Analysis on Dujiangyan Irrigation System and its sustainable development experience

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PART 01  Introduction
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- Introduction
- The headworks of the Dujiangyan Irrigation System is located in the city of Dujiangyan
- The irrigation system was built in 256 BC
- In over 2,200 years, it played a huge supportive role to local economic and social development and left rich water culture heritage to later generations
- It is a monument in the history of the development of water conservancy projects in China
- It is a civilization symbol and landmark of water conservancy and water transportation
- "Water is under control and man does not know what famine is"

Introduction

Headwork of the Dujiangyan Irrigation System in 1910
Fish mouth Levee
Flying Sand Weir
Bottle Neck Canal
- Length: 500M
- Include: Baizhang Dike and Jingang Dike
- Wide: 200m
- Function: Water diversion and sediment discharge
- Wide: 17 ~ 23m
- Function: water diversion and shore control

Introduction Area of Dujiangyan Irrigation System
- Irrigation Area of Dujiangyan Irrigation System
- City: Chengdu
- County: Pi, Pengzhou, Wenjiang, Shuangliu, Tianfuxinqu, Xinjin, Longquanyi, Xindu, Qingbaijiang, Jintang, Chongzhou, Dayi, Qionglai, Jianyang, Wuhou, Qingyang, Jinniu, Jinjiang, Chenghua, Gaoxin
- Meishan City
- County: Pengshan, Renshou, Qingshen, Dongpo
- Deyang City
- County: Guanghan, Shifang, Mianzhu, Jingyang, Luojiang, Zhongjiang
- Mianyang City
- County: An, Fucheng, Santai
- Suining City
- County: Shehong, Daying
- Ziyang City
- County: Yanjiang
- Leshan City
- County: Kaiyan

History

1. Creation and improvement of the project
- In 256 BC, under the command of Li Bing, the governor of the Shu Prefecture, started to build the Dujiangyan Irrigation System
- The project aimed to control the floods and divert water and turned to benefit the local people
- The project was completed in AD 662

2. High-speed development
- In 1949, the Dujiangyan Irrigation System started to transform and expand
- The irrigation area has already reached 1,000,000 ha in 38 counties in 7 cities
- By the end of 2000, the annual provided irrigation water to 150,000 ha of cropland is 42.5 billion m³

3. Relatively stable area
- Relatively stable area
- During the Tang (AD 618 – 907) and Song (AD 960 – 1279) dynasties, ancient China achieved prosperity. As a result, the irrigation area of the Dujiangyan project quickly expanded to cover 12 counties

4. The irrigation area has already reached 1,000,000 ha in 38 counties in 7 cities

5. High-speed development
- In 1949, the Dujiangyan Irrigation System started to transform and expand
- The irrigation area has already reached 1,000,000 ha in 38 counties in 7 cities
The Dujiangyan Irrigation System is an engineering system that consists of headworks, water diverting channels at various levels in irrigation districts, ponds, weirs.

The project has created a water environment characterized by crisscrossing rivers and densely-distributed ponds, lakes and swamps on the Chengdu Plain and farmlands.

Irrigation System

<table>
<thead>
<tr>
<th>Heritage Item</th>
<th>Number</th>
<th>Location</th>
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<tbody>
<tr>
<td>Headwork</td>
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<tr>
<td>Fish Mouth Levee</td>
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<td>Flying Sand Weir</td>
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<td>Bottle Neck Canal</td>
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<td>Main Canals and Sub-Canals</td>
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<td>Puyanghe River</td>
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<td>Jiang'anhe River</td>
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<td>Branch Canal</td>
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<td>Important Projects of Branch Canals and Those Below</td>
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<td>Baimayan Weir</td>
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</table>

Management experience

- In various historical periods, multiple management types have brought orderly management and full vigor to the Dujiangyan Irrigation System.
- The management of the irrigation system involves both highly-centralized administrative system and non-government resources, allowing all benefited parties to bear their respective management responsibilities and corresponding obligations.

Management experience

Dujiangyan began to set up special administrative organs in Han Dynasty, and Dujiangyan set up Water Conservancy Office in Yongzheng period, and Yamen set up in Guan County (now Dujiangyan city).

Management experience

- The generation of weir or trench managers can be roughly divided into voting system and rotation system.
During its 2000 years of sustainable utilization, Dujiangyan weir has generated rich irrigation culture

➢ This magnificent building is Er'wang Temple, the weir temple
➢ In the 3rd century, to encourage the development of agriculture, the central government of China enshrined Li Bing as the water god and worshipped him on the national level
➢ In the Qing Dynasty, Er'wang Temple was where the government officials and weir managers met to discuss project management issues and solve water use conflicts

THANK YOU