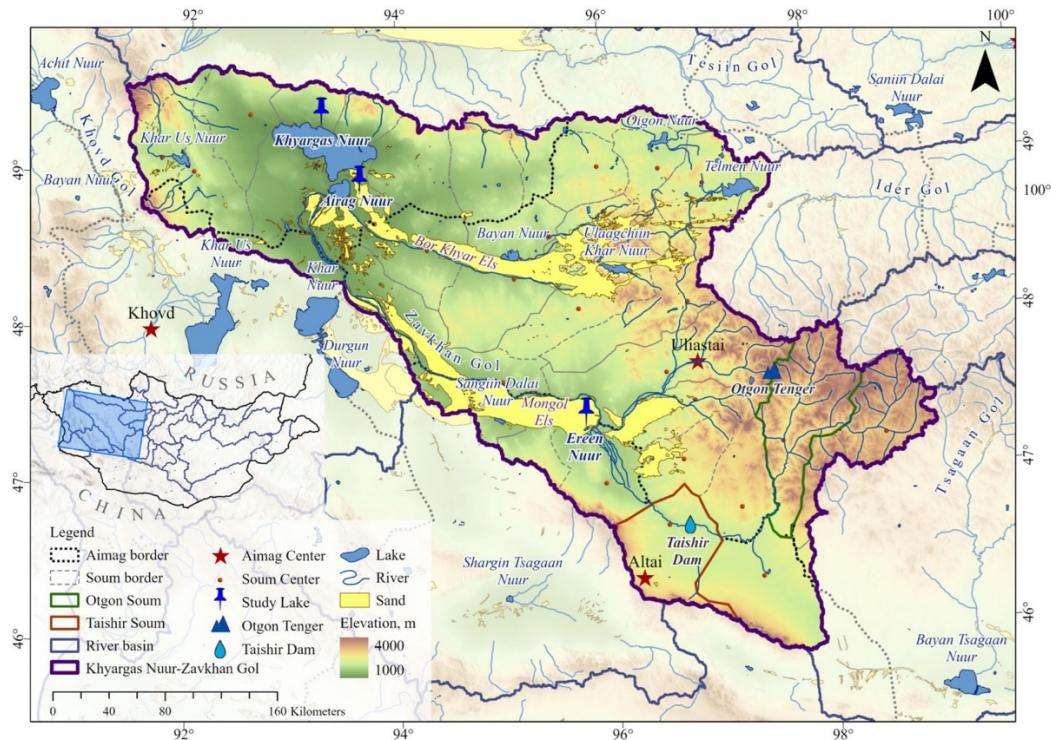


Figure 2 Map of Khyargas and Airag Lake in relation to the Zavkhan River, showing its location within the Khyargas-Zavkhan River Basin (Map: Erdene-Soyol et al. 2025)

3. Biodiversity value of Airag Lake

3.1. Key habitats

Airag Lake is a shallow freshwater lake in the Mongolian Great Lakes Basin. The wetland habitats include extensive freshwater marshes and pools, with emergent vegetation dominated by *Phragmites*, and sparse floating and submerged vegetation.

3.2. Importance of Airag Lake for migratory waterbird species

Airag Lake was identified as a candidate RFI site because the available evidence showed that it supports internationally important populations of the migratory waterbirds listed in the species table below, defined as those species which have exceeded the 1% population estimates from the Conservation Status Review (CSR1) (Mundkur and Langendoen 2022). The data used in this assessment was compiled from Batbayar and Tsevenmyadag (2009), together with the available count data from the peer-reviewed literature. A review of the candidate RFI sites was conducted by panels of national and international

(EAAFP, Wetlands International and BirdLife) ornithological experts, and which identified a total of 11 RFI candidate sites, including Airag Lake.

Table 1. List of migratory species (based on the EAAFP list of species) with globally significant congregations in Airag and Khyargas Lakes.

Species name	IUCN	CSR1 score
Great Cormorant <i>Phalacrocorax carbo</i>	LC	>1%
Pallas's Gull <i>Larus ichthyaetus</i>	LC	>1%
Great Crested Grebe <i>Podiceps cristatus</i>	LC	>1%
Dalmatian Pelican <i>Pelecanus crispus</i>	NT	>1%
Ruddy Shelduck <i>Tadorna ferruginea</i>	LC	>1%
Common Pochard <i>Aythya ferina</i>	VU	>1%
Greater Sandplover <i>Charadrius leschenaultii</i>	LC	>1%
Kentish Plover <i>Charadrius alexandrinus</i>	LC	>1%
Northern Lapwing <i>Vanellus vanellus</i>	NT	>1%
Eurasian Spoonbill <i>Platalea leucorodia</i>	LC	>1%

In addition, Airag Lake supports populations of further globally threatened and near threatened migratory waterbirds including; White-headed Duck *Oxyura leucocephala* (EN), Swan Goose *Anser cygnoid* (EN), Asian Dowitcher *Limnodromus semipalmatus* (NT) and Relict Gull *Larus relictus* (VU), Grey Plover *Pluvialis squatarola* (VU), Eurasian Curlew *Numenius arquata* (NT), Black-tailed Godwit *Limosa limosa* (NT), Bar-tailed Godwit *Limosa lapponica* (NT), Ruddy Turnstone *Arenaria interpres* (NT), Broad-billed Sandpiper *Calidris falcinellus* (VU), Curlew Sandpiper *Calidris ferruginea* (VU), Red-necked Stint *Calidris ruficollis* (NT), Dunlin *Calidris alpina* (NT), Horned Grebe *Podiceps auritus* (VU) and Ferruginous Duck *Aythya nyroca* (NT).

3.3. Other notable biodiversity

In addition to the waterbirds, Airag Lake supports populations of the globally threatened Pallas's Fish-eagle *Haliaeetus leucoryphus* (EN), Cinerous Vulture *Aegyptius monachus* (NT) and Goitered Gazelle *Gazella subgutturosa* (VU), and some rare xerophytic plants are reported to grow in the semi-arid steppes surrounding the lake.

4. Ecosystem Services

4.1. Ecosystem services provided by Airag Lake

The Airag Lake landscape encompasses diverse wetland habitats and provides a variety of ecosystem services (Figure 3), including provisioning, regulating, and cultural services that are vital to communities within the site (Table 2). The results from the RFI workshop¹ highlight the top ecosystem services provided by the site, emphasising their essential and non-substitutable nature (Table 2). These provisioning services (fresh water and harvested wild food), regulating services (water purification and waste treatment), and cultural services (recreation/ecotourism, and knowledge systems/education) are considered essential or non-substitutable, benefitting the communities within the site only.

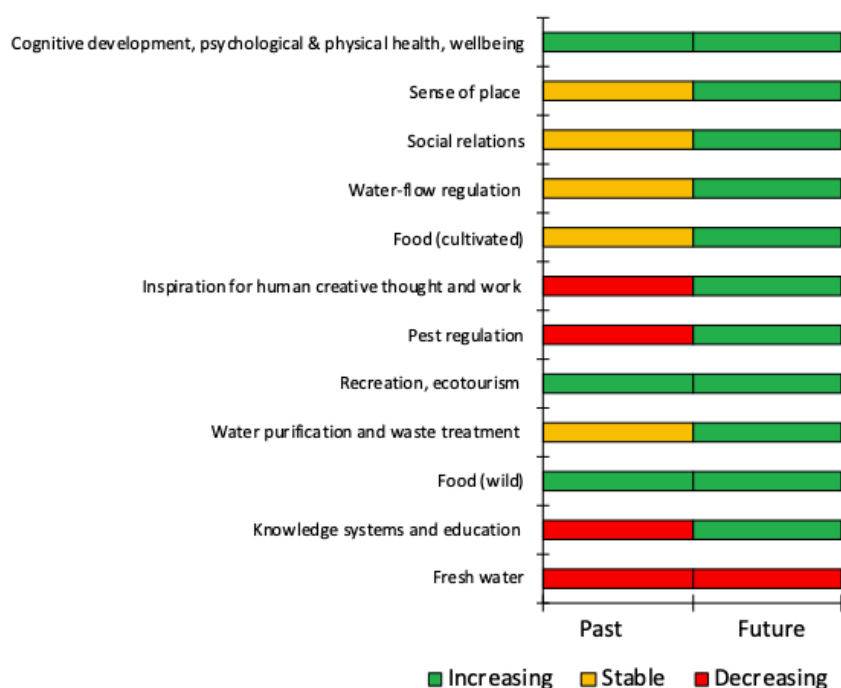


Figure 3. List of ecosystem services provided by Airag Lake, as identified through stakeholder consultation at the Regional Flyway Initiative workshop.

¹ 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 2. List of top ecosystem services provided by Airag Lake, based on stakeholder consultation.

Ecosystem services	Essential or non-substitutable	Benefits to communities			Change	
		Within the site	Adjacent to the site	Distant to the site	Past	Future
<i>Provisioning services</i>						
Fresh water	Yes	✓			Decrease	Decrease
Food (wild)	Yes	✓			Increase	Increase
<i>Regulating services</i>						
Water purification and waste treatment	Yes	✓			No change	Increase
<i>Cultural services</i>						
Recreation, ecotourism	Yes	✓			Increase	Increase
Knowledge systems and education	Yes	✓			Decrease	Increase

4.2. Global climate regulating services

The stakeholders at the RFI workshop² did not identify global climate regulating services as important benefits provided by Airag Lakes. Therefore, these ecosystem services were not assessed.

4.3. Flood mitigation services

The stakeholders at the RFI workshop³ did not identify flood mitigating services as important benefits provided by Valley of the Lakes. Therefore, these ecosystem services were not assessed.

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>

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>

5. Drivers of change and their potential impacts on Airag Lake

5.1. Current drivers of change and their level of impact

Stakeholders from the RFI workshop⁴ identified 25 drivers of change impacting Airag Lake and their corresponding levels of impact on the wetland site (Table 3). High-impact drivers include desertification; drought conditions; droughts; garbage and solid waste; livestock farming and grazing; storm and flooding; and temperature extremes. A medium impact is associated with recreational activities and tourism.

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

Driver of change	Impact
Desertification	High
Drought conditions	
Droughts	
Garbage and solid waste	
Livestock farming and grazing	
Storm and flooding	
Temperature extremes	
Recreational activities and tourism	Medium
Destruction of cultural heritage buildings, gardens, sites, etc.	Low
Earthquakes/tsunamis	
Erosion and siltation/deposition	
Fishing, killing and harvesting of aquatic resources	
Flight paths	
Habitat shifting and alteration	
Hunting, killing and collecting of terrestrial animals	
Invasive animal species	
Loss of cultural links, traditional knowledge and/or management practices	
Natural deterioration of important cultural wetland site values	
Research, education and other work-related activities	
Roads and railroads	
Sewage and wastewater from wetland site facilities	
Shipping lanes and canals	
Tourism and recreation infrastructure	
Utility and service lines	
Vandalism, destructive activities or threats to staff and visitors	

In a recent study, Munkhtur et al. (2025) reported that the lake area has reduced by 5.4% since 2002 (see also Soyol-Erdene et al. 2025), whilst mining, mineral exploration and tourism have increased considerably

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>

in the past few years. In 2002 there was one tourism camp, no mining licenses and 1,238 km of unpaved road in the landscape. By 2010 mining operations had begun and expanded in scope (*Icheet, Shar tolgoi, Tsagaankhairhkan-2 and Turgenii gol*). As of 2022, tourism had expanded to 15 camps with increased recreational use of the area, five settlements had appeared since 2002, the road network had expanded to 2,190 km unpaved and 166 km of paved road, and there has been a considerable increase in mineral exploration. Munkhtur et al. (2025) estimated that by 2022, 11.1 % of their study area exhibited varying degrees of habitat degradation. They noted in the study area that the road network itself has led to habitat degradation, and that it facilitates human access, (e.g. tourism, mining, grazing) which in turn causes further issues, and the area of “relatively poor” habitat quality increased from 32.9% to 44.5% from 2002 to 2022. Overall, Airag and other lakes in the Khyargas-Zavkhan basin is highly vulnerable to long time climate change, and is increasingly threatened by prolonged droughts, shifting precipitation patterns, and mounting anthropogenic pressures (Soyol-Erdene et al. 2025).

5.2. Potential alternative state of Airag Lake under current drivers of change

Stakeholders at the RFI workshop⁵ 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 4). This future scenario assumes that the current drivers of change affecting the site and the existing management practices will remain unchanged.

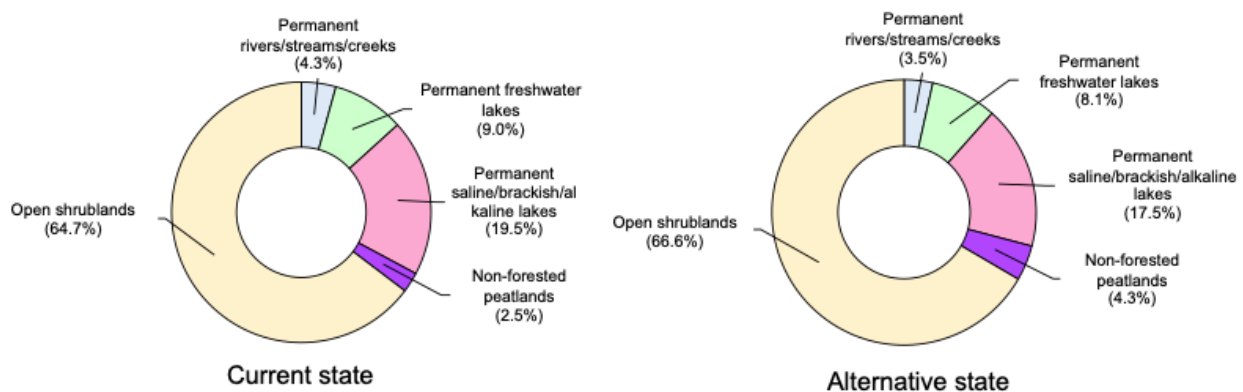


Figure 4. The proportional change in the extent of different habitat types between the current and alternative states of Airag Lake.

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>

5.3. Expected changes in the ecosystem services of Airag Lake

Stakeholders at the RFI workshop⁶ assessed future trends in the ecosystem services provided by Airag 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 3 and Table 2 show that the provisioning of the fresh water has decreased in the past and is expected to decrease continuously in the future. Both wild food provision and cultural services such as recreation/ecotourism, and knowledge systems/education are expected to increase in the future, following the trend in the past. Regulating services such as water purification and waste treatment have remained unchanged in the past but is expected to increase 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 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 1940-2011 (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 any potential project interventions in the Khyargas-Airag Lake system.

⁶ 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>

6. Capacity gaps and needs for the management of Airag Lake

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

Table 4. Stakeholder capacity needs in Airag 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	Policy development	Strengthen existing roles and capacity in policy development	Good	Increase budget and financing	Raise financing and resourcing for wetlands management
Protected area administration	Protection, management and interventions at site using evidence base	Strengthen existing roles and capacity	Good	Building management capacity for site managers; Project development and implementation	Capacity on evidence-based wetlands management
River basis authority (RBA, i.e. Zavkhan)		Strengthen existing roles and capacity	Good		
Local government	Policies and decision-making for land use and site management	Strengthen existing roles and capacity	Medium	Sharing experience and networking	Organisation strengthening. Sharing experiences at workshops
Herders and community	Involvement in co-management	Strengthen existing roles and capacity	Medium	Capacity on how to improve local livelihoods	Involvement/i inclusion in projects. Training programmes (productivity of herding)
Rangers	Law enforcement and promote awareness	Strengthen existing roles and capacity	Good	Training programmes and more field equipment and	

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)
				learning/sharing experience	
NGO projects and programmes	Support wetland management	Support, budget and research	Medium	Supporting the effective implementation of management plan	Provide funds to support projects

7. Opportunities for RFI interventions

7.1. Recommended Interventions

There are various issues affecting the Airag and Khyaragas Lakes, the adjacent wetlands, and the surrounding habitat. The steppe, dry-steppe and semi-desert areas surrounding the lakes are sensitive to degradation, most often caused by human activities (though climate change is also having an effect.), the principal threats being the road network, tourism, mining, over grazing and water management.

Improved and integrated water management across the wider landscape will be critical to maintaining water flows into the lake system and the ecological function of the system. This can be achieved through protecting inflows from the Zavkhan and Khungui Rivers as well as ensuring that the water levels at the upstream Khar-Us lake system (another Ramsar site) are maintained, since Airag lake is in part fed by that system. The management of the existing Durgun hydropower plant (between Khar-Us and Khar Lakes) and the Erdeneburen hydropower plant (under construction on the Khovd River), is expected to alter the hydrology of Khar-Us Lake and thus in turn Airag Lake, overall reducing ecological connectivity across the wetlands, especially for migratory fish.

Interventions at the site should focus on regulating human activities to reduce their impact, improving water management across the wider landscape, to protect ecological function and to restore degraded habitat.

Table 5. List of proposed interventions for Airag and Khyaragas Lakes and possible project indicators

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
<i>Component 1. Strengthening site management and protection of the Airag and Khyaragas Lakes and the surrounding wetland-steppe-alpine landscape</i>					
Undertake scoping study of existing interventions and threats at Airag and Khyaragas Lakes and surrounding grasslands, including targeted assessment on long-term threats (from climate change, hydropower, overgrazing, tourism expansion).	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 participatory assessment of existing interventions and threats.	100,000	2 years	MECC Uvs aimag administration Zavkhan soum administration Conservation organisations Research institutions ADB

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
<p>Strengthen site management for Airag and Khyaragas Lakes including developing a comprehensive management and zonation plan (including unpaved roads)</p>	<p>Airag and Khyaragas Lakes are better managed through the development of the site management and zonation plans, and installation of boundary markers for zones.</p> <p>Habitat degradation and loss to unpaved and informal roads reduced by 15% (over project period)</p>	<p>Site management plan over short to medium-term developed, in consultation with key stakeholders, including communities inside the site through participatory mapping.</p> <p>Zonation plan defines sensitive areas where grazing activities is excluded, or highly regulated and integrated in the site management plan</p> <p>Number of stakeholder consultation meetings organised with local government and herding households in Zavkhan soum (at least 100 households) for participatory mapping for zonation, understand local livelihood needs, and engage national stakeholders.</p> <p>Establishment and installation of boundary markers of zones.</p>	<p>200,000</p>	<p>3 years</p>	<p>MECC</p> <p>Uvs aimag administration</p> <p>Zavkhan soum administration</p> <p>Airag Lake Protected Area Administration</p> <p>Zavkhan River Basin Administration</p> <p>Conservation organisations</p> <p>Research institutions</p> <p>Local community groups</p>

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
<p>Develop an integrated water management plan for the entire Khyargas-Zavkhan River catchment</p>	<p>Airag and Khyaragas Lakes are better managed through the development of an integrated water management plan, and restoration plan.</p>	<p>Integrated water management plan developed and published, with inputs from local stakeholders to regulate water consumptive activities around the lakes.</p> <p>Riparian corridors mapped for restoration along the main tributaries that feed the lake / wetland system.</p> <p>Number of workshops organized to engage all local actors involved in water resource planning/use to assess local water demand and monitor implementation of plan.</p> <p>Number of stakeholder groups engaged in the integrated water management plan development.</p> <p>Restoration plan for riparian vegetation in the catchment zone of the wetland system with restoration targets (10 km along Zavkhan River) developed.</p>	<p>200,000</p>	<p>3 years</p>	<p>MECC</p> <p>Uvs aimag administration</p> <p>Zavkhan soum administration (and bag governments)</p> <p>Zavkhan River Basin Administration</p> <p>Local community groups</p> <p>Research institutions</p> <p>Conservation organisations</p>

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
<i>Component 2. Expand grassland and vegetation management and restoration in the Khyargas-Zavkhan landscapes (linked to component 1)</i>					
<p>Undertake a comprehensive assessment of grazing pressure, vegetation and degradation in Airag and Khyaragas Lakes and the landscape immediately surrounding the key lake systems.</p> <p>Assessment to include mapping of ecologically sensitive areas and hotspots of nutrient pollution (from animal defecation).</p>	<p>Airag and Khyaragas Lakes are better managed through roadmap and action plan development for grassland restoration activities 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 Airag and Khyaragas Lakes</p>	<p>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 Airag and Khyaragas Lakes</p> <p>Number of stakeholder groups engaged, targeting the local government and herding households (about 200 households)</p> <p>Number of meetings and workshops organized to strengthen engagement local stakeholders for participatory mapping for zonation, understand local livelihood needs, and engage national stakeholders.</p>	100,000	2 years	<p>MECC</p> <p>Uvs aimag administration</p> <p>Zavkhan soum administration (and bag governments)</p> <p>Zavkhan River Basin Administration</p> <p>Protected Area Administration</p> <p>Local community groups</p> <p>Research institutions</p> <p>Conservation organisations</p>

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential 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.	<p>Nurseries for vegetation restoration established.</p> <p>At least two pilot plots for grassland restoration established, with grazing exclusion structures and signage in place.</p> <p>At least 1,000 ha of grassland restored over a five-year period.</p>	500,000	5 years	
<i>Component 3. Wildlife research, monitoring and management</i>					
Strengthen wildlife protection and enforcement at Airag and Khyaragas Lakes.	Improved wildlife protection and enforcement at Airag and Khyaragas Lakes through co-management framework, increased patrol and enforcement efforts for landscape, wildlife protection and encroachment activities, and increased capacity of local rangers	<p>Co-management framework with local communities developed.</p> <p>Number of households (target of at least 50% households in site) engaged and actively participating in co-management activities.</p> <p>Training program and modules on patrol and enforcement developed</p> <p>Number of training activities conducted</p> <p>Number of local rangers trained on patrolling and enforcement.</p>	200,000	5 years	<p>administration</p> <p>Zavkhan soum administration (and bag governments)</p> <p>Zavkhan River Basin Administration</p> <p>Protected Area Administration</p> <p>Conservation organisations</p> <p>Research institutions</p>

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
Strengthen biodiversity and wetland monitoring, with a focus on waterbird and wildfowl species.	Better monitoring of biodiversity and wetland ecosystems in the landscape through a locally engaged biodiversity monitoring program and increased awareness of globally threatened species in the landscape and migratory waterbird conservation amongst local households.	<p>Monitoring mechanism for the site established</p> <p>Number of monitoring activities conducted using the established biodiversity and wetland monitoring scheme.</p> <p>A locally led conservation group organized</p> <p>Number of awareness-raising activities (including workshops and WMBD activities) on importance of nature protection, with a focus on charismatic bird species, implemented.</p> <p>Number of stakeholder groups engaged in the awareness-raising activities.</p>	100,000	5 years	
Scale-up research on biodiversity and ecology to support evidence base for management plan development (see component 1, 2)	Airag and Khyaragas Lakes are better managed through improved understanding of migratory species movements (and movement ecology) and strengthened local research capacity on	<p>Training programmes (including workshops) on grassland and wetland ecology, with a focus on charismatic bird and wildlife species developed</p> <p>Number of training activities implemented</p>	500,000	3 years	<p>MECC</p> <p>Uvs aimag administration</p> <p>Zavkhan soum administration (and bag governments)</p> <p>Protected Area Administration</p>

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
	<p>wetland and lentic ecology.</p> <p>Long-term data on changes in landscape and wetland quality to guide site management cycle.</p>	<p>Number of local researchers and stakeholder groups trained.</p> <p>Number of locally led research on wetland and lentic ecology.</p>			<p>Conservation organisations</p> <p>Research</p>
<i>Component 4. Regulate and strengthen tourism infrastructure and local capacity for specialized, nature-based tourism</i>					
<p>Establish licensing and regulations for tourism.</p> <p>Develop a code of conduct for tourism operators including a permit / license system dependent on minimising negative impacts.</p>	<p>Impact of habitat degradation caused by tourism activities in the landscape reduced through local regulations, strengthened capacity, and microfinancing.</p>	<p>Provincial-level tourism regulations, plans and strategies updated in coordination with MCST, MECC, aimag government and relevant tourism stakeholders.</p> <p>Number of training activities to strengthen local capacity for sustainable specialized tourism</p> <p>Number of stakeholders engaged in tourism-related activities engaged.</p> <p>Microfinance schemes to provide loans to small tourism businesses to improve sustainability and reduce impact created.</p> <p>Number of small tourism businesses</p>	500,000	3 years	<p>MCST</p> <p>Uvs aimag administration</p> <p>Zavkhan soum administration, and other adjacent soums</p> <p>Tourism operators</p> <p>Conservation organisations</p>

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
		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 the increased local capacity of local communities and businesses for nature-based tourism	<p>Framework for benefits-sharing from nature-based tourism enhanced for households and tourism operators.</p> <p>Number of stakeholder groups engaged in the framework development for nature-based tourism</p> <p>Training program on nature-based tourism developed</p> <p>Number of stakeholders trained on tourist management (target of at least 50 households)</p>	300,000	5 years	
Upgrade tourism infrastructure to reduce negative impacts.	Impact of habitat degradation caused by tourism activities in the landscape reduced through well-regulated development of tourism infrastructure, particularly on the management of unpaved road network, and waste	<p>Tourism infrastructure plan, with the goal of making the road network better regulated and constructing waste management infrastructure to manage tourism waste.</p> <p>Number of facilities established/ upgraded, in line with the tourism infrastructure plan</p>	500,000	3 years	

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
	management infrastructure	<p>Number of stakeholder groups engaged in the upgrading of tourism infrastructure</p> <p>Number of people benefiting from the upgraded tourism infrastructure</p>			
<p><i>Component 5. Strengthening sustainable, community-based management in Airag and Khyaragas Lakes and adjacent areas to address over-grazing (see also Component 2)</i></p>					
<p>Strengthen the local capacity in sustainable rangeland management, and management of livestock</p>	<p>Improved conditions at Airag and Khyaragas Lakes against baselines (reduced organic waste pollution from livestock waste)</p> <p>Improved condition of grassland (pasture) in Airag and Khyaragas Lakes (in zoned areas) and adjacent landscapes against baselines.</p>	<p>Number of stakeholder consultation meetings organised, targeting at least 50 households.</p> <p>Number of meetings and workshops to engage local people on rangeland management, sustainable grazing practices</p> <p>Training programmes focusing on community-based rangeland management, including livestock grazing regimes (e.g. rotational grazing) created.</p> <p>Training programme(s) on grazing management established with local governments and MOFALI created.</p>	<p>500,000</p>	<p>5 years</p>	

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
		<p>Number of capacity-building activities implemented.</p> <p>At least XX households at Airag and Khyaragas Lakes and the surrounding landscapes trained with sustainable rangeland management and herding practices.</p> <p>Number of trained stakeholders adopting the sustainable rangeland management and herding practices</p>			
<p>Scale up sustainable rangeland use/grazing activities to strengthen the resilience of herding households.</p>	<p>Improved condition of grassland in degraded areas around Airag and Khyaragas Lakes (in zoned areas) and adjacent landscapes against baselines through microfinance mechanisms, benchmarking activities, and incentive mechanisms.</p>	<p>Number of stakeholder consultation meetings organised, targeting XX households.</p> <p>Number of exchange visits organized for herding households to other landscapes with good grazing and livestock management.</p> <p>Microfinance mechanism (for local loans and grants) created for local households and supported by lending institutions.</p> <p>100 households benefiting from small grants and microloans on animal</p>	<p>250,000</p>	<p>5 years</p>	

Intervention	Outcome	Indicators	Cost (USD)	Timeframe	Potential stakeholders
		<p>husbandry and livestock management practices.</p> <p>Incentives (and compliance mechanisms) for best practices in grazing and rangeland management created.</p> <p>Number of stakeholders trained and engaged who adopted sustainable rangeland use/ grazing activities</p>			
Total investment for 5 years			15,350,000		

7.2. Potential Financing

The estimated project cost is USD 15,350,000 over a 5-year period. This project budget supports local assessments and scoping studies, development of plans on site management, zonation, integrated water management, tourism, and co-management framework, capacity building activities on integrated water use, wetland research, nature-based tourism, sustainable rangeland management, grassland restoration pilots, microfinancing mechanisms, and upgrading of tourism infrastructure.

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 Airag and Khargyas Lakes, tourism, mining, biodiversity monitoring, enhancing rangeland and grazing management practices (led by MECC and the soum government) for local grazing households. Conservation and research organisations such as the Wildlife Science and Conservation Center Mongolia can be expected to play a major supporting and technical role in the project.

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 upgrading infrastructure that would improve tourism experience in the Airag Lake. Building these infrastructures, however, would induce noise that may disturb the wildlife in the area. 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 Airag 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 rivers/streams/creeks	6228.0	4.3	5069.3	3.5
Permanent freshwater lakes	13035.3	9.0	11731.8	8.1
Permanent saline/brackish/alkaline lakes	28243.2	19.5	25346.4	17.5
Non-forested peatlands	3620.9	2.5	6228.0	4.3
Open shrublands	93709.3	64.7	96461.2	66.6
Total	144836.7	100.0	144836.7	100.0