

LETTER TO THE EDITOR

Application of PPP Model in Water Pollution Environmental Governance

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At present, it is necessary for many countries to improve urban water supply and sewage services. On the basis of deeply discussing the concept, characteristics and functional advantages of PPP model, this paper analyzes the existing problems and causes of urban sewage treatment in China. In order to better achieve the goal of energy saving and emission reduction in urban sewage treatment, it is necessary to actively introduce and promote the new PPP management model. When introducing and using PPP management mode in municipal sewage treatment work, it is necessary to select different PPP management modes according to the specific forms of existing, rebuilt and expanded sewage treatment plants and newly built sewage treatment plants. According to the above analysis, it can be seen that the application of PPP model has practical significance for solving water pollution problems.

PPP; Water Pollution; Environmental governance

1 INTRODUCTION

PPP, short for Public-Private-Partnerships, is a management model that encourages the government to strengthen its links and cooperation with the private sector and enterprises. At present, PPP management model has been taken as an important measure to improve the way of government public goods and public services. Countries around the world are widely used in the management of providing public goods and services. In recent years, China's social and economic development has been sustained and rapid, but at the same time, the degree of environmental pollution has been deepening, which has brought many threats and challenges to the construction of ecological civilization. The prevention and control of environmental pollution has become a social issue of great concern. Urban sewage treatment is an important content and key link of contemporary environmental governance. After decades of practice, exploration and comparison, people find that in order to achieve the goal of energy saving and emission reduction in urban sewage treatment, it is necessary to actively introduce and promote the new PPP management model (Chen et al. 2017).

Fengping Wu, Min Zhu, Shang Luo, Junyuan Shen, Xia Xu and Fang Li published an article in the journal Ekoloji on Issue 107, 2019, entitled "Ecological Water Price Adjustment Model Based on Contamination Bearing Capacity of Ecological Water Resources" (Wu et al. 2019). This paper studied the construction of ecological water price adjustment model based on the carrying capacity of ecological water resources pollution. The evaluation index system of polluted ecological water resources was established by analytic hierarchy process, and the index

comparison judgment matrix was constructed, and the comprehensive evaluation was carried out. The weight of the indicator of polluted ecological water resources was calculated and finalized. On the basis of analyzing the residential water and industrial water, the comprehensive score of carrying capacity of water resources was calculated by the carrying capacity model of ecological water resources pollution, to construct an ecological water resource adjustment model and rationally adjust the living and industrial ecological water use. Pricing was based on actual conditions (Pessoa et al. 2016). The results show that the adjusted ecological water price is within the acceptable range of residents' living, the growth trend of urban domestic water consumption is slow, and the industrial water reuse rate is increased by 6.3%. This is a scientific and reliable price adjustment model for ecological water.

On the basis of the above research, this paper studies the application of PPP model in the treatment of water pollution environment. Firstly, the concept, characteristics and functional advantages of PPP model are analyzed (Chen and Han 2015). On this basis, combined with the existing problems and causes of water pollution treatment in China, the PPP management model is introduced into water pollution treatment, so as to achieve timely treatment of water pollution environment.

2 IDEA DESCRIPTION

2.1 Analysis of the Concept and Functional Advantage of PPP Model

2.1.1 Concept of PPP Model

PPP was first put forward by the British government in the early 1980s as a management concept. It refers to the way that the government grants private enterprises to replace the government in infrastructure construction, operation and management, and to provide public goods and services to the general public through long-term agreements (Xu et al. 2017). Later, however, this concept has been extensively developed. Some public management scholars from different international organizations and countries, such as the United Nations Development Programme, the United Nations Institute for Training and Research, the European Union, the United States, Canada and so on, have given different understandable definitions from different perspectives, and it has not yet formed a unified and consistent concept. On the basis of comprehensive reference and combining with the reality of China, this paper defines the concept of PPP model as follows: PPP mode is a cooperative operation and management mode in which the government and other public organizations, the public sector, enterprises, companies, individuals and other private organizations, conclude cooperative agreements and establish cooperative relations to achieve profits or interests of private or private enterprises while performing their functions and responsibilities for public organizations in a more efficient manner, around the common goal of public management.

2.1.2 Functional Advantages of PPP Model

One is the advantage of financing. For example, in the process of infrastructure construction, BOT mode, one of the forms of PPP mode, can be used to realize active and effective financing for highway, railway, water works, waste treatment plants, sewage treatment plants and other construction, and to solve the traditional "financing difficulties" of infrastructure construction.

The second is the advantage of efficiency. In PPP management mode, the factors of private enterprises are actively introduced. Driven by the maximization of economic benefits, it is conducive to reducing costs, improving quality, increasing efficiency in the production and provision of public goods and public services.

The third is the low-risk advantage, on the basis of that the public sector and the private sector share their own risks, PPP model can greatly enhance the ability of both partners to resist risks together, making the original comprehensive risk greatly reduced (Zhu et al. 2018).

2.2 Problems and Reasons of Water Pollution Treatment in China

With the acceleration of industrialization and urbanization in China, sewage treatment is facing more and more tasks and workload. In recent years, under the strong leadership of the government and the loud appeal of the public, many sewage treatment infrastructure has been established, and some achievements have been made in the actual effect of sewage treatment. But at present, there are still some problems in urban sewage treatment in China.

2.2.1 Main Problems

At present, there are three main problems in water pollution treatment: one is the serious shortage of investment in water pollution treatment. Second, there are inefficiencies and inadequate motivation. Third, there is a single form of management and supervision and the absence of social supervision.

2.2.2 Causes of Problems

The main reasons for the above three problems include: the first is the continuous increase of sewage discharge due to the sustained and rapid economic development. The accelerated urbanization process has led to the increase of municipal domestic sewage and the dramatic increase of people's demand for sewage treatment facilities. However, the investment growth rate of government departments and private enterprises in sewage treatment is far from meeting the overall demand for water pollution treatment. Secondly, the government is still the leading factor in the water pollution treatment system. Most of the organizations and implementing units of the water pollution treatment and supporting systems are public institutions or quasi-public institutions, resulting in unequal rights, responsibilities and interests, and leading to inefficiency, unreasonable charges and serious underinvestment. Thirdly, on the management of sewage treatment, the backward management concepts and methods, the single management means and the incompatibility between design ability and actual demand result in a great waste of resources. In addition, the excessive dependence on government financial funds, the imperfect management system of modern enterprises and the lack of market-oriented and modern management personnel with advanced experience and management level lead to the lack of motivation in sewage treatment work. Fourthly, in sewage treatment technology and equipment, foreign equipment import proportion is large, external dependence is strong, the claim period is long when problems arise, and the cost of maintenance and repair is high. Fifthly, when choosing sewage treatment facilities, the local water quality and sewage treatment quantity are not considered carefully, resulting in the purchase and introduction of facilities and equipment idle due to soil and water incompatibility, greatly affecting the efficiency and actual effect of water pollution treatment (Li et al. 2018).

3 RESULTS

On the basis of the above analysis, taking GZ Environmental Protection Company as an example. The company uses PPP model to deal with water pollution. The specific operation process is project identification, project preparation and project execution.

3.1 Item Identification

At this stage, the Ministry of Finance jointly with the competent ministries of industry evaluate and screen possible projects, mainly completing feasibility analysis, project output description and the formulation of skillful implementation plan, and focusing on evaluating the attractiveness of this project to social capital, the financial strength and risk tolerance of private enterprises participating in bidding. Then, through public bidding, social capital competition mechanism is introduced, and the enterprises with the strongest comprehensive strength are selected as winning bidders to promote the rational marketization of sewage treatment industry.

3.2 Project Preparation

The government organizes and establishes a project investigation team, which is responsible for decision-making on major issues, communication between senior government leaders and guidance of overall work. It also includes

investigating social investors, mainly investing investment orientation, capital strength and management level. Ultimately, the Ministry of Finance, together with the relevant ministries and external experts, should establish a PPP mode evaluation to make a skillful evaluation of the project implementation plan, and then be skillful in accordance with the implementation plan after the audit.

3.3 Project Implementation

Social investors should establish project liability companies according to law. Social investors and the government should invest in full and on time according to the contract agreement, and provide tax and financial preferences to social investors. They should actively expand PPP financing channels of project companies to ensure the smooth implementation of sewage treatment projects. The project company is responsible for financing construction projects, timely financing scheme design, institutional contacts, contract signing and financing delivery, etc. At the same time, the Ministry of Finance has done a good job of supervision and management, preventing the transfer of corporate debt to the government, and safeguarding the common interests of both sides (Paruch et al. 2017). After the completion of the project, the project company will operate the project, and do a good job of accounting masterpiece, prepare quarterly and annual reports to the government and social capital cooperation for the record, so as to provide experience and reference for future related projects. The project company should focus on the analysis of the operation status of the project and the compliance and rationality of the project contract every 3-5 years, find out the potential risks in the project in time, and put forward solutions to ensure the smooth implementation of the PPP model in the future.

4 DISCUSSION

According to the characteristics and advantages of PPP management mode, combined with the existing problems in water pollution treatment in China, it is found that PPP management mode can be introduced and used in urban sewage treatment to promote better and faster urban sewage treatment. In the actual sewage treatment work, it needs to accord to the specific form of sewage treatment plant, so as to select the appropriate and effective PPP mode of the specific form.

Following are the suggestions for the application of PPP model in water pollution control.

(1) Rational design of organizational structure and improvement of management capability

Perfect organizational structure is the premise and foundation to ensure the efficient operation of PPP mode. Reasonable organizational structure design requires that management levels shrink, improve the speed of information transmission between superiors and subordinates, facilitate communication between different levels, and prevent the emergence of idle staff. The division of departments is clear, the functions and responsibilities correspond to each other, and the separation of responsibilities should be paid attention to, so as to avoid organizational errors and affect the management efficiency of the project company. In order to achieve the common goal, we should work closely and cooperate to maximize our subjective initiative, adapt to the changes in the dynamic environment, and improve the overall work efficiency of the organization.

(2) Paying attention to technical professionals and experience to build the core competitiveness of the company

Sewage treatment construction and operation are long-term, so we should attach importance to the introduction and research of sewage treatment technology, and pay attention to the training and incentive of technology research and development personnel. However, owning core technology means that enterprises need to increase investment in R&D funds, and attach importance to the training of R&D talents, maintain sustained nuclear competitiveness, and constantly inject fresh blood. While pursuing market share, we should focus on technological research and development and promote the progress and application of various innovative technologies.

5 CONCLUSION

This paper expounds the definition of PPP mode and its functional advantages, describes the current situation of local government financing mode, and analyzes the feasibility and necessity of introducing PPP mode into sewage treatment industry. Taking GZ Environmental Protection Company as an example, this paper studies the distribution and operation process of its PPP model, analyzes the market, financial effect, financing ability and social effect of its participation in the PPP model, and finds out the problems in its operation process. On this basis, this paper puts forward suggestions for further improving the PPP model of sewage treatment from both government and enterprises, promotes the application of PPP model in the development of macro-economic and micro-enterprises, and enhances the enthusiasm of cooperation between private enterprises and PPP model, so as to alleviate the financial pressure of governments at all levels and further promote the market-oriented construction of urban infrastructure.

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