



# WATER CONSERVATION IN EAST ASIA

## Sustaining Dauria's wetlands, grasslands and local communities through the wise use of water resources



Photo: Dan Hanisch  
Wetland in the Argun area, China

## The Wetlands

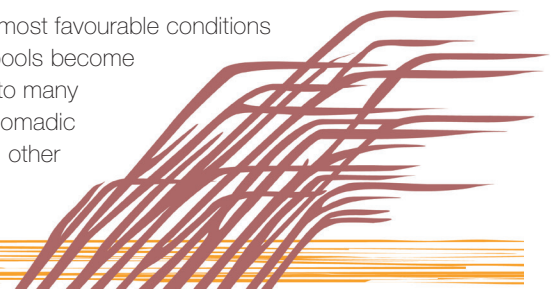
Wetlands are the 'veins and arteries' of the Dauria steppe ecosystem, supporting grasslands and other ecosystems and sustaining the livelihoods of local communities throughout the region. With a low annual rainfall, water in the Dauria is a precious and fragile resource.

Daurian wetlands support globally significant populations of at least 20 bird species on the IUCN Red List of Threatened Species, including the Japanese Crane, Swan Goose, Great Bustard, and Tundra and Whooper Swans. The Dauria also provides important resting and feeding areas on several major flyways across Asia, with several million waterbirds depending on the Dauria's rivers and lakes.

As well as being the keystone for the Dauria's rich biodiversity values, water is of critical importance for herders and local communities. It is estimated that in Mongolia alone 60% of the local population are herders, and substantial herder communities are still present in Russia and China. Unsustainable water use in the Dauria region will directly impact on the livelihoods of at least two million people.

The water and climatic systems of the Daurian ecoregion are complex, and there is a pronounced natural climate cycle with cyclical periods of wet and dry over a span of 25–40 years. The cyclic changes in wet and dry conditions experienced across the Dauria can take place on a massive scale. For example, over the past nine years the region has been in a period of drought, causing Large Barun-Torey Lake in Russia to completely dry up, and decreasing the volume of Dalai Lake, the largest freshwater lake in the Dauria, by 50%.

Most fauna species migrate between areas within the Dauria depending on where the most favourable conditions arise. During humid periods, steppe areas with large lakes and multiple small shallow pools become optimal habitat for most wildlife, while in dry periods the steppe becomes inhospitable to many species and therefore forest-steppe and river floodplains become favoured. Similarly, nomadic herders have traditionally moved around seasonally depending on water availability and other conditions to find the best grazing opportunities for livestock.



Understanding and rationalising transboundary water resource use in the water scarce Dauria region will have a decisive influence.



Photo: Dan Hanisch

## The Challenge and Opportunity to Make a Difference

Water is a naturally scarce resource in the steppes. With human-induced changes, however, this resource is becoming even more limited, and water scarcity is one of the greatest threats to the region. This has been brought about in part by the complete change in the land use of the steppe in recent years and the accelerating economic development in the Russia–China–Mongolia border region. The major driving economic force is mining, which brings with it heavy water demands. In addition, urbanization has resulted in the damming of water ways and the transfer of water to cities, which has had huge effects on steppe ecosystems as well as on rural livelihoods. National water use policies are often put in place without reference to impacts on downstream transboundary wetlands and river systems.

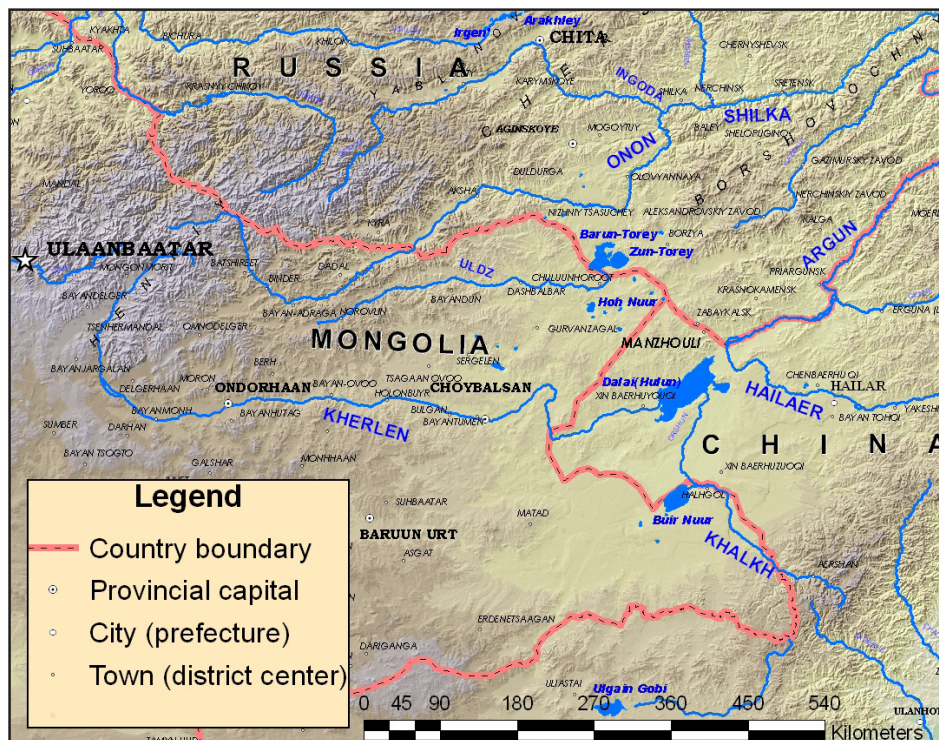
The Argun River basin is one of the most threatened river systems in the Dauria from the effects of upstream water diversion. One such diversion project is currently being undertaken in China to transfer water from the Hailaer River (as the upper reaches of the Argun River is known in China) to Dalai Lake for use as a water source for irrigation, agriculture and urban areas. It has been predicted that this may cause alarming environmental degradation across one million hectares of China's nature reserve territory and 2000 square kilometres of valley/floodplain habitat along the Argun River on the Russia–China border.

The governments of the Zabaikalsky Province of Russia and the Inner Mongolia region of China have signed an agreement to protect the Argun River, but implementation of the agreement lags far behind the immediate wetland conservation needs.

Water shortages in the Dauria are further exacerbated by climate change. It is predicted that climate change will increase the fluctuation of annual precipitation, and linked elevated temperatures will increase levels of evaporation. In the future it is expected that this will bring more prolonged and severe droughts in the region.

Tremendous pressure is now being placed on the Daurian wetland ecosystems. Natural grassland ecosystems as well as agricultural and grazing areas are degrading quickly due to water shortages combined with other impacts including grassfires, overgrazing, poaching, rapid infrastructure development, and mining. A key challenge for the Dauria region is the allocation of scarce water resources for both human use and ecosystem conservation.

Understanding and rationalising transboundary water resource use in the water scarce Dauria region will have a decisive influence on future patterns of international water management in larger transboundary basins of Northeast Asia. If sound water use patterns are agreed for the Argun River today, there is a hope that sustainable water use can be negotiated for the larger Amur River Basin in the future.



A number of notable river basins occur in the Dauria, and most of these cross national borders. The Onon and Uldz rivers, for example, are shared by Mongolia and Russia, while the drought-prone Argun River Basin crosses China, Mongolia and Russia.

## Scope of the Project

This project confronts the greatest potential threat to the Dauria steppe ecoregion: uncoordinated and unsustainable competition for water.

One of the most critical needs for water conservation in the Dauria is research on the Environmental Flow Requirements of the region's transboundary rivers, and understanding of the dynamics of the fluctuating ephemeral wetland ecosystem of the area. Developed through scientific research, the Environmental Flow Requirements will indicate the minimum level of water necessary for the maintenance of the ecological values of wetlands and river systems, and will allow the effects of upstream water development proposals on downstream ecological values to be determined. Once endorsed by China and Russia, the Environmental Flow Requirements will guide the level of water diversion that can responsibly be undertaken for human use and economic development.

The Dauria's wetlands, and therefore the grasslands they support, will be conserved by advocating for the expansion of the protected area network. The most urgent first step is to protect the Argun River wetlands within an appropriate international protected area, and subsequently to nominate the area as a Ramsar site. Engagement with local communities is also integral to the successful conservation of the area. The Daursky Biosphere Reserve, which contains the significant Torey Lakes system (part of transboundary Uldz River Basin), has a long history of cooperative sustainable water use between conservationists, local herders and fishermen, and this could serve as a replicable model for the region.

The project will also encourage the cooperative use of the region's scarce water resources by promoting a range of measures for conserving water, including production of common water management policies adapted to particular climate conditions and the use of cutting edge water-saving technologies.

The project addresses both the conservation of important wetlands and implementation of water management strategies. The results of this project will be useful in the management, planning and monitoring of existing and future water use development projects in the Dauria and other semi-arid grassland regions.

The project will work with IUCN's *Water and Nature Initiative* (WANI). This global initiative, in conjunction with more than 80 partner organisations, has implemented water-related poverty reduction and environmental protection projects across the world by helping people to better manage river flows and by improving access to all communities. The WANI toolkit provides concrete guidance on issues such as the management of flows, governance, economics and incentives, and adaptation to climate change, and these guidelines will be practically applied to aid the implementation of this project.

# Project Actions

The project consists of five interrelated actions, each having specific outputs:

- 1. Strategic water planning in the Dauria region:** A strategic assessment of the water management options in the Dauria will be prepared, based on the guidelines issued by the UNECE (United Nations Economic Commission for Europe) Convention of the Protection and Use of Transboundary Watercourses and International Lakes. This strategy will identify key threatening processes to the Dauria water systems and prescribe both domestic and cooperative transboundary actions to prevent and remove these threats. Preparation of this strategy will introduce cutting edge approaches to transboundary river basin management into decision-making in the region and establish links to relevant international institutions (such as the UNECE Convention Secretariat, IUCN WANI, etc.).
- 2. Environmental flow research and government advocacy:** Scientific research will be undertaken on the environmental flow requirements of the Argun River during different phases of the climate cycle, and the information will be collated into a technical guidance document. The project will also develop an environmental flow case study for the Uldz River basin where the significant Daurian and Mongol–Dagur Biosphere Reserves are located. An extended advocacy program will be implemented to promote and institute the environmental flow concept amongst key water management agencies. The environmental flow guidelines will provide the technical foundation for harmonizing bilateral water management policies and will also be used to promote the critical need for implementation of the existing Sino–Russian provincial agreement on the conservation of the Argun River Basin.
- 3. Wetland monitoring system:** Wetland monitoring will be enhanced by developing combined remote-sensing and field-transect monitoring methods in transboundary wetlands. This will allow scientists to measure the effects of climate change and other impacts on water levels and ecosystem health, and will help improve water management for human use and economic development.
- 4. Wetland protected area network enhancement:** The project will advocate the expansion of the protected area network to incorporate key wetlands of the Dauria and to create a continuous band of protected wetlands and steppe along the Argun River valley. Given the fundamental basis that these water systems have for the sustainability of the Dauria ecosystem as a whole, their protection is crucial to the conservation of grasslands and other ecosystems and to sustaining local community livelihoods.  
  
As a first step, the spatial and temporal requirements for the conservation of Dauria wetlands throughout all phases of the climate cycle will be analysed. This information will be essential in informing the planning and establishment of priority protected areas. In concert with expanding the protected area network, co-management projects with local herders, hunters, and fishermen will be designed and implemented.
- 5. Promotion of innovative water use:** An awareness-raising program of water-saving technologies and appropriate resource-use practices will be carried out. The pilot program will initially target Manzhouli City in China and the mining/energy industry that has rapidly developed throughout Dauria.

## Implementing Agencies and Partners

The project will be a partnership between the Temperate Grasslands Conservation Initiative (TGCI) and the implementing agencies.

### Implementing Agencies

- Dauria International Protected Area (DIPA)
- Baikal Fund (Chita)
- Rivers Without Boundaries

### Potential Project Partners

- Bilateral Argun Commission (Inner Mongolia and Zabaikalsky Province)
- Bilateral Sino-Russian Transboundary Waters Commission
- Water Management Agencies in Russia and China
- Dauria Eco-centre
- Biodiversity Conservation Centre
- Green Longjiang NGO

### Regional Research Institutions

- Zabaikalsky Hydrometeorology Centre
- Institute of Water and Ecology (Khabarovsk)
- North-east Forestry University (Harbin)
- Northeast Institute of Geography and Agricultural Ecology (Changchun)

### International Organizations

- IUCN through its Asia Protected Areas and Water & Wetlands Programmes including WANI
- IUCN Commissions such as the World Commission on Protected Areas (WCPA), the Commission on Education and Communication (CEC) and the Commission on Environmental, Economic and Social Policy (CEESP)
- Ramsar Convention Secretariat
- UNECE (Transboundary Watercourses Convention Secretariat)
- WWF – Amur Branch
- The Nature Conservancy (TNC) – Northeast Asia Program

# Funding Requirements and Timetable

Indicative funding requirements: \$2.15 million US over 5 years. The project will be implemented over a five year period. This period is considered the minimum required to fully address the objectives of the project and ensure its effectiveness.

ACTIVITY/OUTPUTS	YEARS					TOTAL (US\$)
	2010	2011	2012	2013	2014	
1. Strategic water planning in the Dauria region	100,000	50,000	50,000			200,000
2. Environmental flow research and government advocacy	150,000	100,000	50,000	50,000	50,000	400,000
3. Wetland monitoring system	50,000	50,000	10,000	10,000	10,000	130,000
4. Wetland protected area network enhancement	150,000	150,000	100,000	100,000	70,000	570,000
5. Promotion of innovative water use	50,000	50,000	50,000	50,000		200,000
Project management and IUCN staff time						650,000
<b>TOTAL BUDGET (US\$)</b>	<b>500,000</b>	<b>400,000</b>	<b>260,000</b>	<b>210,000</b>	<b>130,000</b>	<b>2,150,000</b>



## Temperate Grasslands Conservation Initiative

[http://www.iucn.org/about/union/commissions/wcpa/wcpa\\_what/wcpa\\_conserving/wcpa\\_grasslandstf/](http://www.iucn.org/about/union/commissions/wcpa/wcpa_what/wcpa_conserving/wcpa_grasslandstf/)

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