

Traditional Knowledge in Today's Water Management in China

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I. Traditional Water Management

- China has attached great importance to water conservancy since time immemorial. Water management institutions have been established in different periods. And Corresponding laws and regulations also have been promulgated. A large number of water conservancy projects such as canals, ponds and dams have been constructed.



The **Dujiangyan Irrigation Project** built by Li Bing, the governor of Shu Prefecture, has made the Chengdu Plain a "land of abundance" with controlled floods and droughts.



The **Quebei Irrigation Project** led by Sun Shuao, the governor of Chu, led to the production of a large amount of grain in the Anfeng and quickly became an economic center of Chu.



The **Xinjiang Karez** was built during the Western Han Dynasty, and is referred to as the "Jingqu" in the *Records of the Historian*, which is an important strategic support for the China Western Regions

I. Traditional Water Management

➤ Drinking water

- Due to large scale of Chang'an in the Tang Dynasty, there was a great demand for water.
- Five canals including Qingming Canal, Longshou Canal, Yong'an Canal, Huang Canal, and Cao Canal were built to provide drinking water for the city development, based on eight rivers around Chang'an, such as Wei River and Wu River.
- The five canals were served flood control and drainage.



Rivers around Chang'an in the Tang Dynasty

I. Traditional Water Management

➤ Dujiangyan Irrigation System

- Dujiangyan Irrigation System is the world's oldest, the only remaining use water project until now, with the characteristics of dam-free water diversion.
- The creation of Dujiangyan Irrigation System is based on the premise of not destroying natural resources, making full use of natural resources to serve human beings, turning harm into benefit, and making people, land and water highly integrated.



Dujiangyan Irrigation System (256 B C)

I. Traditional Water Management

➤ Terraces

- China has a lot of mountains and few plains, especially in the Southwestern.
- Terraces have been built along the contour lines of the mountains for food.
- Terraces can trap runoff, retain soil in China. They increase food production and support a large population with rich experience of terraces management.



Terraces in China

I. Traditional Water Management

➤ Grand Canal

- With a history of 2500 years, the Beijing Hangzhou Grand Canal, with a total length of 1797 kilometers, began construction in 486 BC., formed in the Sui Dynasty, and developed in the Tang and Song Dynasties.
- The Grand Canal connected the five major water systems of the Hai River, Yellow River, Huai River, Yangtze River, and Qiantang River.
- The Grand Canal, as a major transportation artery between the north and south, has played a significant role in history. The navigation of the canal has promoted the rapid development of coastal cities.



Grand Canal

I. Traditional Water Management

➤ Flood Control of the Yellow River

- The Yellow River has always been honored as the “mother river” of the Chinese civilization. Due to rich yellow silt in the river, stream route has changed many times in history, and occurred floods. Millions of people have drowned, towns have been destroyed, and crops have been ruined because of the flooding.
- Pan Jixun, a Ming Dynasty official, have great achievements for flood control of the Yellow River. His ideas mainly included “attacking silt with water,” “scouring silt with clear water,” and so on.



Stream Route Changes of the Yellow River

II. Lessons Learned from Tradition

- **Understand the rule of water**
- **Better utilization of nature power**
- **Integrate water into the national governance**
- **Find localized technical and infrastructures**
- **Maintain the sustainability of the sources and system**

II. Lessons Learned from Tradition

➤ Understand the rule of water

- The existence of all things in the world follows certain natural rule.
- We should respecting nature, ecology, social rule, understand water-economy-ecology nexus.
- For example, Yu the Great is an ancient hero in prehistoric times, whose most remarkable accomplishment was taming the water. Drawing from his father's experiences of blocking the flood, he figured out a way of digging channels to conduct water into the sea.



Yu taming the water

II. Lessons Learned from Tradition

➤ Better utilization of nature power

- Water has great nature power, which can destroy everything on the surface. We should let this power serve us.
- For example, Dujiangyan Irrigation System remove sand with the power .
- In order to control flood, attacking silt with water power was been adopt by Pan Jixun in Yellow River.



Sand removal of Xiaolangdi Reservoir

II. Lessons Learned from Tradition

➤ Integrate water into the national governance

- Water is the most basic and decisive factor for livelihood, economic productivity and ecosystem.
- Water security can affect economy, society ecosystem, which are basic issues of national development.
- National governance should improve water management firstly.
- Chinese proverb: National governance begins with water management



II. Lessons Learned from Tradition

- **Find localized technical and infrastructures**
- **Follow the basic laws of natural evolution, utilize water resources according to different conditions and uses, and adapt to local conditions in a reasonable manner.**
- **At the same time, efforts should be made to solve the problem of technological localization and provide differentiated technological paths.**



II. Lessons Learned from Tradition

- **Maintain the sustainability of the sources and system**
 - The sustainable utilization of water resources is not only related to the development of social economy, but also affects people's living environment.
 - We should achieve the balance between taking from and leaving in system.
 - The goal is harmonious between humans and water.



THANKS FOR YOUR ATTENTION!



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