

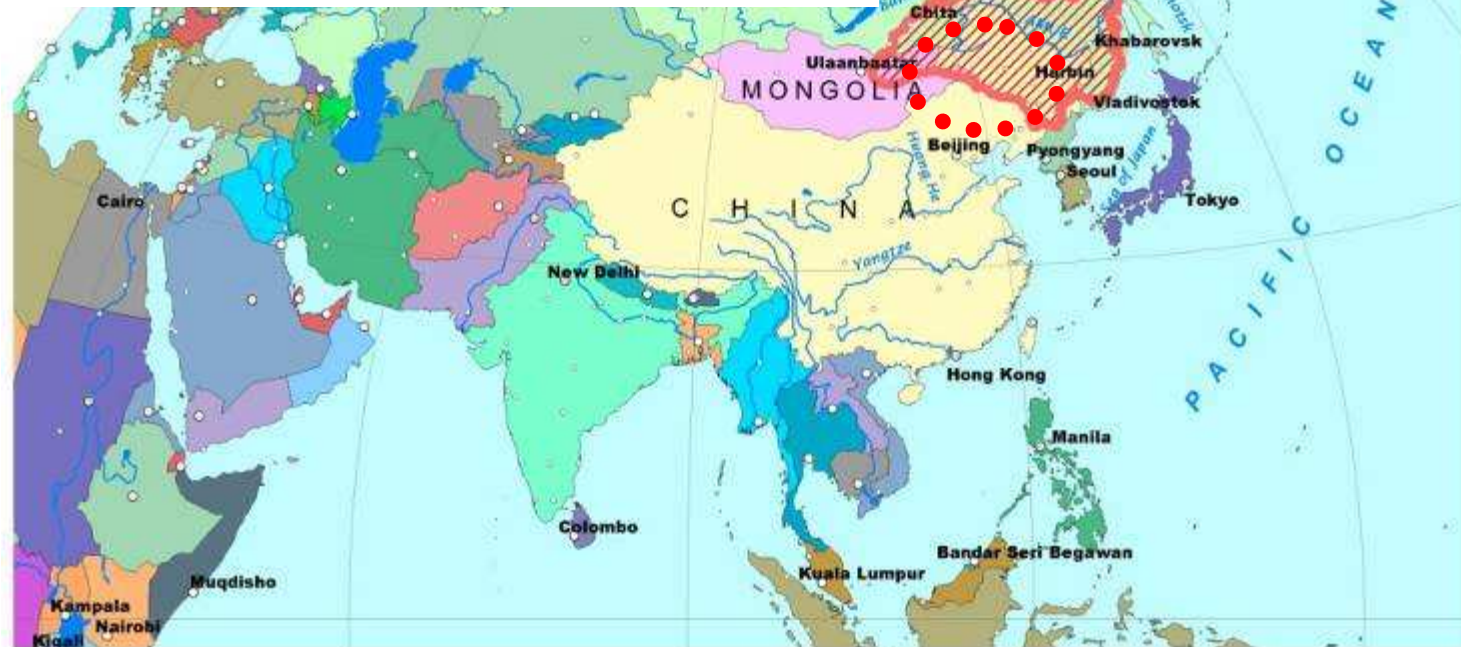
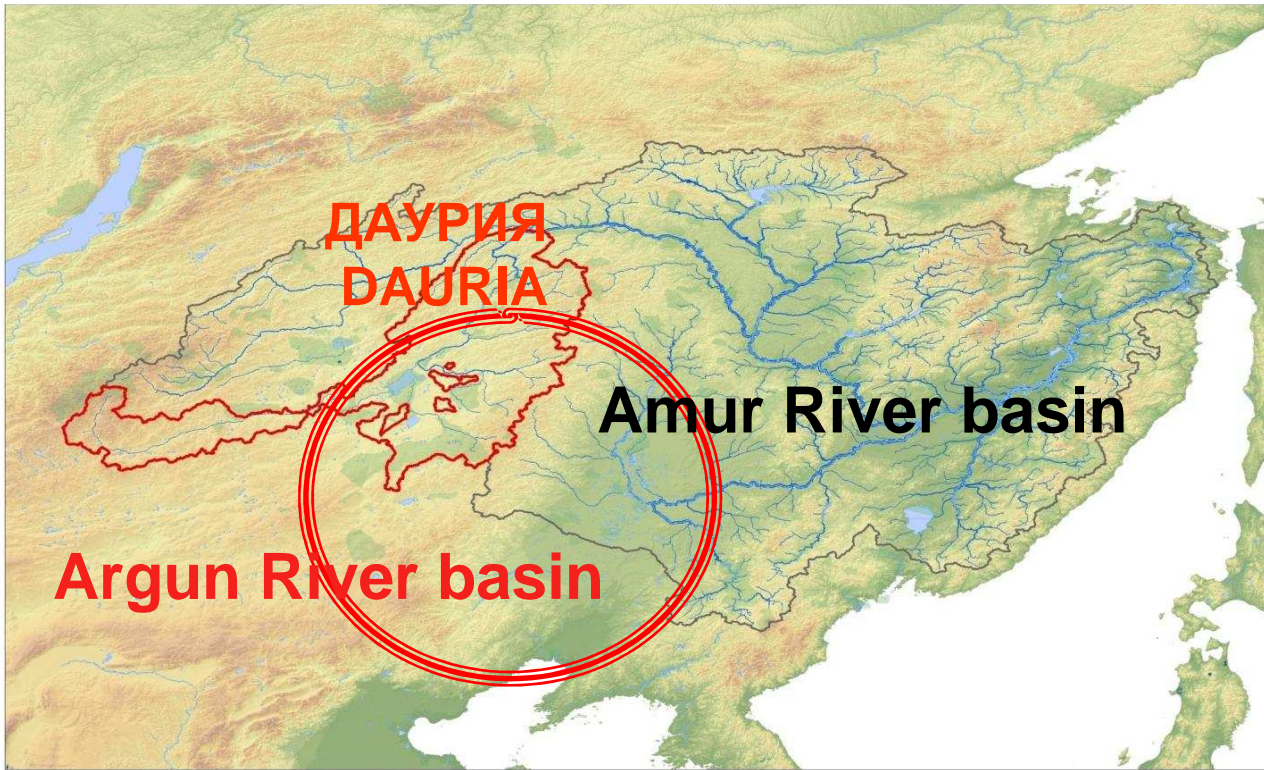
An aerial photograph of a vast, braided river system, likely the Argun River basin, during sunset. The sky is a mix of soft pinks, oranges, and blues, with the sun visible as a small, bright spot on the horizon. The river channels are wide and interconnected, creating a complex, maze-like pattern across the landscape.

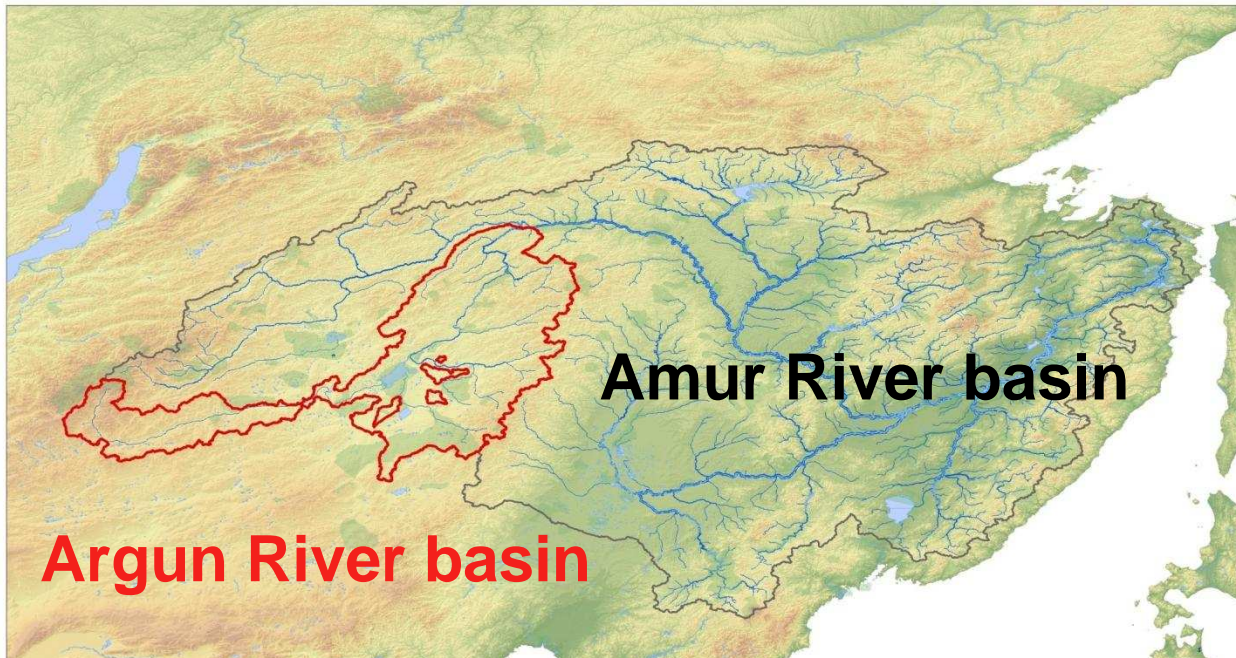
# Argun river basin and Daurian wetlands

*The second Assessment  
of transboundary waters  
UNECE Water Convention*

# Authors and contributors:

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Rivers of Argun Basin have dramatic change of water resource availability during 30-year climate cycle. (See graph below )

## Argun River Basin is the principal river of Dauria Steppe.

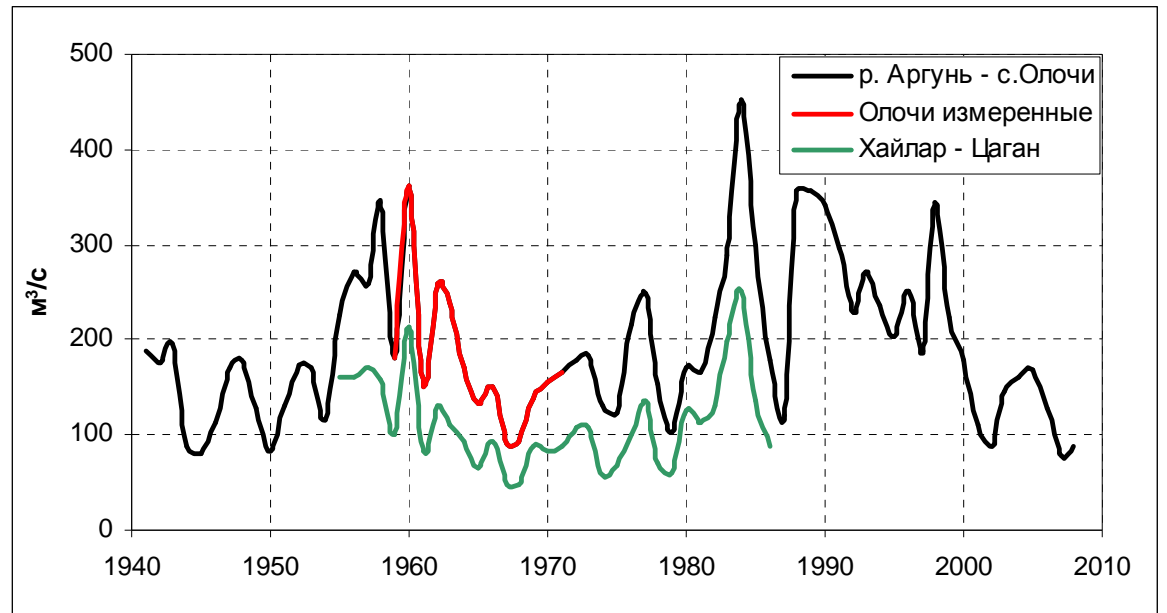
Annual discharge 12 cubic km.

Area -300,977 km<sup>2</sup>:

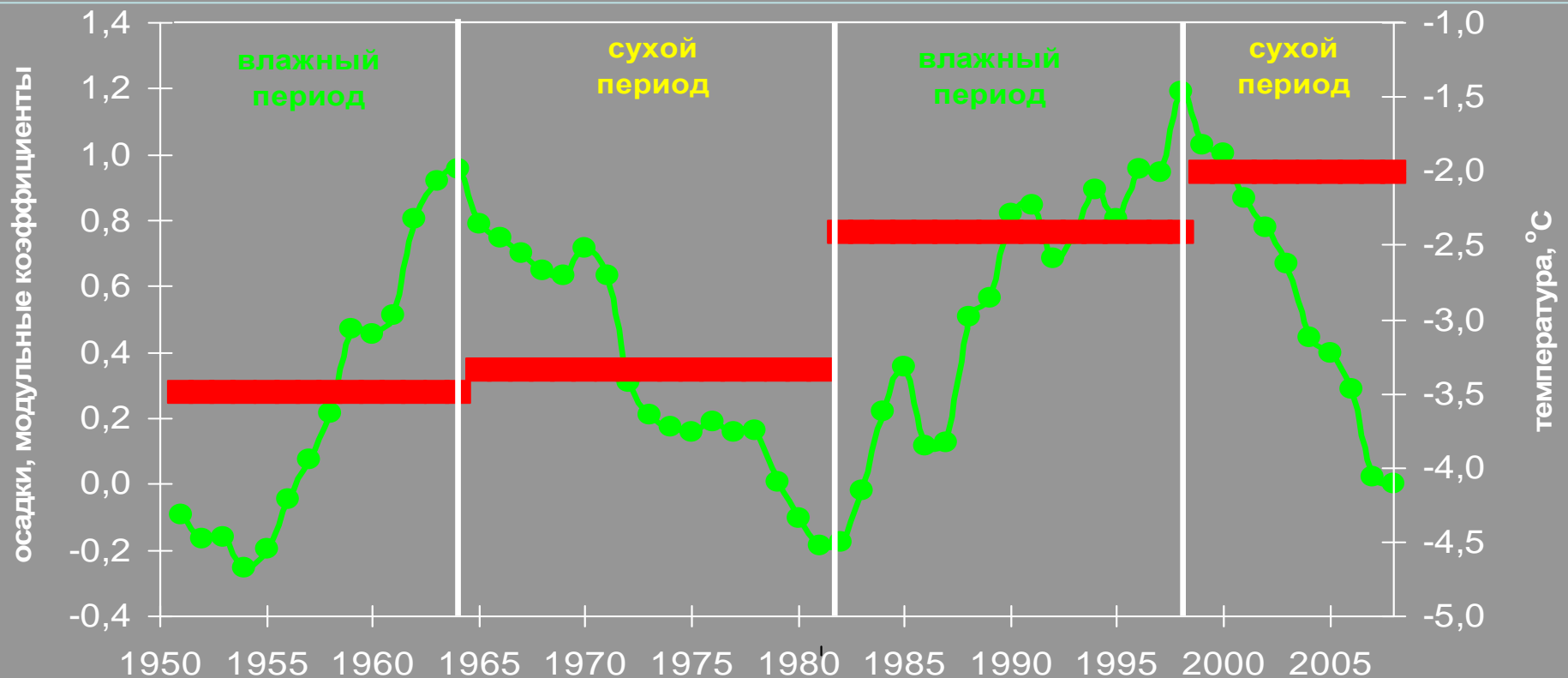
in China 150,900 km<sup>2</sup> (50%)

in Russia 49,100 km<sup>2</sup> (16%)

in Mongolia 101,000 km<sup>2</sup> (34%)



# Cyclical change in annual rainfall (green)



**30-year drought cycles and flooding dynamics are one of factors shaping regional biodiversity.**

Average temperature (**RED**) for the last 55 years has risen up for 1.5-2.0°C that led to an increase of the period with positive temperatures in northern part of Daurian Steppe from 165-167 to 173-179 days.

## The Argun river at high flow



## The Argun river at low flow

**Flooding is the most important ecosystem process sustaining riverine wetlands**

**Регулярные паводки – важнейший процесс поддержания экосистем даурских пойм**



# Pressure factors and transboundary impacts

## Water management:

- Excessive extraction
- Water transfers
- Water pollution
- Embankment construction

## Water-dependent activities:

- Wildfires
- Overfishing
- Overgrazing
- Waterfowl hunting
- Mining impacts
- Thermal power plant impact
- Irrigation



Imagery © 2006 TerraMetrics

Point: 47°41'10.25" N, 102°00'17.04" E

Streaming

Google

Eye alt: 46.721m

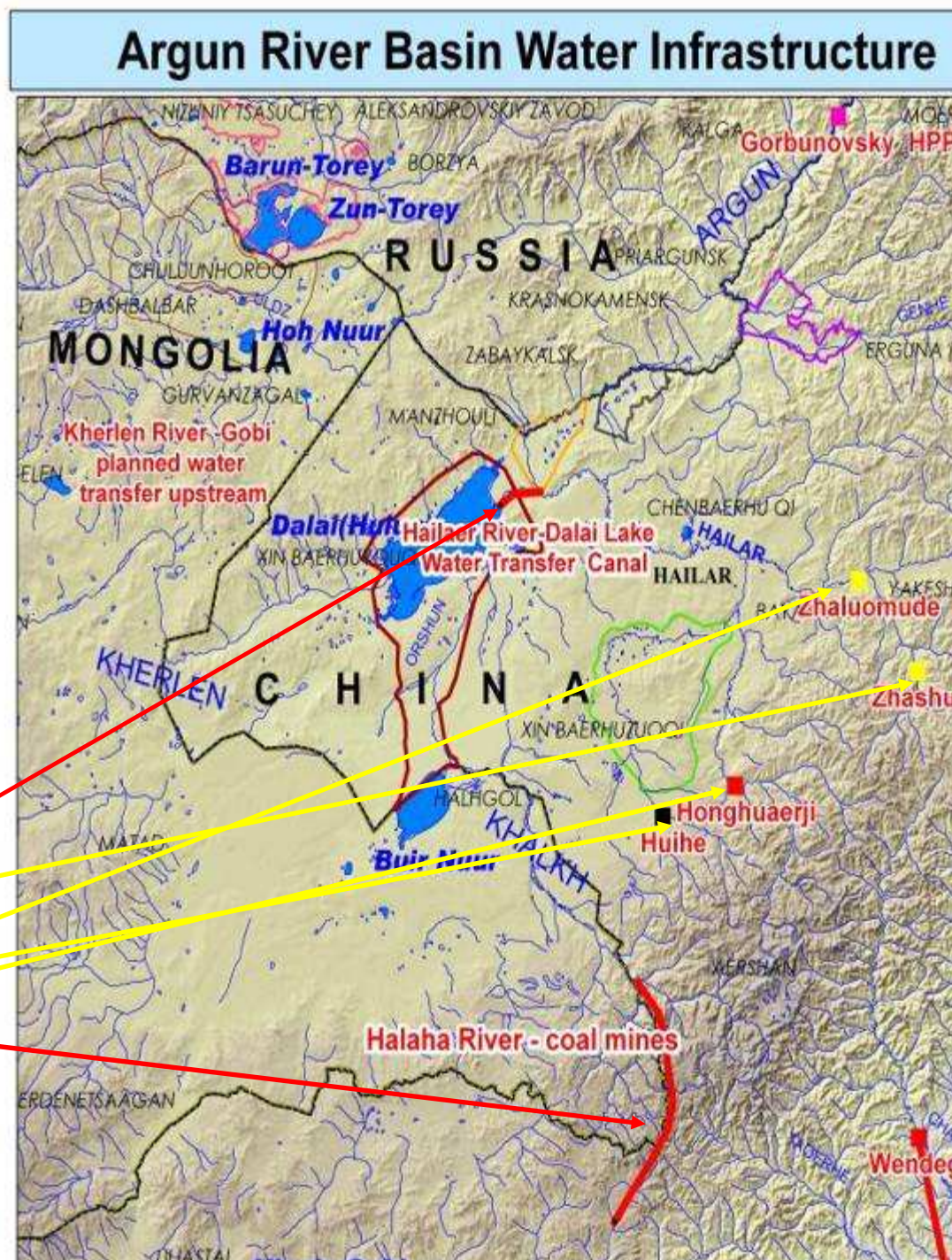
**WATER CONSUMPTION:  
CRISIS PLANNED IN ADVANCE**  
Northeast CHINA “Revitalization of Old industrial Bases” Policy:

1) Increase water supply from transboundary watercourses (Khalkh, Argun-Eerguna).

2) Develop water transfer schemes within the Amur-Heilong River Basin and to adjacent basins, where already achieved water deficit is much worse.

3) Increase water consumption in Argun-Erguna River basin by 1000%.

- **Hailaer-Dalai water transfer – 1.05 cubic kilometers annually**
- **Water consumption from new reservoirs upstream -1.0 cub. km. annually**
- **Halaha- Xilingol water transfer**
- **Mean annual flow of Argun-Hailaer river – only 3.5 cub. km.**





# МОНГОЛИЯ --MONGOLIA

Mongolia –changing pattern of development – growing water demand for industry, irrigation and “preventing desertification”.

Монголия – резкая смена «стратегии» развития



- Water demand from mining industries in Gobi Desert and “Green Belt of Mongolia” anti-desertification plan
- Proposed water transfers from Selenge, Onon, Kherlen, Uldz, Baldj Rivers to Gobi Desert.
- Achieving self-sufficiency in grain through irrigated agriculture
- 2010 National Water Programme – massive intensification of water use and hydropower construction

**Развитие горнодобывающего сектора в Гоби – необходимость водоснабжения и «улучшения среды»**

**Самообеспечение продовольствием за счет ирригации**

**План переброски северных рек - Селенги, Керулена, Ульдзы и др.**

Park of Mongolian-Russian Friendship  
on Kherlen River at Choibalsan

Парк российско-монгольской  
дружбы в Чойбалсане - р.Керулен

GENERAL PLAN OF WATER TRANSMISSION PIPELINE ON LONG DISTANCE AND ITS APPLICATION FOR GOBI AND STEPPE REGIONS OF MONGOLIA



Mongolian National Water Programme

First stage – transfer of Kherlen River to Gobi desert

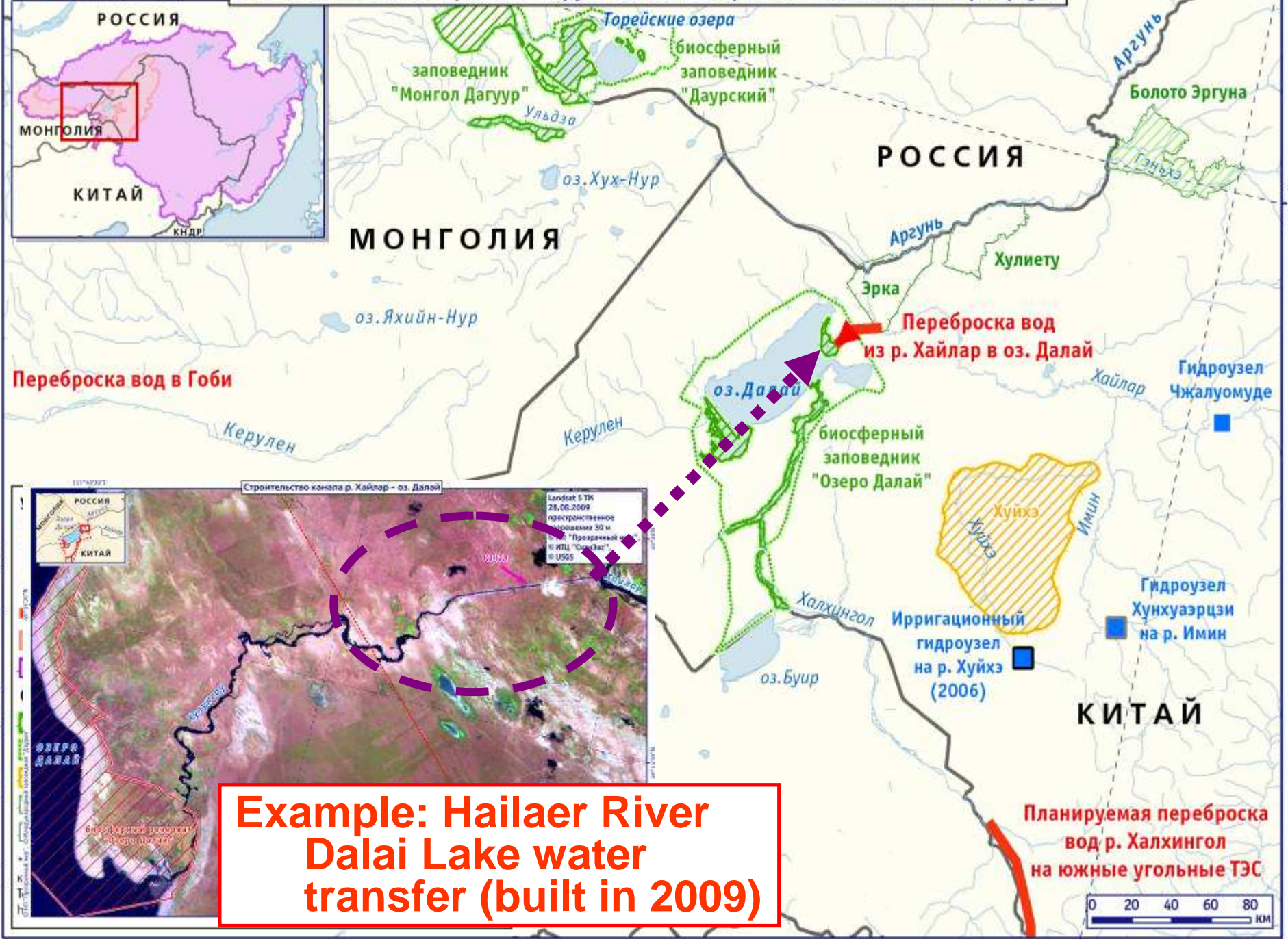
Переброска р.Керулен - первая фаза проекта

Kherlen River-Gobi Desert water transfer

В озеро Далай—То Dalai Lake

Водохозяйственные проекты и крупные ООПТ в средней части бассейна р. Аргунь

120°15'E



Переброска вод в Гоби

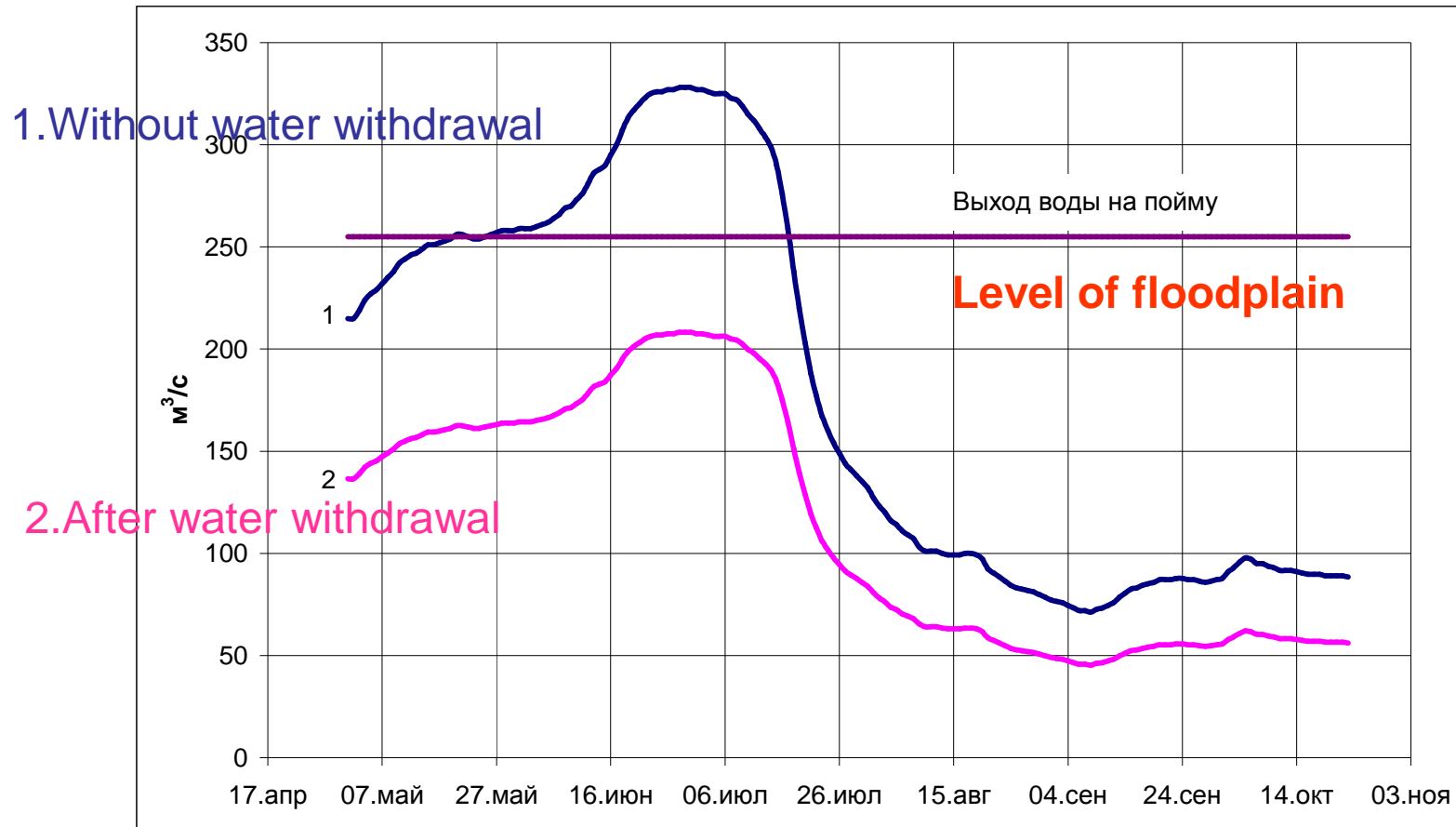
Строительство канала р. Хайлар - оз. Далай

Example: Hailaer River Dalai Lake water transfer (built in 2009)

# Alteration of flooding regime with 1.05 cubic kilometer withdrawal.

Upper Argun river Kuti Village. Modelling ordered by Amur Water Authority 2009

Моделирование влияния отбора 1,05 кубокилометра воды



1. Water level dynamics in 2004 (P=50%)- 50 days of flooding –  
Гидрограф в д.Кути в год 50% обеспеченности (2004)

2. Water level after withdrawal – no flooding –

Год 50% обеспеченности -при проектном отборе воды пойма не  
заполнится водой

# Mining – growing source of pollution



**400 mining operations just in Mongolia part of Dauria**

**400 золотодобывающих и прочих горнодобывающих предприятий действуют в бассейнах рек Онон, Улдза, Аргунь.**

# Transboundary management (water and ecosystem)

- International agreements and national water management tools
- Climate adaptation and securing environmental flows
- Conservation agreements and wetland protection
- International public awareness building

# Соглашения - Relevant Agreements

- 1994—Трехсторонний Договор о международном заповеднике ДАУРИЯ
- 1994— Соглашение между Монголией и Китаем об охране и использовании трансграничных вод
- 1995-- Соглашение между Монголией и Россией об охране и использовании трансграничных вод
- 2008-Российско-китайское соглашение об охране и использовании трансграничных вод
- 1994—Trilateral Agreement on Dauria International Protected Area (DIPA)
- 1994--Mongolia-China – Agreement on Use and Protection of Transboundary Waters
- 1995--Russia-Mongolia - Agreement on Use and Protection of Transboundary Waters
- 2008 Sino-Russian Agreement on Transboundary Waters

## RECENT RELEVANT NATIONAL MEASURES:

CHINA HAS STRONG NATIONAL WETLANDS PROTECTION POLICY AND ACTION PLAN

В КНР действует сильная государственная программа охраны водно-болотных угодий

RUSSIA ADOPTED WATER CODE PRESCRIBING DEVELOPMENT OF “Standards of acceptable impact” (SAI) for environmental flows, as well as chemical, thermal, radioactive and microbial pollution)

Россия приняла новый водный Кодекс требующий разработки норм допустимого воздействия (НДВ) для водных объектов, включая нормативы экологического стока\попуска и допустимого загрязнения

Mongolia adopted a new law “On prohibition of mining in water protection zones”(2009).  
Implementation is slow

В Монголии принят закон “О запрещении разведки и добычи полезных ископаемых в истоках рек, в зоне охраны водоёмов, в лесном фонде”(принят в 2009) – но пока он не действует

**ВСЕ ТРИ СТРАНЫ ТЕПЕРЬ ОЗАБОЧЕНЫ АДАПТАЦИЕЙ К ИЗМЕНЯЮЩЕМУСЯ КЛИМАТУ  
ALL THREE COUNTRIES BY 2010 FINALLY GOT CONCERNED WITH CLIMATE ADATATION ISSUES**



## AN IMPORTANT POSSIBHLE DECISION.....

- Initiate establishment of Chinese-Russian-Mongolian intergovernmental commission on economic and ecological adaptation of management policies in Dauria to changing climate conditions with the aim to ensure favorable environmental and political situation.



- Создать российско-китайско-монгольскую комиссию по эколого-социально-экономической адаптации к климатическим циклам в Даурском регионе и обеспечению благоприятной экологической и политической обстановки в приграничных районах (вопросы регулирования водопотребления, чистота вод, сохранение биологического разнообразия и др.)

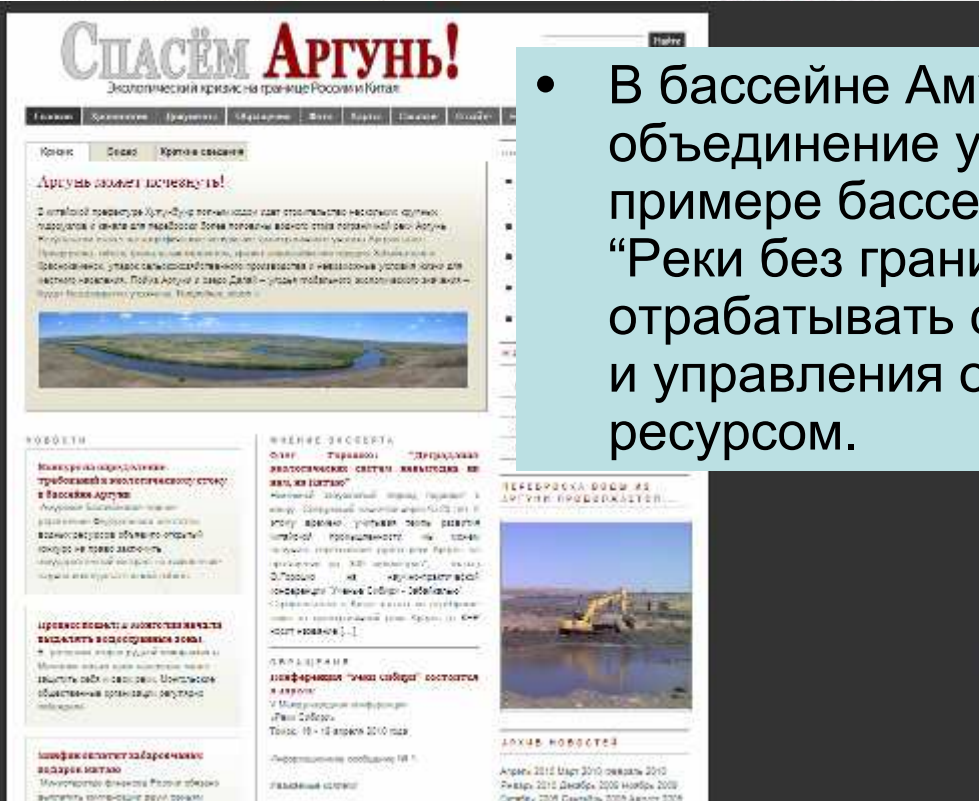
# Need for an agreement on environmental flow and river alteration limits

Разработать и установить совместно с КНР и Монголией нормы допустимых воздействий (НДВ) для трансграничных рек :

- экологический сток
  - химическое загрязнение
  - радиоактивное загрязнение
  - микробное загрязнение
- (возможно в рамках договоров о трансграничных водах)

**Create Russian-Chinese and Russian - Mongolian expert groups for development and endorsement of a common methodological approach and identification of standards of acceptable impact (SAI) for environmental flow (and possibly for chemical, thermal, radioactive and microbial pollution)**

# On-going awareness raising and public education on water and climate adaptation in transboundary Dauria



- В бассейне Амура целесообразно объединение усилий трех стран, и на примере бассейна Аргуни. Коалиция “Реки без границ” уже начала отрабатывать систему взаимодействия и управления общим информационным ресурсом.



ПОЛНАЯ ИНФОРМАЦИЯ НА [WWW.ARGUNCRISIS.RU](http://WWW.ARGUNCRISIS.RU)  
MORE ON [WWW.DAURIARIVERS.ORG](http://WWW.DAURIARIVERS.ORG)

# Daurian wetlands



# Network of important transboundary wetlands in Dauria

## Сеть международных ВБУ Даурии

### Uldz River basin:

- **Torey Lakes** Ramsar site (Russia)
- **Mongol Daguur (Mongolian Dauria)** Ramsar site (Mongolia)

### Argun River basin:

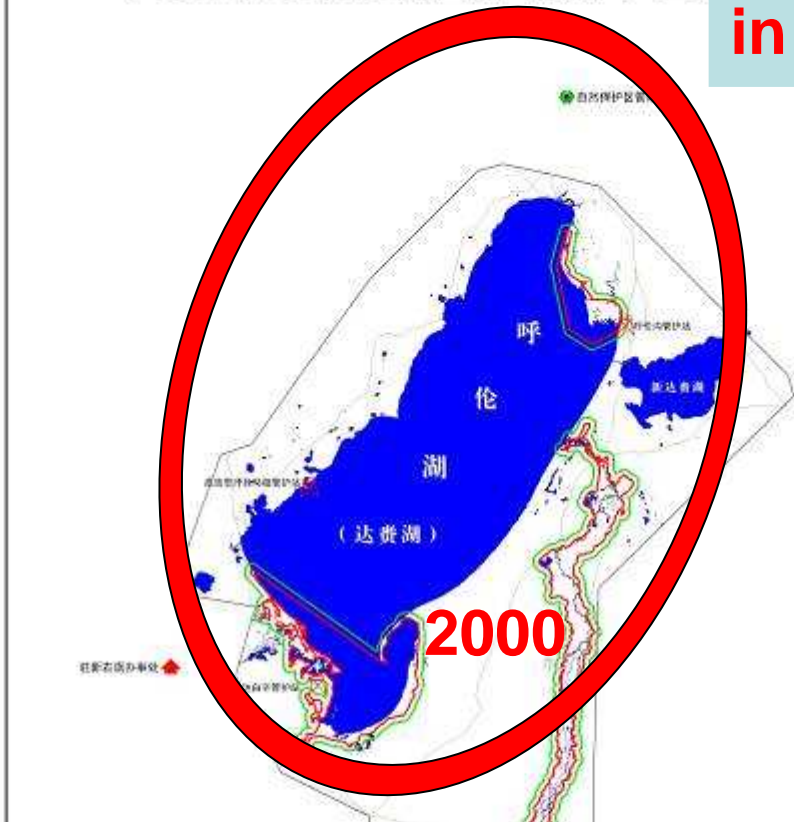
- **Dalai Lake National Nature Reserve, Inner Mongolia** Ramsar site (China)
- **Lake Buir and its surrounding wetlands** Ramsar site, (Mongolia)
- **Upper Argun River floodplain** (*Sino-Russian border –not listed and not protected yet*)

While all major lakes are Ramsar sites, floodplains receive little protection and found only in **Mongol Daguur**

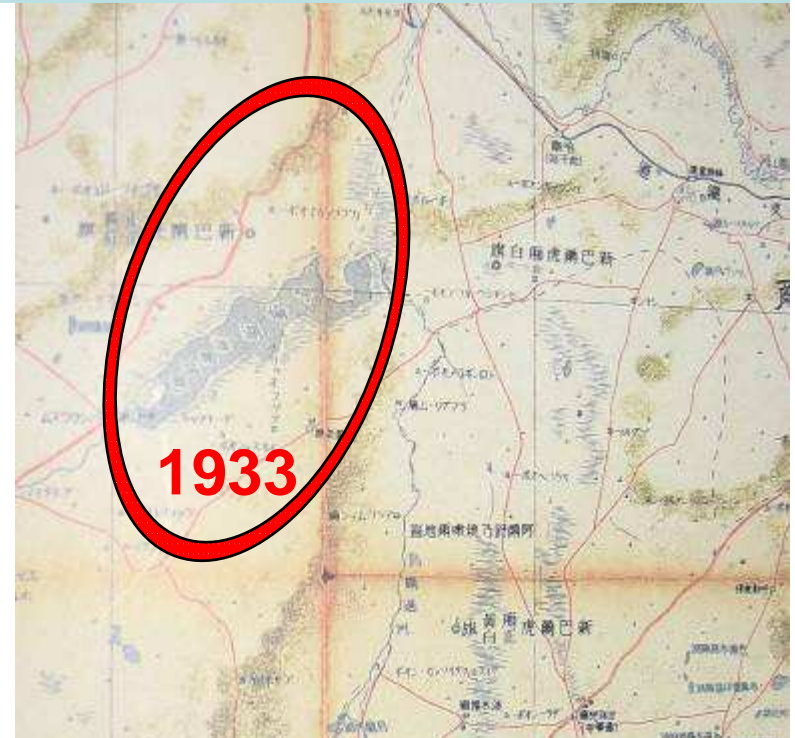


内蒙古达赉湖国家级自然保护区

## Dalai Lake in 2000 and in 1933



=



Ecosystems of pulsating lakes undergo dramatic cyclical successions in which the same area hosts drastically different communities and species. Dalai Lake for example can cover up to 2300 sq km and reach a depth of 7 m during a wet cycle while it was reduced to a small chain of shallow 1m deep pools during the last severe dry cycle in 1904.



***Torey Lakes (Uldz river basin) dynamics:***

***Change of the shore  
line and water volume.***

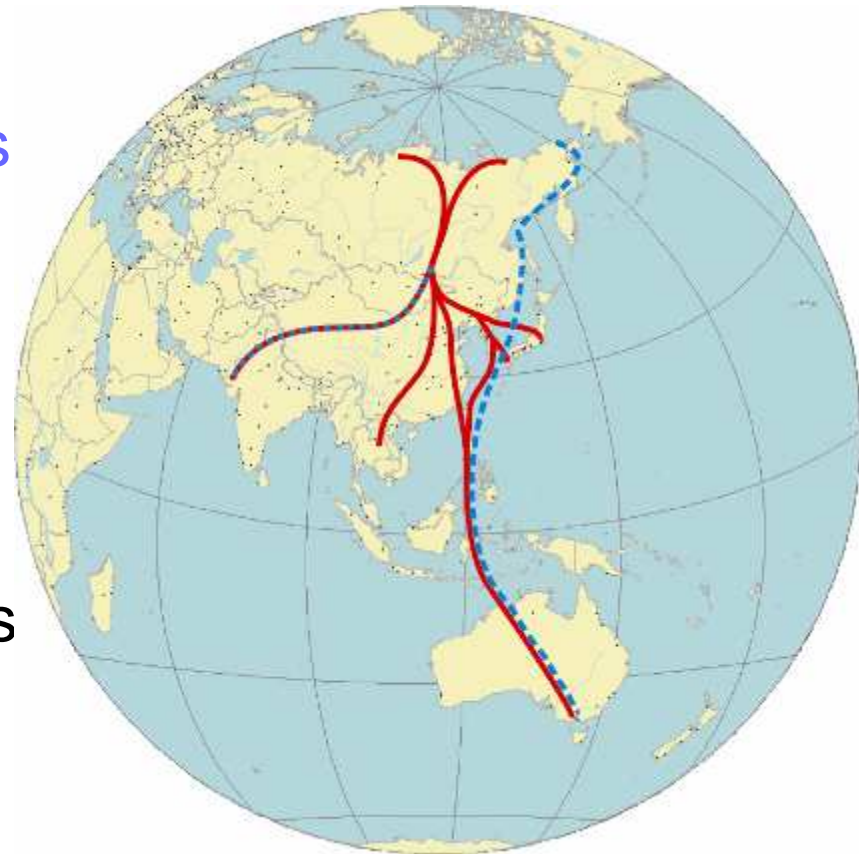
***Coastal plant communities change***

***Changes in numbers  
and species composition of waterbirds.***

***In 1999 Torey lakes yielded  
thousand tons of fish annually,  
and in 2009 meadow at Barun-Torey lake bottom  
is a favorite pasture for Mongolian Gazelle....***

# Environmental services and biodiversity value

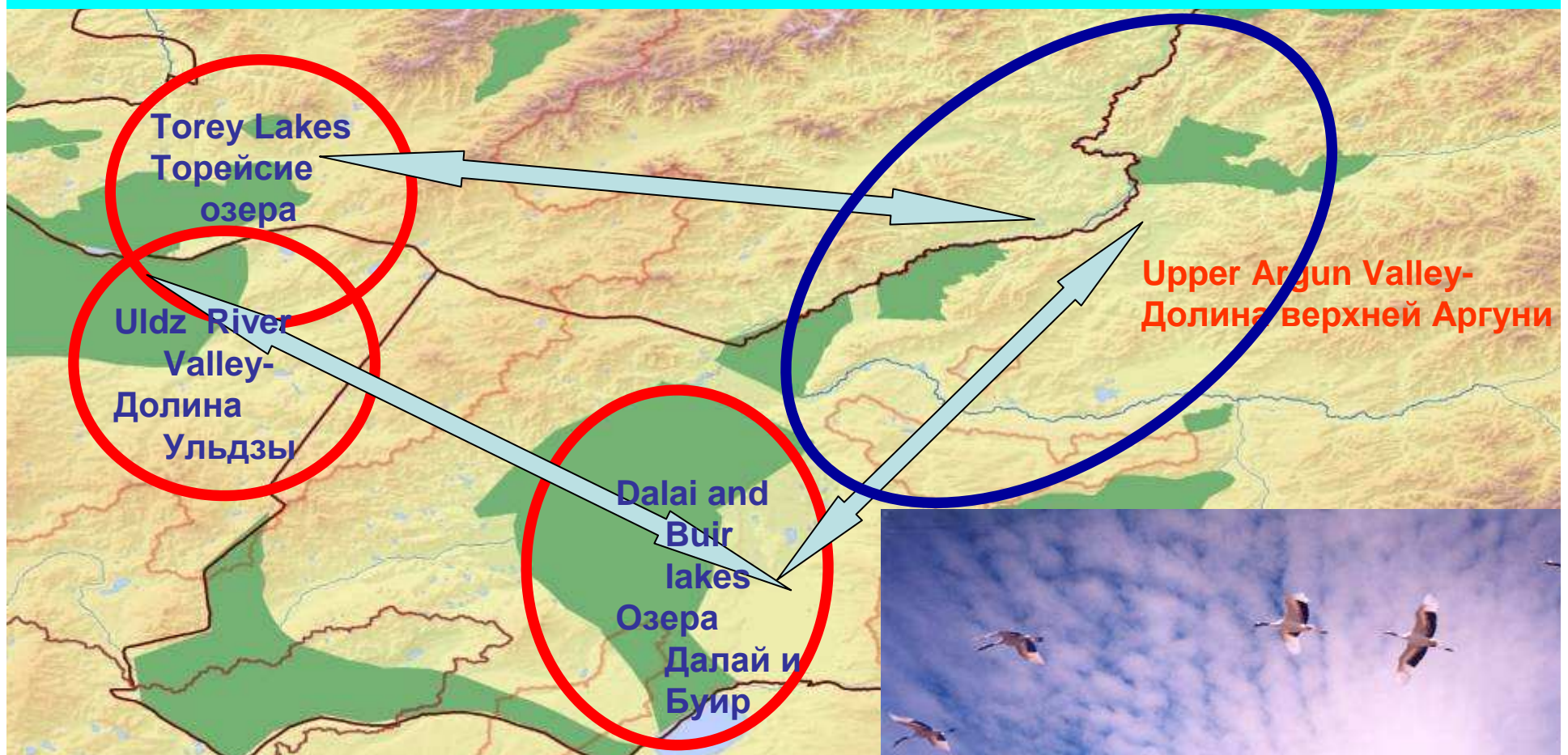
- Key habitat for 20+ species of Endangered birds listed in IUCN Red List
- Best examples of lacustrine and riverine wetland ecosystems in the region
- Important faunal refugia in times of drought
- Cyclical change in water levels sustains river floodplains and supports productivity and dynamic diversity of successional lake habitats.
- Important migratory routes and stop-over sites



**Intra-continental branch of the Eastern-Asian-Australian bird flyways in Dauria: many million birds stop at Argun and Uldz River Basin Wetlands**



# Cyclical re-distribution of bird populations.



It makes little sense to protect one single wetland cluster in the Daurian Ecoregion, most of the area's wildlife migrates among the steppe's scattered wetlands according to 30-year drought cycle patterns.

**RED circles are protected by Dauria International Protected Area,**  
**BLUE circle of Argun Valley is not yet protected internationally.**

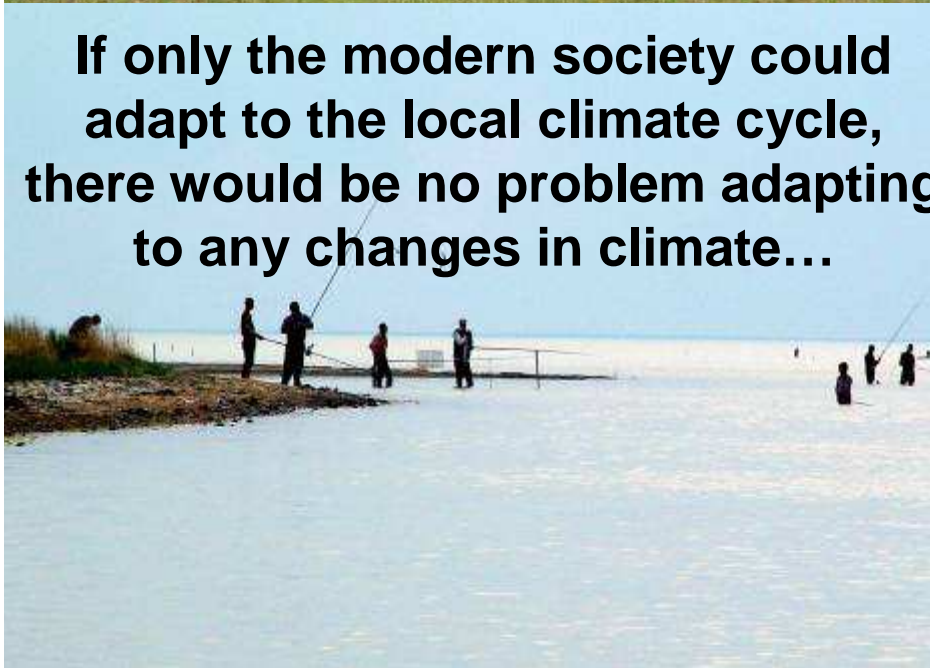
# Socio-economic services

- Source of water for a large region - Zabaikalsky krai in Russia, Dornod and Henti aimags in Mongolia, Hulunbeier and Xinganmeng prefectures in China.
- Argun and Uldz rivers provide agricultural, domestic and industrial (mostly mining) water supply, while large brackish lakes' waters are not good for domestic use.
- Lakes support largest regional wild fisheries, recreation and tourism, watering for cattle, stabilization of local groundwater table and climate – all subject to cyclical change.
- Rivers sustain large productive floodplains and traditional nature use implies maximum dependence on floodplain resources: hay, pastures in dry years, hunting, fishing, recreation, etc. Due to peculiar microclimate, river valleys – the only place where crops are cultivated (wheat, etc) and where irrigation is possible.

**Интенсивность и характер природопользования тоже  
меняется в ходе климатических циклов**

**Intensity and structure of human activity depends on phases  
of the climate cycle**

**If only the modern society could  
adapt to the local climate cycle,  
there would be no problem adapting  
to any changes in climate...**



# Cultural values

- **Nomadic lifestyle of Mongolian tribes is the key cultural value of Dauria – which has been the most effective socio-economic adaptation to climate fluctuations.**
- Lakes and river valleys have many “oboo”- sacred places where locals worship local deities.
- Many areas in Argun river basin are associate with activities of Genghis Khan



# Major impacts on wetlands (summary)

## WETLANDS

### Argun River basin:

- Dalai Lake National Nature Reserve, Inner Mongolia Ramsar site (China)
- Upper Argun River floodplain (*Sino-Russian border –not listed and not protected yet*)
- Lake Buir and its surrounding wetlands Ramsar site, (Mongolia)

### THREATS in Argun River basin:

Hailaer (Argun) River -Dalai Lake water transfer – 1.05 cubic kilometers annually ( in operation since 2009)

Water consumption from new reservoirs upstream in Hailaer basin -1.0 cub. km. annually (UNDER CONSTRUCTION)

China Gold Co copper mine – water pipeline from Dalai Lake ( stopped due to Ramsar convention requirements in 2008)

Kherlen-Gobi water transfer scheme

Hulunbeier Oil fields (in operation)

Coalmines and thermal power stations- thermal pollution and change in hydrology

Polluting industry along Hailaer river- (in operation and under construction)

Municipal sewage from Hailaer and Manzhouli

Irrigation schemes along Hailaer and Khalkh rivers

Halaha- Xilingol water transfer (EIA in 2010)

Mongolian oil fields

### Uldz River basin:

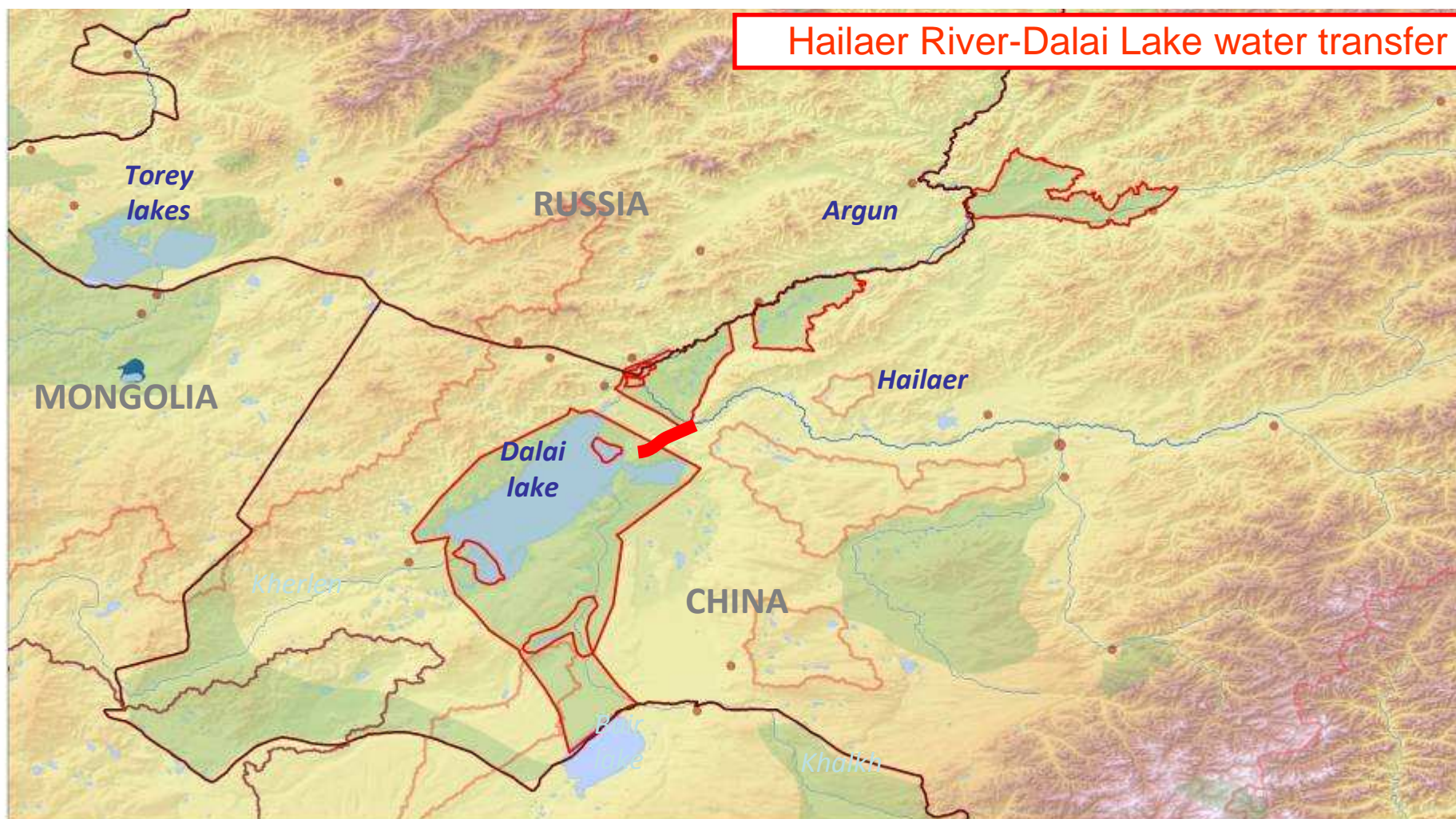
Torey Lakes Ramsar site (Russia)

Mongol Daguur (Mongolian Dauria) Ramsar site (Mongolia)

### THREATS in Uldz-Torey basin:

- Mining and ore processing operations
- Excessive livestock in river valley
- Overgrazing of peat lands in headwaters

**Protected areas that could be affected by the Hailaer-Dalai water diversion in China**  
**– occupy 1 000 000 ha.**

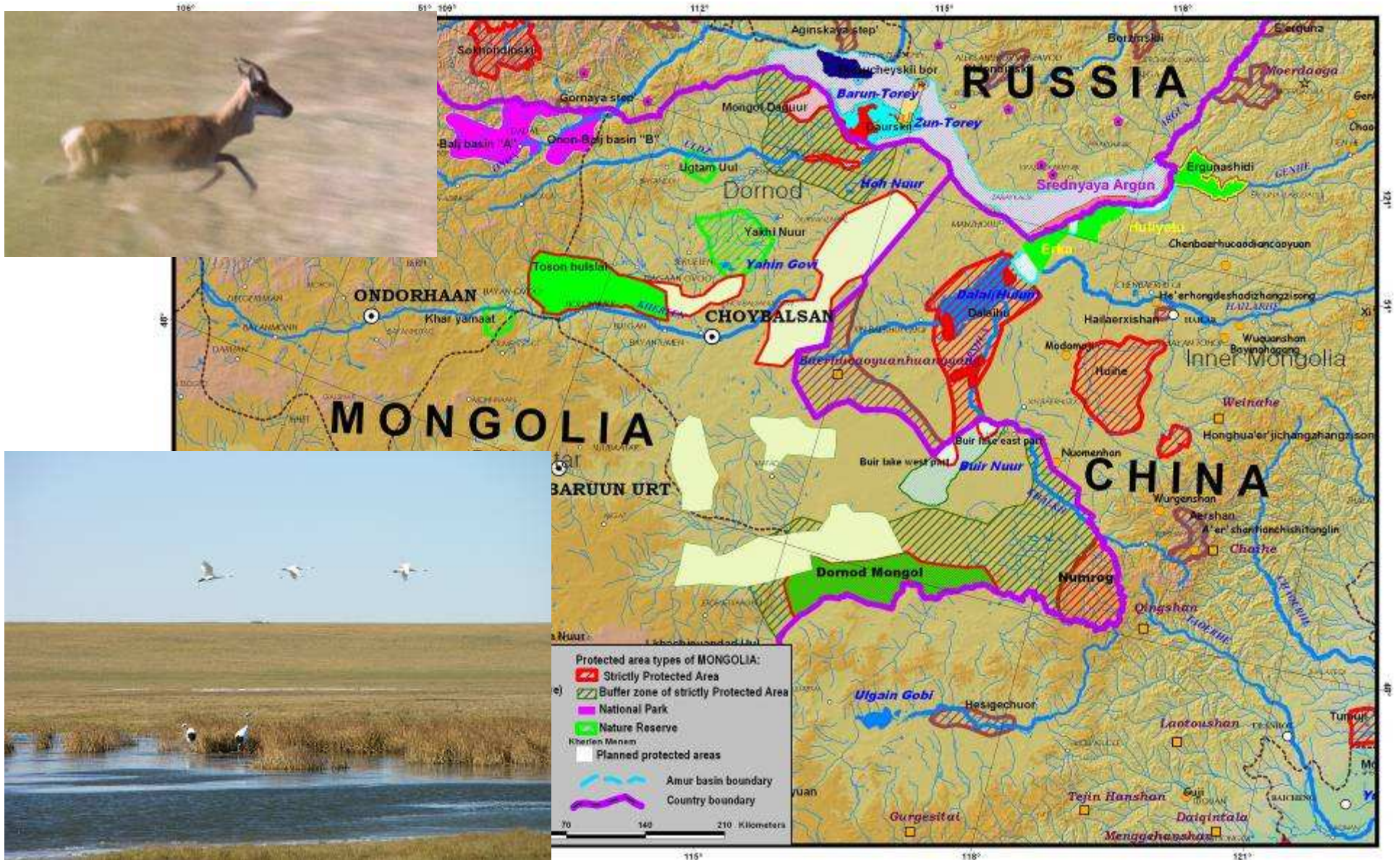


**Seriously affected wetland ecosystems occupy 380 000 ha**

# Necessary measures planned by WWF-DIPA *Dauria pilot project*:

- **1) Strategic assessment of river management options in the light of climate adaptation in the Dauria region**, based on the UNECE “Guidance on water and adaptation to climate change”.
- **2) Develop environmental flow norms for the Argun and Uldz Rivers** to determine environmental requirements during different phases of the climate cycle.. This will provide the technical foundation for harmonizing bilateral water management policies with Mongolia and China.
- **3) Wetland monitoring system** in both Argun and Uldz basins will be enhanced by developing combined remote-sensing and field-transect monitoring methods in transboundary wetlands to measure the effects of climate change and human impacts.
- **4) Wetland protected area network enhancement as one of key adaptation measures** is that provides for migration and breeding of species and preserves key hydrological features and all important refugia during drought period.
- **5) Awareness raising program program on climate adaptation in transboundary Dauria is needed** to make climate cycling/climate change and limitations/advantages it brings better understood by local people and considered by governments in key planning/decision-making.

# Proposed expansion of Dauria International Protected Area Расширение Международного заповедника «Даурия»





**Inappropriate development triggers improper water management**

**Thanks for Your attention**

