

Research on Financing Model of Water Conservancy Projects under the New Economic Situation

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Abstract. Water conservancy project is the most basic livelihood guarantee project related to social security and stability and the survival and development of various production departments, but it is facing huge financial pressure because of its large investment scale, low financial returns, long recovery cycle, positive external benefits and strong public welfare. This paper analyses the characteristics and difficulties of investment and financing of water conservancy projects, combined with the new concept of the development of water conservancy projects and the analysis of related cases, this paper puts forward some solutions to investment and financing problems, such as innovation of investment and financing mode, establishment of local water conservancy development platform company, invigorating stock assets, etc., as well as relevant policy suggestions such as overall project planning, improving investment mechanism, improving financing capacity, expanding investment returns, innovating investment and financing models, etc. It can provide reference for the overall planning and investment construction of water conservancy projects.

1 INTRODUCTION

Affected by the epidemic and changes in the world political, economic and trade landscape, the Chinese economy has entered a new pattern of economic development with the domestic circulation as the main body and the domestic and international dual circulation promoting each other. The Chinese government has also successively introduced corresponding industrial, fiscal, and monetary policies to promote economic development and ensure the smooth transition of the economy [1]. Due to the decline of land market popularity caused by the regulation of the real estate market, and the strict control of the financing of the local implicit debt regulatory platform, local fiscal revenue has declined. At the same time, the source of funds has been widened through policies such as special debt, trillion treasury bond, revision of franchising and PPP project management measures, marking a new stage of economic development [2]. In the new economic situation, local governments no longer have sufficient financial funds to invest in water conservancy projects through government investment. Water conservancy projects are facing increasing pressure to raise funds [3]. This article actively explores ways to expand diversified comprehensive development revenue sources through EOD, XOD, industry city integration, cultural and sports, tourism and leisure, and actively attracts social and financial capital through related comprehensive development projects to solve financing difficulties in

water conservancy projects under the new economic situation.

2 THE CHARACTERISTICS OF WATER CONSERVANCY PROJECTS

2.1 Characteristics of Water Conservancy Projects

Water conservancy projects is located at the upstream of the production sector of the national economy. And it is a necessary input for the production of other economy production sectors [4]. It is the basic condition for the survival and development of other production sectors and plays a very important supporting role in the national economy and social development. It has the basic characteristics of the national economy. Water conservancy projects is a basic infrastructure for social and economic development, with a large total investment scale and mainly consisting of public welfare projects with no direct financial benefits or relatively low returns. It has the characteristics of large investment scale, long return period, and low financial returns. Water conservancy projects have generated good positive external benefits for the comprehensive development and operation of cities, cultural and tourism health, rural revitalization, and smart agricultural complexes in the surrounding areas. They have high comprehensive benefits and require reasonable investment sharing and value conversion.

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2.2 Difficulties in Traditional Financing Models

Due to the fundamental and public welfare nature of water conservancy projects, traditional investment and financing models mainly rely on government direct investment, bond issuance, platform companies financing on behalf of the government, and government procurement of services. However, due to local financial pressure and local debt control requirements, it has brought difficulties to government investment and financing^[5]. Due to the constraints of local fiscal revenue, the scale of government direct investment projects is limited. Due to the fact that the amount of local government bonds available is directly proportional to the local fiscal revenue, underdeveloped areas that require bond quotas the most often cannot allocate sufficient quotas due to weak fiscal strength and small investment scale of major projects^[6]. In recent years, a series of policies have been issued to completely prohibit the government from financing on behalf of the government through financing platforms, further clarifying that projects packaged with engineering and services cannot be included in the scope of government procurement services^[7]. Government procurement services have basically lost the operational space as an investment and financing model for infrastructure construction.

2.3 New Concept of Water Conservancy Projects Development

To overcome the difficulties of traditional investment and financing models, meet the needs of high-quality development of water conservancy projects in the new stage, and reduce the financial pressure on local governments, it is necessary to actively explore new concepts for the development of water conservancy projects. The main methods include optimizing the functions of water conservancy projects, fully leveraging the high comprehensive benefits of water conservancy projects, and cracking down on innovative investment and financing models for water conservancy projects.

3 INNOVATION OF FINANCING MODELS AND CASE ANALYSIS

3.1 Innovation of financing models

In the process of investment and construction of water conservancy projects both domestically and internationally, an effective solution is to utilize the comprehensive development benefits of natural or commercial resources and balance water conservancy projects with poor operational performance^[8]. For example, integrating the benefits of operational resources such as land and sand within the scope of the project, and dynamically balancing the investment and operating costs of water conservancy projects^[9]. While completing investment in water conservancy projects, it is possible to achieve development goals such as regional land maturation, land price increase, and

industrial introduction. Ultimately driving the overall value enhancement and sustainable development of the region^[10].

3.2 Case1: Urban Flood Control River Quality Improvement Project in Jiaying

The main construction content of the project is urban flood control engineering in Jiaying. The project aims to expand the comprehensive functions of Jiaying's urban flood defense with the concepts of "safety+" and "water conservancy+", transforming the urban defense project into a "resilient blue chain and happy green environment" to support urban development. The project mainly focuses on the dynamic balance of water conservancy engineering with three major benefits.

The first is the income from land transfer. Through the research and analysis of exploitable land within the project scope, it can be concluded that the blocks that can be imported for industry and transformation and upgrading are mainly the entrances and exits of the Ring Expressway and the idle land in the north. By introducing investors, investing, constructing, and operating the infrastructure and public facilities within the project scope, and organizing and transferring these lands to obtain corresponding land transfer profits.

The second is the income from waterfront operating assets. The operation and management of wetland park tourism and other projects, as well as the utilization of water and biological resources, can generate stable cash flow and serve as a source of investment income for the project.

The third is to introduce diversified industries to generate profits. By improving the quality of urban defense engineering, enhancing the comprehensive urban environment, and combining with rural revitalization and other work, we will develop high-end industries, prioritize the development of environmentally friendly projects such as sightseeing agriculture, health care, and new energy, accelerate the attraction of talents, funds, and high-end industries in the region and surrounding plots, and form an industrial coordinated development cluster.

In this case, diversified development benefits such as land, waterfront assets, health and wellness, and new energy were utilized to balance investment in water conservancy engineering construction, achieving overall funding balance for the "water conservancy+" comprehensive development project and reducing financial pressure on local governments.

3.3 Case2: West Chongqing Water Resources Allocation Project

The main cooperation content of the project is water source engineering, water supply engineering, and small hydropower asset revitalization. The investment income of the project mainly includes water supply income, water installation income, raw water sales income, and electricity sales income. The project lifts water from Yangtze River and Jialing River, and provide water for

urban and rural life and industry in western Chongqing. It is an important component of the Chongqing water network. The project is developed through a franchise model. The government platform company and social capital jointly establish a project company. The government platform company invests in real assets and currency, while social capital invests in currency. Through equity cooperation between both parties, outdated production capacity and technology will be eliminated, and strong cooperation will be established to enhance the technical and management capabilities in the project company. In the face of difficulties in financing water conservancy projects, through equity cooperation, we can solve financing bottlenecks, restructure high-quality assets, activate inefficient assets, and achieve asset appreciation.

In this case, the operating income from the revitalization of existing assets such as small hydropower and water services operated by local state-owned enterprises was used as supplementary income for the project, which not only balanced the problem of insufficient revenue from quasi-public welfare water conservancy projects, but also achieved the preservation and appreciation of inefficient utilization assets.

3.4 Case3: Changshan River Navigation and Power Hub Project

The project construction mainly includes waterway, hub, ship lock, bridge and other engineering projects. This project comprehensively considers the needs of shipping, flood control, irrigation, and water environment, and is an important measure to improve the quality of urban water environment in Changshan County. The principle of "overall authorization, investment cooperation, rolling development, closed operation, and self balancing" for comprehensive development is conducive to alleviating financial pressure and enhancing the value of land development along the Changshan River. The balanced funding sources for this project mainly include three parts. The first is government special funds. The second is the retained earnings from land transfer fees. Within the balanced land use scope of this project, the retained earnings from land transfer after deducting land acquisition and demolition costs are specifically used for this project. The third is operational income. The project itself includes revenue from the power generation of the navigation and power hub, sales revenue from sand and gravel mining during the dredging process, and revenue from the transfer of operating rights in the waterway service area. After the completion of the project, it also includes revenue from ship clearance fees, rental income from the yard after the completion of the dock construction, sales revenue from limestone mining around the area, as well as development revenue within the radiation range of the waterway, such as industrial introduction and tourism development. This type of income benefits from the social and economic benefits of project construction, creating incremental financial and tax revenue for the Changshan County government.

In this case, the use of government special funds, comprehensive development of surrounding land, and the comprehensive benefits brought by sand and gravel in the river channel not only solved the problem of fundraising for major water conservancy projects, but also achieved a healthy coordinated development of regional economy.

4 SOLUTION TO FINANCING DIFFICULTIES

Water conservancy project investment and financing should seize the opportunity of the country accelerating water conservancy reform and development, innovate institutional mechanisms, broaden investment and financing channels, improve investment and financing environment, significantly enhance water conservancy investment and financing capabilities, and match the requirements of water conservancy engineering construction.

4.1 Establish appropriate social capital cooperation mechanisms and operational models

EOD (Ecology-Oriented Development) +Resource Model. While carrying out water conservancy projects such as seawall construction and river management, we should also improve the ecological quality of the shoreline and synergistically leverage the comprehensive functions of water conservancy projects. This type of water conservancy project can be mainly based on river management or seawall construction, supporting the construction of surrounding land. Match the construction tasks of public welfare infrastructure and public supporting facilities with the proceeds from the sale of operating land around the coastline or the development of operating construction land. In the construction of major projects such as reservoir safety protection, fast waterways, and happy rivers and lakes, we will strengthen the operation of operational assets and industrial introduction, enhance the utilization of high-quality water resources such as water shorelines and sand and gravel materials, and leverage the comprehensive benefits of the projects.

PPP (Public-Private-Partnership)/Franchising Model. For water conservancy projects where user paid income can fully or largely cover investment and operating costs, PPP or franchise models can be adopted for implementation. There are specific operational methods such as Build Operate Transfer (BOT), Build Own Operate Transfer (BOOT), Transfer Operate Transfer (TOT), Renovation Operate Transfer (ROT), and Build Own Operate (BOO). For projects with insufficient operating fees, the government can provide partial investment subsidies, operational subsidies, or related resources to ensure that investors achieve reasonable investment returns.

ABO (Authorize Build Operate) +EPC(Engineering Procurement Construction) Model. For major water diversion and distribution

projects, flood control and drainage projects, the government can authorize state-owned enterprises as project owners, introduce equity partners to form a joint venture project company responsible for project investment, financing, construction, and operation and maintenance, and conduct performance evaluations and provide financial support or operational resource compensation as agreed. At the end of the cooperation period, the project company is responsible for transferring project facilities to the government. Make full use of stable benefits such as water supply and power generation, improve project revenue through water price reform, water rights trading, and enhance balance ability.

For comprehensive water conservancy projects or “water conservancy + comprehensive development” projects, the combination of the above different modes can be used to strive for corresponding financial funds such as treasury bond and special funds, reduce financing costs, broaden sources of investment returns, achieve coordinated progress between water conservancy project construction and regional economic construction, and thus promote high-quality economic development. At the same time, refinancing can also be carried out through capitalization methods such as Reits and ABS.

4.2 Increase government fiscal investment for water conservancy projects

Central and provincial-level financial subsidies are an important component of water conservancy construction funds, and efforts should be made to strive for central and provincial-level financial subsidies to improve funding security capabilities. According to the principle of division of powers, the scope and standards of subsidies for various types of water conservancy projects should be fully grasped, and the construction content of projects should be in line with subsidy policies as much as possible. Efforts should be made to strive for central and provincial financial subsidies. Improve the level of local financial support for water conservancy construction, synchronize and coordinate water conservancy construction with local economic and social development, ensure that local governments invest sufficient project capital, and meet financing requirements.

4.3 Developing and strengthening high-quality water conservancy financing platforms

By integrating existing local state-owned asset platform companies related to water conservancy and water affairs, establish a regional water conservancy development group company. By injecting capital and integrating operational assets, we aim to expand and strengthen water conservancy investment platform companies. By effectively developing upstream and downstream water related industrial chain resources such as raw water, water supply, drainage, sewage treatment, and waterfront development, we aim to tap into the

economic value of water resources assets, activate public welfare and inefficient utilization assets, explore diversified operations, enhance the profitability of enterprises, and create a high-quality water financing platform.

4.4 Suggestions for water conservancy financing policies

Carry out systematic planning and coordinated development of water conservancy projects. For projects that can bring significant promotion or guarantee to the national economy and social development, they can be implemented in the near future; For projects with relatively low comprehensive benefits, less urgency, and little driving effect, they can be considered as medium - and long-term development content based on social and economic development.

Establish suitable mechanisms for allocating investment rights, responsibilities, and benefits for water conservancy projects. Clarify the categories of water conservancy projects, clarify the market and government investment sharing ratio, improve the government financial investment mechanism, maintain the synergy between water conservancy construction investment level and other infrastructure construction investment levels, and maintain stable growth of water conservancy financial investment. Clarify the responsibilities, rights, and benefits of water conservancy projects, implement the principle of central investment for central affairs and local investment for local affairs, and allocate investment based on responsibilities and benefits.

Enhance the ability to raise diversified funds. Stabilize and expand the special investment of fiscal funds in water conservancy, ensuring the supply and allocation of water conservancy projects. Efforts should be made to study, deploy, improve and enrich the water conservancy construction fund plan, conduct in-depth research and demonstration on the feasibility and plan of collecting water conservancy construction funds from it, and continuously enrich the water conservancy development fund from government funds, paid use income of state-owned resources, paid use income of state-owned assets, and operating income of state-owned capital. Increasing financial policy support, providing low-cost financing such as preferential loans and policy loans for water conservancy projects, exploring diversified and multi-level water conservancy financing methods such as funds, Reits, ABS, insurance, etc., can effectively reduce the overall funding cost and financing pressure of projects. Local bonds and treasury bond have the advantages of long term, large scale, stable channel and low interest rate. It is suggested to actively issue special water conservancy bonds to finance water conservancy construction according to the local economy and financial level.

Expand diversified investment returns for water conservancy projects. Promote water price reform, establish a mechanism for urban water supply price formation and dynamic adjustment that fully reflects

water supply costs and incentivizes the improvement of water supply quality, gradually adjust residential water prices to no lower than cost levels, and adjust non-residential water prices to compensation costs and reasonable profit levels, achieving compensation costs and reasonable returns, and attracting social capital to participate in investment and operation. Improve the compensation mechanism. For water conservancy projects with public or quasi-public welfare characteristics, if the financial benefits cannot cover the construction investment and operating costs, the feasibility and economic viability of the project should be guaranteed through the financial fund compensation mechanism and comprehensive development rights compensation mechanism. Improve comprehensive benefits, actively explore the utilization of comprehensive development resources within and around the project, enhance the overall economic viability of the project, and reduce financial investment pressure. The comprehensive development income of the project itself mainly includes aquatic products, water supply, agricultural complexes, etc. The comprehensive development income of the surrounding areas mainly includes cultural and entertainment, leisure and vacation, health and wellness communities, etc. The regional resource development income mainly includes wind power, photovoltaic, mineral resources, etc.

5 CONCLUSIONS

This article analyses that in the new economic situation, the domestic circular system is becoming a key focus of economic development. Due to the cooling of the land market and strict control of local implicit debt, the financing of water conservancy projects is facing increasing pressure. It has been proposed that diversified development benefits such as land, waterfront resources, leisure and health, cultural and sports, and new energy can be utilized to achieve the overall financial balance of "water conservancy+" comprehensive development projects, attract social and financial capital to participate, and reduce the financial pressure on local governments; We can innovate through the "water conservancy + resources" model, broaden diversified financing channels, establish water conservancy related platform companies, and other measures to ensure the construction of water conservancy projects and promote high-quality local economic development.

Acknowledgments

This work was financially supported by the PowerChina Huadong Engineering Corporation Research Fund(KY2019-GH-08, KY2022-GH-02-03).

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