

Huzhou City, China

About the IWA Action Agenda for Basin-Connected Cities

The IWA [Action Agenda for Basin-Connected Cities](#) builds on the [Principles for Water Wise Cities](#), with a focus on how cities can be active water stewards in their wider water basins. This includes the Drivers for Action such as extreme events, declining water quality, and water availability; followed by the Pathways to Action through assessment, planning and implementation; and the Foundations for Action from developing a vision to building capacity to improving governance. To learn more visit - <http://www.iwa-network.org/press/the-action-agenda-for-basin-connected-cities/>

About the Basin Stories

The [basin stories](#) are documenting some of the best practices and approaches that demonstrate how stakeholders especially those in urban areas (e.g. city government, water and wastewater utilities, industries) are taking part or contributing to sustainable management of water resources. Greater basin-level collaboration from catchment to consumer is essential for sustainable water management in the face of growing demand on water resources and global change. The stories aim to inspire urban stakeholders to be aware and respond to what is happening in their watershed.

Regulation and Protection of Lougang Irrigation and Drainage System in Huzhou City

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Summary

Taihu Lake, the third largest freshwater lake in China, is considered the heart of the Yangtze River Delta. Huzhou City, a city named after the lake, is part of the Taihu Basin located on the southern shore of Taihu Lake.

Lougang, is a Chinese word that refers to the inlet and outlet channels of Taihu Lake along its shore. It originated 2500 years ago. At first, drainage canals were dug in the low-lying areas near the lake and dikes were built to protect the farmland. With continuous construction, canals were formed and connected to natural streams and ponds. Due to the multiple demands, the Lougang system was gradually extended and became a specific irrigation and drainage system for the lowland area of Taihu basin. It has had considerable influence on the formation and development of the city, and it is one of the reasons why Huzhou is an important region in the production of rice and silk in China.

With urban expansion, the Lougang system is facing increasing pressure. The natural environment and function of the Lougang system has been damaged, impacting the environment and the cultural heritage of the area. To address this, the Integrated Water and Environmental Management (IWEM) Master Plan in the Taihu Lake Basin integrated regulation of the Lougang system, the local government is unfolding a series of measures. Efforts are in place to restore the traditional landscape through dredging, riverbank restoration, land zoning (which protects the traditional irrigations system), and promotion of the historical and cultural values (which benefits tourism).



Figure 1. Lougang systems in different periods. Clockwise from left to right - 1. Local Chronicles of Huzhou City (1872). 2. Water Conservancy Bureau of Huzhou City(2010), 3. Water Conservancy Bureau of Huzhou City(2019), 4. Transport Bureau of Huzhou City(2019)

Problem: With urban expansion, the Lougang system is facing increasing pressure. The natural environment and function of the Lougang system has been damaged. The quality of the environment has been degraded, and the "historical memory" of the city has been erased.

Solution: The local government has opted for integrated management and development of Taihu Basin by unifying the departments of urban construction, agriculture, culture and tourism to promote systematic management, protection and use of resources in the Lougang system.

Geographic information

Country: China
City: Huzhou City
Population: over 3 millions residents
Basin area: Taihu Basin - 3.69km²



Figure 2. Location of Huzhou city in China and in the Taihu basin

Problem

Huzhou, China is an important commercial centre with close ties to the wider landscape which is included in the greater metropolitan area. The area has been intensively farmed since at least the 7th century. This includes the ancient Lougang irrigation and drainage system in the plains of Taihu Lake, which was initially constructed 2500 years ago. Even today, the Lougang system still serves as the backbone for irrigation, flood control and drainage in the Huzhou area. However, urbanization and economic development have affected the traditional irrigation system.

The Lougang system is made up of canals, culvert gates and dikes which have been and are still used to control water drainage, irrigation and provide waterway transportation. Urban construction has increased siltation, reduced flows, and caused a reduction in the number of connected ponds which in turn has affected the storage capacity of the city's water resources. The public space on parts of the shoreline has been occupied by improper infrastructure, illegal facilities and disposed waste, such that the quality of the ecological environment has decreased, and residents have now turned their back on their environment. Due to inadequate protection and improper use, some parts of the ancient structures have been damaged and hence reduced the function and cultural value of the historic Lougang system.

What are the Drivers for Action?

Extreme Events

Public health hazards

Damage to infrastructure

Economic activities and supply chain disruption

Declining water quality

High operating costs

Loss of credibility and trust

Environmental, cultural and health impacts

Water availability

Water supply disruption

Constraints to growth

Declining quality of life

Solution

Since 2011, there have been efforts to restore the traditional landscape through dredging, riverbank restoration, land zoning (which protects the traditional irrigations system), and promotion of the historical and cultural values (which benefits tourism).

Within the implementation of the Integrated Water and Environmental Management (IWEM) Master Plan in the Taihu Lake Basin, local government has integrated the regulation of the Lougang system with development of the city. The departments of the relevant industries have joined forces in basin-wide management to promote the systematic regulation, protection and use of the Lougang system. The goal is to create a system that is functional for the Lougang and beneficial to its residents.

Huzhou City developed a comprehensive management plan to protect the Lougang system, as well as preserve the historical and cultural landscape, conserve the environment, and provide shipping routes among other functions. Huzhou has adopted a plan that combines integrated management of the Lougang system and spatial planning of its urban area.

The main approach is the systematic management of the water environment. Based on key projects of the IWEM Master Plan, the approach is to divert water from the upstream to Taihu Lake through the Lougang system. In order to enhance the connectivity of the water system and improve the aquatic environment, five basic channels of the Lougang system (more than 50km), were widened and dredged. Nearly 90 km of connected streams and ponds were dredged (1,800,000m³) and more than 200 km of rivers in the area were regulated. This has greatly improved the aquatic environment and ensured better flood management in the Taihu basin.

At the same time, the government has adjusted the layout of urban development at different levels. For example, the landscape zone or scenery zone along the lake have been integrated in city-level construction. At the regional level, areas with different characteristic themes are recognised. A successful example is the Silk City, where visitors can learn about the history of silk production in Huzhou, experience the manufacturing process and enjoy exquisite silk products.

Following the transformation of the city's development plan, the relevant cultural and tourism industries are encouraged to develop rapidly, which stimulates the economic development and improves the transportation and other functional infrastructure.

Pathways for Action

For more information on the Pathways for Action visit the [Action Agenda for Basin-Connected Cities](#)

Assessment	Planning	Implementation
<input type="checkbox"/> Investment in data & information systems	<input type="checkbox"/> Risk-based approach to planning	<input checked="" type="checkbox"/> Integration of natural infrastructure
<input checked="" type="checkbox"/> Linking traditional water management with science	<input checked="" type="checkbox"/> Water allocation mechanisms	<input type="checkbox"/> Economic and financing mechanisms
<input type="checkbox"/> Invest in values to motivate water decision-making	<input type="checkbox"/> Stakeholder participation in planning and management	<input checked="" type="checkbox"/> Building partnerships from catchment to tap

- Aligning urban development with basin management Digital Technologies

Lessons learned

As part of the integrated management of the aquatic environment in the Taihu Basin, the Lougang Regulation in Huzhou City was implemented to protect the traditional landscape. The watershed is a source of opportunity for the city, and the city follows the rhythm of the watershed. Guided by the belief that "clear waters and lush mountains are priceless assets," the local government combines the city's demands with the skills of relevant departments to implement multi-stakeholder and multi-scale cooperative governance. In this process, it highlights the characteristics of the regions to find more appropriate ways of development. Therefore, with the continuous improvement of the Lougang system, the city has taken a new face.

In the future, the protection and use of the Lougang system will continue to meet the needs of the people for better living and better water management. The current governance, protection and development of the Lougang system is the responsibility of the government, and the participation of the people must be further strengthened to be even more effective. Recently, Huzhou City has initiated legislation for the protection of the Lougang system, but there still remain obstacles in using legal means to curb the destruction of this traditional landscape.

Resources

http://www.mwr.gov.cn/xw/tpk/slfj/201909/t20190920_1363676.html (from the website of Ministry of Water Resources, P. R. China)

<https://news.cctv.com/2020/11/11/ARTIcKhgoSN4RD36nKjBXpPt201111.shtml> (from the website of China Central Television)

About the Water Conservancy Bureau of Huzhou City, Zhejiang Province

The Water Conservancy Bureau of Huzhou City is the water management department of Huzhou City. It mainly has city-level responsibility in water resources development, utilization, allocation and protection, guiding and organizing the construction and operation of city-level water projects. The Water Conservancy Bureau of Huzhou City leads the Regulation and Protection Project of Lougang Irrigation and Drainage in Huzhou City.

About the Water Conservancy Bureau of Wuxing District, Huzhou City

The Water Conservancy Bureau of Wuxing District of Huzhou City is the water management department of Wuxing District of Huzhou City. It mainly has responsibility in water resources development, utilization, allocation and protection, guiding and organizing the construction and operation of city-level water projects and so on. The Water Conservancy Bureau of Wuxing District of Huzhou City is the important organisation in implementing the Regulation and Protection Project of Lougang Irrigation and Drainage in Huzhou City.



Figure 3. Scenery of Taihu Lake and Huzhou City