



# Maintaining Water Security in Critical Water Catchments in Mongolia

## An Ecosystem-based Adaptation Approach



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### Project at a Glance

The *Ecosystem-based Adaptation Approach to Maintaining Water Security in Critical Water Catchments in Mongolia* Project assists vulnerable communities in two areas in rural Mongolia (Altai Mountains and Great Lakes Basin ecoregion and the Eastern Steppe ecoregion) adapt to climate change. Mongolia is an arid to hyper-arid country with low precipitation rates (50 to 400 mm per year) and ground water recharge. The country's watersheds are under growing pressure from climate change impacts such as drought and higher temperatures, leading to increased evapotranspiration. From 1940 to 2007, the mean air temperature in Mongolia increased by 2.1 degrees Celsius and average annual precipitation declined by 7%. A water inventory in 2007 found that an estimated 850 rivers and streams out of 5,128 had dried up.



**Project Donors:**

United Nations Development Program (UNDP) and Adaptation Fund

**Implementing Partners:**

Mongolian Ministry of Nature, Environment, and Tourism

**Funding:**

\$5.5 million from the UNDP and Adaptation Fund; \$5 million from the Government of Mongolia

**Period of Performance:**

2012–2017

**Climate Threats:**

Drought, increased temperatures, irregular rainfall patterns

**Ecosystem Services:**

Maintenance of steppe, mountain, and forest ecosystem services, particularly water provision

**Project Focal Areas:**

Altai Mountain/Great Lakes Basin and the Eastern Steppe (two landscapes that serve as catchments for 70% of the country's water resources)

**Direct Beneficiaries:**

58,000 people

## What's the Situation?

Livestock grazing is the primary economic activity in rural areas; it is estimated that the national herd size has tripled over the last 30 years. Additionally, herd composition has also changed to include more goats, which are more destructive to pastureland than other livestock. This dramatic increase in herd size and changes in herd composition have led to overgrazing, with subsequent degradation of pastureland and water systems, accelerated desertification, and declines in biodiversity. Agricultural operations, particularly for vegetable production, are also growing larger and using more water-intensive irrigation networks that pressure local water supplies. Additional threats to watersheds include deforestation from logging and fuelwood collection, riparian disturbance from livestock, and mining operations.

The combined impacts of climate change and poor natural resources management compromises the ecosystem services communities depend on, particularly the provision of clean water for households and livestock. Using **landscape level ecosystem-based adaptation (EbA) approaches**, the project is enhancing planning, management, and conservation of grazing lands, water resources, and forests in two large landscapes that serve as catchments for 70% of Mongolia's water resources, strengthening water security for local communities.

Project activities are organized around three main components:

- Develop and implement integrated strategies/management plans for target landscapes/river basins
- Implement landscape-level adaptation techniques to maintain ecosystem integrity and water security under climate change
- Strengthen capacities/institutions to support EbA strategies and integrated river basin management, their replication, and mainstreaming in sector policies



## Key Ecosystem-based Adaptation Activities

- **Restore riparian and wetland habitats with native plants, reforest upstream areas, and rehabilitate springs in order to stabilize hydrological conditions.**
- **Protect upstream catchments through activities, such as the construction of fences around natural springs to prevent overgrazing and trampling, prohibition of mining activities near rivers, and enlargement of protected areas.**
- **Build capacity among administrators and staff of government institutions to support and promote EbA approaches.**
- **Assist each district (soum) in the project areas to develop and implement a customized land use plan that incorporates EbA approaches to address specific ecosystem threats and vulnerabilities.**
- **Support the establishment of River Basin Councils to improve coordination of district activities at the river basin scale.**
- **Support sustainable pastureland management by working with communities to decrease herd size (particularly the number of goats) and rotate grazing.**

### Left:

Karakol Lakes, Altai Mountains, Mongolia: The country's watersheds are under growing pressure from climate change impacts, including drought and higher temperatures, leading to increased evapotranspiration.

## Key Results to Date

>10,000

People trained on adaptation techniques

72,000

Hectares under improved pastureland management

10

Hectares of riparian and wetland habitat restored with native vegetation

3

River Basin Councils established

18

Wells rehabilitated, leading to restoration of 16,000 hectares of abandoned pasturelands

294

Hectares under improved forest management with routine clearing/thinning and reforestation

60

Herder communities engaged in sustainable pasture management

17

Districts included EbA in their land use plans

20%

Decrease in surface water extraction for agriculture in 15 pilot sites

PHOTO: © KATE BORKOWSKI

## Why Ecosystem-based Adaptation?

The project design team considered a number of strategies to help local communities adapt to climate change, including construction of major waterworks and small site-specific hard infrastructure. However, they ultimately decided against these approaches because they did not find them to be sustainable or cost-effective, especially given the large geographic range of the project and the high reliance of target populations on natural resources and ecosystem services. The design team and local stakeholders used government data to conduct economic valuation studies in both project landscapes and determined that the best adaptation strategy in this context was to conserve natural systems and the services they provide. A major consideration for stakeholders in choosing the EbA approach was its potential to deliver continuous and long-term environmental, social, and economic co-benefits compared with other adaptation strategies, including water provisioning services, improved pastureland, enhanced agricultural sustainability, resilience to extreme weather events, and the expansion of ecotourism opportunities. Local stakeholders were particularly supportive of EbA because they realized the potential for communities to maintain this approach within the target areas long-term. Lastly, the project was designed to coordinate with other donors' environmental efforts in the region such as the Global Environment Facility's Small Grants Program that supports community-initiated conservation efforts.

Indicators to capture higher-level project results include measures of water flow and quality, increases in the size of protected areas in target landscapes, decreases in average rural poverty rates, and number of official government policy documents that adopt EbA principles.

The project's recent performance report found progress towards several of these indicators compared with the baseline, including:

- Suspended solids in three major rivers significantly decreased, an indication of improved water quality
- Almost 600,000 hectares had been added to existing protected areas
- Four additional official government policy documents adopted EbA principles/practices

A 2015 mid-term review of the project found improvements in the status of targeted ecosystems and the return of some indicator species including migratory bird species. Communities had positive perceptions of the project and noted a range of impacts, including improvements in pastureland productivity and water availability. However, the authors also suggested some areas for improvement including distinguishing between project outputs and outcomes and strengthening indicators that were too non-specific, including those related to stream flow, soil quality, and poverty reduction.

# Strategies to Support and Sustain Ecosystem-based Adaptation

**Directly engage local communities in EbA activities to build their capacity:** The project team is engaging local communities on EbA activities including the identification of degraded and vulnerable sites, resources, and ecosystems; collection of hydrological data; creation of resource maps; and development of EbA strategies. Furthermore, EbA activities are primarily implemented by resource users.

**Develop co-financing arrangements so the government contributes financially to the strategic goals:** At project inception, government institutions at different administrative levels from the Ministry of Nature, Environment, and Tourism to districts committed to co-financing this project. A 2015 mid-term review of the project found that almost \$1.4 million had been invested by these institutions out of a total commitment of \$5 million; the largest proportion of government funding came from districts for implementation of EbA measures for water management.

**Present the EbA approach as an extension of traditional nomadic practices:** The project team emphasized the alignment between EbA activities and traditional natural resources management practices and frameworks rather than as new, “project-driven” approaches. For example, project activities on sustainable pastureland management were integrated into ongoing annual pasture management and district land-use plans.

**Coordinate and align EbA approaches with other efforts in the region:** Recognizing the role of the livestock sector in contributing to climate change vulnerability through ecosystem degradation, the project is coordinating with the World Bank, the International Fund for Agricultural Development, and other organizations that work on grazing management in the region to ensure that EbA approaches such as the regulation of livestock numbers are also supported by these organizations.

**Build the sustainability of EbA approaches by engaging local and national institutions:** From its inception, the project has sought to build institutional awareness of EbA approaches as effective climate change adaptation strategies. Project implementers directly engage local governments to build their capacity to integrate EbA into government planning and project monitoring activities; ensure that project activities contribute to Mongolia’s National Climate Adaptation Plan; and support collaboration between communities, technical institutions, and political institutions.

**Facilitate mainstreaming and scaling-up of EbA by engaging key high level decision-makers:** The project is implementing a communications strategy to increase awareness of EbA principles and strategies among members of Mongolia’s Parliament. Outreach strategies include trainings and quarterly newsletters aimed at creating a cohort of high-level champions for EbA.

## Sources

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### About This Series

This case study is part of a series of products highlighting the potential role of biodiversity and ecosystem-based adaptation in addressing climate vulnerability. This series is produced by USAID’s Biodiversity Results and Integrated Development Gains Enhanced (BRIDGE) activity and can be found here: [mportal.net/usaideba](http://mportal.net/usaideba).

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