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The Great Lakes Basin of Mongolia
Greatness under threat

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The Great Lakes Basin of western Mongolia is an area of outstanding natural beauty and cultural heritage. It stretches from high mountain ranges with glaciated peaks, through forests, internationally recognized wetlands fringed with some of the last remaining extensive reed belts in central Asia, to semi desert and the Gobi desert.

Covering 18% of the country, it is home to one third of Mongolia's total renewable water resources and these resources are precious. The Great Lakes Basin is still rich in freshwater, but the available water is limited and the ongoing changes in climate, land use and economic activities are taking their toll.

The situation will worsen if the water resources are not very carefully managed in the future. Only a healthy environment can adequately support long term economic development.

A unique and complex system

The strength and fragility of the Great Lakes Basin has already been nationally and internationally recognised. The area is partially protected under Mongolian law by the Uvs Lake Basin Strictly Protected Area, the Khar-Us Lake, Khyargas Lake and Altai Tavan Bogd National Parks.

Khar-Us Lake National Park was designated in 1999 as one of eleven Ramsar sites in Mongolia. Parts of the Great Lakes Basin fall within the Altai-Sayan Ecoregion, one of WWF's Global 200 Ecoregions (which are designated for their globally outstanding biodiversity features). The 320,000 people living in the area depend on the freshwater of the Great Lakes Basin for their personal survival, the survival of their herds and for the economic stability and growth of the region.

The wildlife statistics for the Great Lakes Basin also speak of its importance:

- *The lakes and wetlands provide important breeding ground and a migration stopover for 369 bird species, of which 10 are globally endangered, 21 are nationally threatened, and 41 are rare*
- *Altogether in the Great Lakes Basin have registred more than 80% of Mongolia's bird spesies*
- *554 plant species of 62 families have identified*
- *The basin is home to 40 species of mammals, including the last remaining population of Mongolian saiga in desert-steppe habitat, and the globally endangered snow leopard in high mountains*
- *Ten fish species have been recorded in the rivers and lakes*

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For the Great Lakes Basin to function effectively, it relies on a chain of events. Water that falls as rain and snow in the mountains must sink into the soil or travel along major rivers such as the Tes, Khovd and Zavkhan to finally flow into the basin's shallow, landlocked lakes that make up 60% of all Mongolia's lakes. These lakes are highly dependent on the rivers and without their constant and continual replenishment of water, the levels of the lakes will decline.

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Greatness under threat

The water resources of the Great Lakes Basins face increasing and multiplying threats.

Land use change

***Overgrazing*:** The major economic activity in the Great Lakes Basin focuses on herding goats, sheep, cows, horses, and camels. The sharp increase in this industry has led to overgrazing of pastureland, threatening plant communities adjacent to wetlands and disturbing breeding bird populations. Changes or increases in land use accelerates erosion and evaporation and reduces groundwater recharge, and the generation of runoff.

***Mining*:** In recent years, exploration for natural resources has increased rapidly. Currently, more than 28 km^2 are under intensive mining for gold, silver, coal, precious stones and other natural resources and an additional 120,000 km^2 are under exploration. With mining comes increase in water use, landscape degradation, and pollution, which accumulates in the landlocked lakes of the Great Lakes Basin.

Irrigation: More than one fourth of all irrigation schemes constructed in Mongolia between 1958 and 1990 were located in the Great Lakes Basin. Most of these irrigation schemes involved creating an open channel to divert water from the nearest river. Since 1990, the majority of irrigation schemes have gone out of operation partly due to the decline in arable land. However, in many cases water still flows through the abandoned water channels, altering natural river flows, disrupting the connectivity within the Great Lakes Basin and causing barriers for fish.

Dams

Four large scale hydropower projects have been planned for the basin, but their possible effects on lake, river and wetland ecosystems have not been evaluated in adequate Environmental Impact Assessments. Electricity production through large-scale hydropower stations is considered one of the main threats to freshwater biodiversity. Dams fragment habitat and alter river flows. Any disturbance of river and lake connectivity or of the conditions in one of the connected habitats will have consequences for all populations throughout the basin.

Climate Change

While historical climate records show that global warming and changes in precipitation patterns have already occurred during the last century, climate change simulations are predicting that these will accelerate significantly in the future. Climate changes in the Great Lakes Basin are already apparent:

- *Between 1946-52 and 1985, the number of glaciers in the Great Lakes Basin have decreased by 6%. A hydrological survey conducted in summer 2003 revealed clear signs of disappearing snowfields and shrinking glaciers in many parts of the glacier region. The melting of the permafrost caused landslides.*
- *Since the mid 1990s, below-average flows have been observed for the rivers draining from the Khangai Mountains, where runoff is generated as a result of rainfall and evaporation. Ponds, headwater streams, marshes and small lakes will be the first to suffer from these reduced flows. On the contrary, a warming is occurring in the Altai Mountains. The glaciers contribute more than 50% of the annual flow of the Khovd River. In spring, the water levels of the Khovd river rise due to the melting of snow, glaciers, and the break-up of river ice. Increased air temperatures in winter have meant that these high spring flows are now occurring 20 days earlier than they did historically.*
- *The level of Uvs Lake has increased by 200 cm in the last 40 years. At the same time, other lakes of the Great Lakes Basin, particularly in the Gobi area, are shrinking or even disappearing.*

Increases in water temperature can drastically affect all aquatic species, their distribution, reproduction, the entire species composition of the Great Lakes Basin and ultimately humans and their livelihoods.

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Protecting a national treasure

None of these threats are isolated. Each has a knock-on effect on the other, compounding the concern for the future of the Great Lakes Basin water resources. All those who use, depend upon and exploit these precious water resources need to understand the urgent situation that must now be addressed. To halt the possibility of disaster, the local, national and international community must work together to ensure the healthy future of the Great Lakes Basin.

To balance socio-economic needs, a fragile environment and to safeguard water resources for the future, WWF Mongolia recommends that an Integrated River Basin Management (IRBM) plan be developed. This plan will include coordination and supervision of water related activities in the whole basin, ensuring that water resources are utilized without exceeding their renewal rate. The effects of climate change will be monitored and adaptation strategies implemented.

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To succeed, this plan requires:

- Facilitated dialogue between all parties using and impacting the water resources
- Making the financial means available to the Mongolian Government to enforce water laws that guarantee sustainable management of the water resources
- The scientific community to target research at existing gaps in order to provide essential data needed
- International donors to fund projects that develop a comprehensive management strategy and to train national experts
- Creation of a Sustainable Energy Policy that integrates all available alternative energy sources.
- The high mountains of the Mongolian Altai are areas of high wind power potential and with around 300 days of sunshine every year, solar energy is a natural solution
- Environmental Impast Assessments to be conducted for all planned dams. These assessments should consider impacts at the basin scale and should fully integrate cumulative impacts from land use and climate change. Dam proposals should consider whether building a facility would be economically sustainable and cost effective given further possible effects from climate change
- Increased conservation of land. It is essential to conserve the areas largely responsible for the sustainable recharge of groundwater and surface water storage. In particular, the upper areas of the Mongolian Altai, as well as the Khangai Mountains and Khuvsgul mountainous region, should be incorporated into the protected area network, as nearly 70% of the total basin runoff originates in these regions
- Addressing the causes of land degradation. Mining operations should meet international standards of best environmental practices. The appropriate legal and regulatory framework should be established to ensure minimization of impacts from mining operations, including specific measures to protect water resources. All extractive waste facilities should be built to standard specifications, have a permit to operate, and have a waste management plan. Finally, all necessary steps should be taken to reverse the trends of overgrazing and deforestation in the Great Lakes Basin.

The existing water resources of the Great Lakes Basin are highly limited and climate change and other human-related changes are expected to put severe pressure on these resources in the future. An integrated approach to the environmental management of the Great Lakes Basin is essential to secure the water needs of humans and environmental conservation.

WWF Mongolia calls upon the Government of Mongolia, local authorities, international donors, non-profit organizations, citizens, and scientists to seize the current opportunity of securing a sustainable future for this great and fragile region.

WWF's mission is to stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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