

THE BEIJING ECO-COMPENSATION PROGRAM, CHINA

Connecting Megacities and Their Rural Neighbors for a Green Economy

THE CHALLENGE

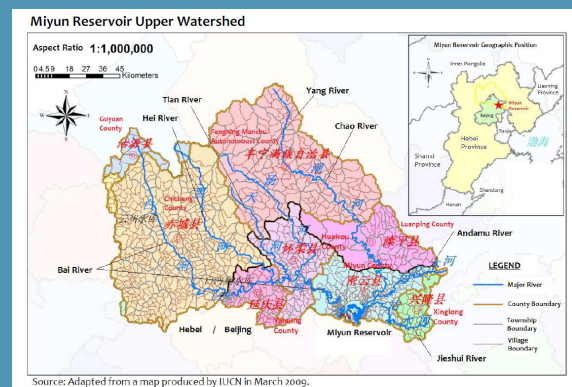
Water is cited as the single most critical resource bottleneck to China's continued economic growth, and the city of Beijing faces a particularly acute crisis. The Miyun reservoir, which used to supply 60-70% of Beijing's surface water, is now at one-fourth of its total capacity. Authorities in Beijing are also concerned about large algal blooms caused by nutrient loading from animal waste, fertilizer run-off, and domestic waste, which threaten drinking water supplied by the reservoir. Similar pollution caused water from another major reservoir to be rendered unfit for human consumption in the 1990s. Despite being the primary source of water for Beijing, two-thirds of the watershed that supplies the Miyun reservoir is actually in neighboring Hebei Province.

The biophysical challenges facing Beijing's water source are compounded by socio-economic challenges in the watershed, caused by inequalities between the capital city and its rural neighbors. The annual per-capita income for rural Beijing is US \$2,136, while in Hebei province, it is half as much, just USD \$959, and even lower in the upstream counties around the Miyun reservoir. Approximately half of the rural labor force works in agriculture and forestry.

In response to this crisis, the government of Beijing has financed large-scale reforestation across the watershed. Beijing Municipality has already channeled more than USD \$103 million between 2000 and 2014 from the capital city to local governments in neighboring rural areas through this eco-compensation program. These programs have reforested 48,000 hectares of land and have compensated farmers for reducing water and fertilizer use in 103,000 hectares of rice paddies and corn fields.

While the Beijing government has achieved great scale and impressive reforestation results with these programs, the hydrological benefits of this eco-compensation program—in terms of increases water yield, improved hydrological regulation, or improved water quality—is yet unknown. This is partly due to significant

Location: Hebei Province and Beijing Municipality, China



PARTNERS: Beijing Forestry Society, Beijing Parks and Forestry Department, IUCN China.

difficulty sharing data between forestry and water authorities in Beijing and elsewhere in China, but also reflects their singular focus on increasing the number of hectares reforested in the watershed. The program also has the opportunity to improve socio-economic outcomes through more direct engagement of upstream communities.

THE RESPONSE

Beijing's watershed reforestation programs have been so successful, according to their historical measure of hectare coverage, that there is now very little area remaining to reforest. The city's watershed management programs thus have the opportunity to enter a new phase, where forest and agricultural management for hydrological results can be the driving focus.

To inform this new phase, Forest Trends has partnered with the Beijing Forestry Society to encourage a performance- and monitoring-based approach for the Miyun watershed. The Beijing Municipality has demonstrated their interest in this new approach with

a recent \$1.6 million award to Beijing Forestry Society to improve forest structure and water quality in watershed pilot sites, with an emphasis on improving and monitoring the hydrological benefits of pilot interventions. Beijing Forestry Society is also leading efforts with a range of Beijing foundations and businesses to establish the Beijing Watershed Fund, which will channel additional resources to performance-based watershed improvement projects. These two strategies will leverage public, private, and philanthropic funding to demonstrate the potential of a performance-based approach to watershed management for Beijing's water supply.

Forest Trends and Beijing Forestry Society are working together in three key areas to develop this performance-based approach:

- Improving hydrological monitoring of project interventions in terms of priority hydrological metrics, including base flow and avoided phosphorous pollution, and helping the Beijing government use that information in their decision-making around the design and implementation of forest and watershed restoration activities.
- Evaluating socio-economic dynamics in communities and quantifying the socio-economic impacts of interventions to refine intervention design for improved community engagement, cost-effectiveness, and socio-economic results of project interventions.
- Supporting the development of complementary funding sources through the design of a water fund for Beijing and outreach to the private sector.

THE MODEL

This project demonstrates how Chinese eco-compensation programs, which are predominantly large, government-led programs, can be more effective in producing better water quality and quantity returns, while being more socially inclusive. Forest Trends is supporting Beijing Forestry Society as they lead a shift towards

Beijing Eco-Compensation Program at a Glance

Size of the Miyun watershed (including counties in Beijing and Hebei)	1,580,000 ha
Percentage of rural population in watershed engaged in agriculture and forestry	52%
Increase in forest and shrub land in last 30 years	582,836 ha (24% of the total watershed)
Average annual per-capita water availability in Beijing	124 m ³ (UN threshold for scarcity : 500 m ³)
Average annual per capita income in upstream villages in Hebei	US \$402.66

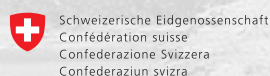
more targeted monitoring and evaluation of hydrological and social impacts of these interventions.

Beijing is a laboratory to try new approaches and techniques to implement, monitor, and finance large-scale landscape and watershed restoration, and serves as strong proof-of-concept for strategies that invest in rural communities to improve urban water supply and improved water quality.

Furthermore, the Beijing eco-compensation program has already set an example for the potential scale of city leadership on watershed protection, which inspired the establishment of the Partnership for Mega-Cities and Watershed Protection by Beijing Forestry Society, Forest Trends, and IUCN China in May 2013. The Partnership facilitates sharing of lessons and best practices between major Chinese and international cities proactively working for water security through watershed management.

Forest Trends' Water Initiative merges a holistic, "ridges to reefs" outlook on water management and conservation with a strong belief in the power of markets and incentives to address the global water crisis. Primarily funded by the Swiss Agency for Development and Cooperation, the Scaling Up Investments in Watershed Services Program supports local partners piloting innovative investment in watershed services projects in seven countries and engages a diverse community of experts to create new tools and analytics and share best practices.

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