

# Recycling Design and Utilization of Agricultural Water Conservation Heritage Resources in the Early Period of Socialism in Chongqing

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**Abstract.** Chongqing has rich agricultural water resources in the early days of the founding of the People's Republic of China. Through protective restoration and design, development and design utilization, a large-scale agricultural water conservancy network in which Chongqing integrates old and new water storage and irrigation is constructed. This will benefit Chongqing's agriculture, rural areas, and farmers, empower rural areas, and coordinate the construction of ecological civilization.

**Keywords.** Water heritage resources, Regeneration design, Value activation

Developing water conservancy construction is a great achievement since the founding of New China. At the beginning of the founding of the People's Republic of China, water conservancy was very backward. There were only 6 large-scale reservoirs and 17 medium-sized reservoirs in the country. The continuous floods and droughts have worsened the poor new China after many years of war, and agricultural production has been seriously affected. Facing such a situation, the state attaches great importance to the development of water conservancy projects, and the construction of water conservancy projects has become a major development strategy after the founding of New China. "In the early stage of the construction of socialism in New China, there were 86132 reservoirs built in the country, including 319 large reservoirs, 2252 medium-sized reservoirs, 83561 small reservoirs and 6.64 million ponds and dams. There are countless large and small irrigation channels. "Provided the foundation and guarantee for the development of socialist agriculture.

As far as Chongqing is concerned, "there are 153,633 water conservancy projects completed in the initial stage of socialist construction, of which the total number of reservoirs reached 2,195, and the area covered by drought and flood protection was 2.306 million mu." It had a positive effect on Chongqing's agricultural production and people's lives in mountainous areas. Many large-scale agricultural water conservancy projects are

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built by the government. Leakage and reinforcement of reservoir dams have been rectified successively after the reform and opening up, water storage functions have been maintained, and the risk of dam breaches has been resolved;

## **1 Status and reason of agricultural water conservation heritage resources in the early period of socialism in Chongqing**

Located in mountainous Chongqing, the main water conservancy construction in the early stage of socialism was large reservoirs, small and medium-sized reservoirs and small mountain ponds, and farmland irrigation canals. Many small and medium-sized agricultural water conservancy projects are built by local people's communes and production teams. Reservoirs and dams are mostly artificial rammed soil. The participants in the project are ordinary people. The labor force is complex, without engineering technical training, and without construction quality standards. When these water conservancy projects were first constructed, there were problems such as low standards, incomplete emergency measures, poor quality, and low safety; mountain pond is an important achievement of agricultural water conservancy in the early stage of socialism, with the largest number. It is distributed in valleys, mountainsides and even mountaintops all over Chongqing, mostly storing seasonal rainwater. During the dry season, this water supplies the farmland around the mountain ponds with water or domestic water. Mountain ponds are mostly built by collective villagers of the village community. The quality of the construction project can be imagined, but because of the small water storage capacity and the risk of dam failure, the leakage caused by quality problems has become a common phenomenon at the beginning of mountain pond construction; Due to the climate of Chongqing, June and July are the water supply period of Shanping pond. The high temperature in August and the continuous dry season have a low water storage capacity in mountain pond. Most mountain ponds are out of repair due to water aging and water leakage.

Whether it is a large reservoir, or a small or medium-sized reservoir, or Shanping pond, the original supporting agricultural irrigation canals, diversion viaducts, culverts, etc., are limited by materials and technology, and the quality of the project is not high. In addition, it is in disrepair for a long time, and the natural aging damage is serious; After the industrialization of society, a large number of rural people in Chongqing have been displaced, leaving more old, weak, and sick villagers to stay at home. The leading role of the industry in rural areas has been declining, leading to barren farmland, a sharp decline in agricultural demand for water resources, villagers' loss of enthusiasm for the management and protection of agricultural water conservancy facilities, and the collapse or damage of irrigation canal facilities. Village roads, electricity and other modern constructions have severely damaged agricultural irrigation canals but have not been repaired, leading to the interruption of some of these canals and loss of irrigation functions; some artificial excavation of sand and quarry constantly breaking irrigation canals; There are also basic construction stones for transporting and selling canals and diversion viaducts, which are used for antique buildings and houses in towns. There are also basic construction stones such as transporting and selling canals, diversion viaducts, etc., which are used for antique buildings and houses in towns. Filling an empty concept culture with stone full of historical traces, creating artificial nostalgic memories, but constantly causing damage to farmland preservation and agricultural water drainage facilities.

The government does not pay enough attention to the management of small and medium-sized agricultural water conservancy, the management mechanism is lacking, there are problems such as unclear property rights, inadequate maintenance and management responsibilities, and difficult operation; Facing illegal acts of artificially destroying water conservancy facilities, there is no management and no legal punishment, and there are gaps

or gray areas in law and management; During the agricultural society, the villagers' sense of ownership of agricultural water conservancy continued to weaken under the impact of the industrialized society. They also turned a blind eye to the artificial destruction of agricultural water conservancy facilities and canals.

So far, most of the large and medium-sized water conservancy projects constructed in the primary stage of socialism in Chongqing are still in operation, and other small water conservancy projects and irrigation channels are in a state of disrepair. Less than a fifth of the existing agricultural and water conservancy projects are still in use.

## **2 Conservative development, design and utilization of water resources heritage resources**

Chongqing is located in the mountainous area, the water source mainly depends on the natural water supply in June and July every year, and the rest are in dry and water deficient months. In addition to the rich groundwater supply in karst geology in Southeast Chongqing, the groundwater supply in other areas can barely meet the needs of villagers' domestic water. Even the full-load operation after the protective restoration design of the agricultural water conservancy heritage cannot meet the agricultural irrigation needs in Chongqing; Chongqing's agricultural water conservancy is mostly built in valleys and gullies. It can only irrigate farmland below the water conservancy contour. The area above the contour becomes a blind irrigation area; In particular, the hillside area is the main land source of Chongqing. Although there is natural rainwater supply in June and July, the soil layer is thin and does not store water. In addition, the high temperature in Chongqing in June and July makes the land in the hillside area drought and water shortage. Therefore, based on the protective restoration design and utilization of water resources heritage resources, the protective development, design and utilization of water resources heritage resources should be strengthened, and the coverage of water resources irrigation should be expanded.

The development of modern engineering technology and engineering mechanization have provided support for the design of water conservancy projects and their irrigation ditches, viaducts, culverts, and efficient and high-quality construction. Modern design should be used to expand the irrigation canal network of heritage resources and extend the scope of irrigation; At the same time, new water conservancy and storage projects and supporting irrigation projects should be designed and developed according to local conditions;

### **2.1 Protective repair design utilization of water resources heritage resources**

China has a wide area and cannot be urbanized as a small country. Agriculture is always the focus of our social development. In the early days of New China, the agricultural economy was the foundation on which the country stood and the people survived; Reform and opening up, China is moving towards an era of urban industrial economy as the leading era, and the development of rural and agriculture is relatively lagging behind. Food security has become a new issue. Entering the new era of socialism, the coordinated development of urban industrial economy and rural agricultural economy, that is, the overall development of urban and rural areas has become the new mission of the party and the country. The revitalization of the countryside has become the main theme of the times. The state has continued to attach importance to agriculture, rural areas and farmers. The development of agriculture and rural areas has once again returned to the national strategic focus.

After the reform and opening up, although there have been major developments in the country's water conservancy industry, most of them have developed hydropower and water conservancy projects. Agricultural water conservancy projects are mostly the reinforcement and rectification of the dams of large and medium-sized reservoirs in the early stage of socialism. Villagers have hardly added new agricultural water conservancy projects, as has Chongqing.

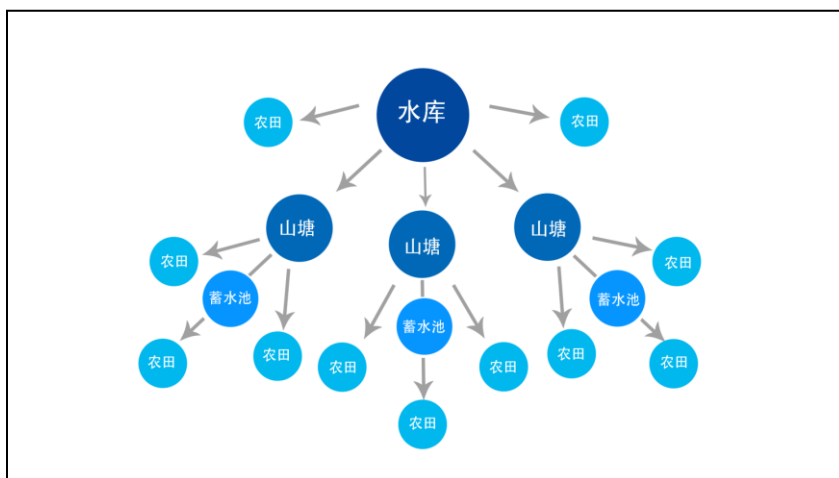
As a municipality directly under the Central Government, Chongqing is a key social and economic development area of the country. In addition, among the four municipalities in the country, Chongqing has a rural area and agricultural population that are multiples of about three digits in other municipalities. Demonstrate to other provinces and regions in the country in agricultural and rural development. Chongqing's strategic position in the country and the node of rural revitalization should make a difference in the agricultural and rural areas. The agricultural water resources in the early stage of socialism should be fully designed and restored to fully utilize the secondary functions to make the agricultural water resources heritage in the new era of socialism, a new light will be emitted to help the rural villages in Chongqing and the construction of ecological civilization.

The effective use of water resources is the lifeblood of agricultural and rural development. The protective restoration and utilization of these agricultural water heritage resources in the early days of Chongqing 's socialism was not a simple and partial temporary repair after repair, but by incorporating modern design concepts, design ideas, Design methods and modern engineering materials and technologies, combined with the geological and ecological conditions of various agricultural water conservancy, carry out high-level design guidance and scientific construction to achieve the purpose of conservation and sustainable use of water conservancy heritage resources. At the same time, a comprehensive census should be carried out on the integration of agricultural water conservancy resources in the early period of socialism in the jurisdiction into the scope of cultural relics, grading, classification, and points of heritage relics should be graded, and standards for the restoration, protection, and use of water conservancy heritage at various levels should be formulated, and comprehensive protection in accordance with standards. The restoration design is re-used to give play to its basic support value of rural rejuvenation and modern ecological civilization construction.

## **2.2 Formatting the text**

Chongqing is located in a mountainous area. The main source of water depends on the natural water supply in June and July of each year, and the rest are in dry and dry months. In addition to the abundant groundwater supply in the karst geology of southeast Chongqing, the groundwater supply in the remaining areas can only be marginal Meet the needs of villagers for domestic water. Even the full-load operation after the protective restoration design of the agricultural water conservancy heritage cannot meet the agricultural irrigation needs in Chongqing; Chongqing's agricultural water conservancy is mostly built in valleys and gullies, which can only irrigate the farmland under the contour line of water conservancy, and the area above the contour line becomes the irrigation blind area; In particular, the hillside area is the main land source of Chongqing. Although there is natural rainwater supply in June and July, the soil layer is thin and does not store water. In addition, the high temperature in Chongqing in June and July makes the land in the hillside area drought and water shortage. Therefore, based on the protective restoration design and utilization of water resources heritage resources, the protective development, design and utilization of water resources heritage resources should be strengthened, and the coverage of water resources irrigation should be expanded.

The development of modern engineering technology and engineering mechanization have provided support for the design of water conservancy projects and their irrigation ditches, viaducts, culverts, and efficient and high-quality construction. Modern design should be used to expand the irrigation canal network of heritage resources and extend the scope of irrigation; At the same time, according to local conditions, expand and design new water conservancy and water storage projects and supporting irrigation projects; under the major and medium-sized water storage projects of heritage resources and newly-built resources, design multi-level water storage projects and supporting irrigation projects; Through the design, as many levels as possible, various levels and levels of hydraulic irrigation canals are linked into a network, a multi-level irrigation system is developed, and the first-level irrigation mode that connects water storage projects to farmland in the initial stage of socialism is broken; Utilizing the terrain drop, the reservoirs, mountain ponds, ponds, and paddy fields are connected at multiple levels to build a multi-level irrigation mode (Figure 1). In the face of natural floods and droughts, this multi-level irrigation network chain can effectively allocate water resources and ensure the network Agricultural water supply at every link.

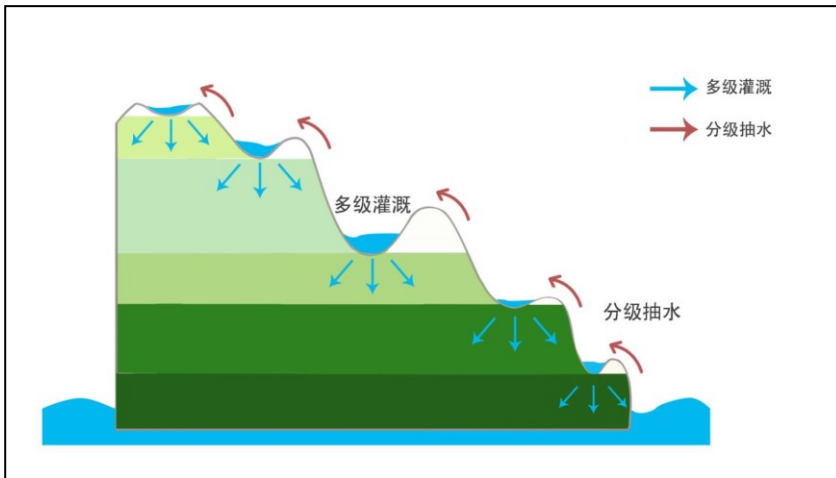


**Fig. 1.** Multistage Irrigation Mode.

On the basis of designing and developing reservoirs and mountain ponds, vigorously design and build storage tanks and wells for springs and drilling-type underground water wells as a supplement to on-site irrigation and human and livestock water use in the dry season.

Innovative design of water conservancy projects to solve the problem of water shortage on slopes and mountains in Chongqing. In the early days of socialism, some places in Chongqing tried to solve the problem of agricultural irrigation from the low to the high, but due to the limitation of fuel consumption and water pressure technology, it could not be implemented. Nowadays, with the popularization of rural power grid and the development of pumping technology, the wisdom of pumping water storage irrigation returns to the field of view of water resource design and utilization, which can be used to solve the problems of agricultural irrigation and human and animal water use on slopes and mountains. The mountain pond is designed and constructed at different heights of the mountain, connected with the mountain pond by electric pumping facilities. The water is delivered from the river water source layer by layer in the valley to the mountain pond on the top until the mountain pond on the top of the mountain. The mountain pond at all levels of height irrigates the area below the contour line of the mountain pond to achieve the slope irrigation without blind

spots (Figure 2). The mountain pond in the water conservancy project is not only the water source for irrigation, but also the water source for ecological conservation, as well as the water body for forest fire fighting.



**Fig. 2.** Slope Irrigation Without Blind Spots.

### 3 Conclusion

The agricultural and water heritage resources in the early stage of socialism in Chongqing are valuable wealth and should be designed and utilized to give play to its value. Its functional development, development, design and utilization should be based on the protective restoration and design of the huge water resources heritage in the early stage of socialism. This large network of water storage and irrigation benefits Chongqing agriculture, rural areas, and farmers. At the same time, this big net is also the heart blood network of regional ecology, effectively maintaining ecological stability.

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