



Case Study: **Conserving the Miyun Watershed, China**

Organization: IUCN
Country: China



Overview

With a rapidly increasing population and rising resource demands, Beijing has faced a water crisis for over a decade. Government agencies and environmental organizations have prioritized the need for environmental conservation measures throughout the surrounding region to address Beijing's water needs. Roughly 70% of Beijing's drinking water comes from the Miyun Reservoir, located 80 km north of Beijing (Figure 1). It is northern China's biggest reservoir, and collects its water from the surrounding Miyun Watershed. The health of the soil and forests throughout this watershed plays a vital role in the supply and availability of good quality drinking water downstream. The villages located upstream within the watershed, therefore, have a significant impact on the downstream water supply for the Miyun Reservoir.

IUCN, the International Union for Conservation of Nature, collaborated with the Beijing Forestry Society and local government officials to initiate a project that would promote forest restoration and sustainable livelihoods in villages throughout the Miyun Watershed. In 2007, the project began as a pilot site in Hua Yuan Village, located in Beijing Municipality, just 180 km from central Beijing (Figure 1). In 2010, the project was expanded to include another pilot site, Xiao Wo Pu Village, which is across the provincial border in Hebei Province (Figure 1).

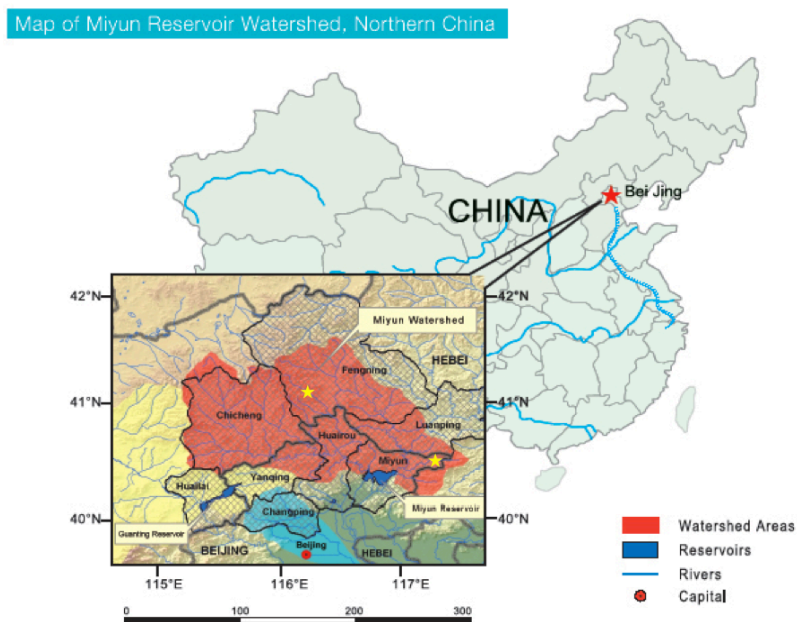


Figure 1. Map of Miyun Watershed spanning Beijing Municipality and Hebei Province, from IUCN China Liaison Office.



About the Landscape

The Miyun Watershed covers 15,788 km² and spans six counties in Hebei Province and Beijing Municipality. It is located within a fragile, semi-arid eco-zone and receives an average annual rainfall of 549 mm. Most of the area was originally covered with mixed broadleaf forests, but due to deforestation most of the landscape is now degraded shrub lands. A logging ban limiting industrial development and restricting fuel wood collection was initiated in the 1980s to protect the watershed, but forest conditions still remain unhealthy. Through a government initiative, large monoculture conifer plantations were planted in the area, but they provide limited environmental services. (Ingles, Andrew, et al. 2009).

Hua Yuan Village is at the northern foot of Wu Ling Mountain National Nature Reserve and includes the most common forest types found throughout the Miyun Watershed. The village covers an area of 7.9 km², and has about 227 households with a total population just over 650. About 80% of the land area is forested. The average per capita income is 4,500 RMB (~US\$710), only 12.5% of Beijing City's per capita average. Almost 75% of this income comes from outside employment, 17% is from agriculture, and 9% is from forest products. Due to Hua Yuan Village's close proximity to Beijing's urban center, ecotourism is one of the growing industries that IUCN has focused on developing with the villagers to address the need for livelihood development.

Xiao Wo Pu Village is similar in size to Hua Yuan Village (71% of the land is forested, 233 household and just over 730 villagers), but the average per capita income is significantly lower than that in Hua Yuan Village, being only 1,100 RMB (~US\$175), which is 2.9% of Beijing City's average. Half of the villagers' incomes come from farming, 30% is generated from outside employment, and 10% is from forest products.

Deeper Description

A watershed is the area of land that drains water into a receiving water body, such as a reservoir, lake, or river. All activities that occur within a watershed, such as agriculture, logging, industrial development, and tourism, have an impact on the watershed's natural resources and water quality. Pollutants from agricultural runoff or erosion caused by forest degradation impact the quality and quantity of water and sediment that is transported downstream. Watershed management inevitably involves multiple stakeholders because the problems and the solutions involve such a wide geographic region; therefore, forming partnerships across provincial and county boundaries, utilizing adaptive management approaches, and integrating socio-economic development with environmental conservation plans are central to developing long-term and large-scale watershed management strategies.

Beijing's water crisis has forced government agencies, environmental organizations, and development projects to form partnerships that focus on what is happening upstream from the Miyun Reservoir. These agencies and organizations face complex problems because of the vast socio-economic differences between those who live



downstream and those who live upstream. The people living in Beijing's urban center earn on average about eight times as much as those living in Hua Yuan Village and about twenty times as much as those living in Xiao Wo Pu Village. Yet, those villagers have an enormous responsibility to take care of the surrounding forests and water bodies since their watershed is the primary supplier of drinking water for downstream users. The organizations working to restore and manage the Miyun Watershed must therefore design a way to provide economic incentives for upstream villagers, who have already experienced constraints on their livelihoods from recent logging bans and development restrictions, to restore and maintain the health of their surrounding forests and waterways.

IUCN Initiative

The goals of IUCN's pilot projects in Hua Yuan Village in 2007 and in Xiao Wo Pu Village in 2010 are forest landscape restoration, livelihood development, and the restoration of small-body waters and riparian zones. The following are key elements in the development of this initiative.

Purpose of Initiative: To restore the biodiversity and productivity of forests and deliver livelihood benefits to the local population. More specifically, the project's objectives are to:

- Enhance local people's access to forest products, improve benefits for the community and increase household income by 25%.
- Adopt and implement a close-to-nature management approach to ecological forests following a multi-stakeholder participatory forest management plan.
- Improve capacity for relevant stakeholders and promote cross-boundary, cross-departmental collaboration.
- Provide recommendations for government policies on forest management.
- Scale-up the project to include the entire Miyun Watershed.

Key Considerations:

Forest Landscape Restoration: "...conservation and sustainable use of natural products and services (forest functions) embedded in processes of local development and international policy." (Wenger et al., 9).

- It takes a landscape-level view
- Restorations efforts need to result in both improved ecological integrity and enhanced human wellbeing at the landscape level
- It is a collaborative process



- It does not necessarily aim to return landscapes to their original state
- It can be applied to primary forests, secondary forests and also agricultural land

Stakeholders: Upland communities (villagers in Hua Yuan and Xiao Wu Po), Li Jia and other IUCN practitioners, Beijing Forestry Society, local government forestry bureau workers, and downstream water users.

Threats to Biodiversity:

- Low and highly variable rainfall
- Degraded mountainous landscape: high forest cover (65%), but mostly sub-healthy, monoculture and young forests
- Increasing domestic, industrial, and agricultural water use and water pollution
- Soil erosion

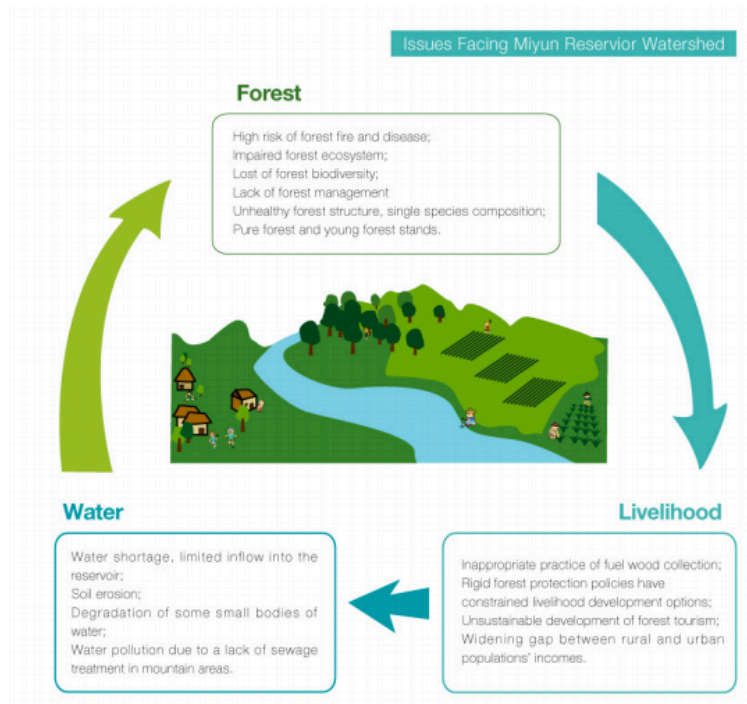


Figure 2. Written by IUCN China Liaison Office



Strategies:

IUCN practitioners incorporated the Forest Landscape Restoration approach (see definition above) into their strategies while working with villagers in Hua Yuan, and their plan is to incorporate the same strategies into their approach in Xiao Wu Po Village. The strategies include:

- Conducting initial surveys at the landscape level to measure participatory forest resources and biodiversity.
- Conducting a participatory socioeconomic analysis and market opportunity analysis.
- Conducting forest management and non-timber forest product (NTFP) production technique trainings at the village level.
- Assisting with ecotourism development.
- Investigating alternative energy potentials and offer trainings.
- Conducting ongoing monitoring and evaluation of forest resources, biodiversity, and the project's socioeconomic impacts.
- Restoring small-body waters and riparian zones and monitoring water quality and quantity.

Challenges:

- Scaling-up: IUCN and their partners face significant challenges when trying to work across provincial boundaries. There are large economic differences and needs between Beijing Municipality and Hebei Province.
- Constraints on livelihood opportunities due to the need for watershed protection and strict logging quotas.
- Limited government subsidies for ecosystem services.
- Ongoing monitoring to measure success.
- Ensuring the local community continues working towards sustainable development and forest protection even after IUCN and other partners are gone.

Possible Study Questions:

- Why is watershed management important for addressing Beijing's water crisis?
- Why is an ecosystem approach important for watershed management?



- After watching the video, can you identify the main concerns that Hua Yuan villagers had after working with IUCN on the pilot project?
- How can adaptive management approaches be utilized in scaling up this watershed management project?
- What should IUCN and other practitioners be monitoring to measure the success of their projects? What are the main indicators?
- What can IUCN do while working in Hua Yuan and Xiao Wo Pu Villages to encourage their development and conservation projects to continue even after they have left the villages?

About the Organization:

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