

# The Evaluation of PPP Mode of Environmental Pollution Prevention and Control Based on the View of the Perspective of Sustainable Development

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**Abstract:** The reality of the water environment pollution has seriously affected people's production and life, and even threaten people's life and living environment, it is urgent that we should curb water pollution increasing trend. To promote the prevention and control of water pollution in the field of PPP (Public - Private - Partnership, a public-private partnership) project implementation, and to guide social capital to enter the field of water pollution control, can effectively solve the problems of water pollution, such as the shortage of funds, low operating efficiency. This paper first describes the current situation of PPP project research, then analyzes the feasibility of PPP project in water pollution prevention and treatment, and analyzes the existing problems in China, finally puts forward some targeted suggestions and measures.

## 1. Introduction

With the development of economy in our country, the pollution situation of domestic environment is becoming more and more serious. Although China's government financial investment is increasing, there is still a big gap between pollution control goals and environmental protection needs. The establishment of a market mechanism to attract social capital into the ecological environment protection and to carry out the innovation of environmental protection investment and financing, PPP mode has become a new type of cooperative organization relationship model of ecological environment governance. Water pollution control involves many factors such as resources, technology and economy, make the evaluation and analysis on the PPP mode of water environmental governance from the angle of sustainable development, will make a strong complement of the existing mode of PPP project in the depth.

## 2. Research Significance

From the perspective of sustainable development, the evaluation and analysis of PPP mode of water pollution prevention and control will help to improve the efficiency of resource allocation and pollution control, improve the enthusiasm of social capital, to form effective competition, and to reduce costs. It is helpful to alleviate the main problems that individual project is difficult to disperse and co-ordinate; it is conducive to the overall regional project collaboration and sharing of resources. In addition, due to the large coverage of China's environmental problems, similar financing projects will be further increased with the development of society economy, the contradiction between the project financing and governance effect in the next period of time will exist[1]. Therefore, in the near future and long-term the PPP project of environmental pollution control under the premise of a wide



range of promotion, to evaluate the research and optimize countermeasures is particularly important from the view of perspective of sustainable development.

### **3. Research Status and Trends in China and abroad**

Since 2014, the government and social capital cooperation (PPP) model has received widespread attention[2]. The State Council and the Ministry of finance, development and Reform Commission and other relevant ministries have launched more than 20 documents, in energy, transportation, water conservancy, environmental protection, municipal engineering and other public services, to encourage the use of government and social capital cooperation mode, to attract the participation of social capital. PPP model has been developed for decades in China, but it is still a new thing in the field of environment[3], especially in the field of municipal sewage and garbage. Promoting the PPP mode in the environmental field will be beneficial to broaden the channels of environmental protection investment and financing, and have a greater impact on the environment of investment and financing pattern.

At present, as an effective means of pollution control, promoting environmental governance by the government and social cooperation mode, has been widely used in developed countries, some developed regions in China also began to promote and carry out exploration.

Now, the existing researches are mainly related to these subjects:

#### *3.1. Research on PPP Mode*

The PPP (Public-Private-Partnership, PPP) mode is that the public sector and the private sector provide public services, which is established by way of contract and based on long-term cooperation mechanism of risk sharing and benefit sharing (Deng Xiaopeng, 2007). Some foreign scholars had discussed the mode of mutual cooperation between the public sector and the private sector very early, and established a relatively complete theoretical framework[4]-[6]. In recent years, with the introduction of PPP mode, many public facilities in cities have achieved a series of successes through this method. More and more problems need to be paid attention to in the application of PPP mode. For example, in 2003 Zhang Tongjiang, Liu Erlie deeply researches and elaborates the system of PPP mode, pointed out that with the rapid rise of private enterprises, capital accumulation, will be introduced into the PPP mode of public facilities. In recent years, many domestic scholars have studied the PPP mode, including the theoretical basis, application methods, legal framework, risk sharing, pricing model and so on.

#### *3.2. Research on PPP Mode of Water Environment Prevention and Control in Domestic*

From the existing research data, at present, the research on PPP mode project are more, but related to environmental pollution, it is less, the reason is mainly because that PPP project in China is too late to start in the field of environmental protection (Yuan Tang Lu, 2015). However, with the promotion of PPP mode of water environment prevention and control in recent years, the relevant content has gradually attracted the attention of scholars. Existing research data focused on the feasibility of PPP mode in environmental governance (Mo Lu Group, 2016; Lin Donghai, 2016; Liu Jun, 2016). With the policy oriented in nearly a year, it has gradually started to increase PPP project application in environmental pollution control efforts in domestic. According to the "13th Five-Year" plan, PPP mode is expected application in all fields in 2017, it will cover the construction of infrastructure and public services (Tang Chuan, 2017).

#### *3.3. Evaluation on PPP Mode of Water Environment Prevention and Control from the View of Perspective of Sustainable Development*

The relationship between environmental protection and economic development is a game, which is bound to exist between the contradictory subjects. Environmental protection is inseparable from economic development, economic development is bound to require environmental protection, the establishment of a market based cooperation mechanism is an effective way to solve environmental protection and sustainable economic development (Lei Qinli, 2010). From the point of sustainable development, the analysis of environmental pollution control is an effective means to evaluate the effectiveness of social development and environmental governance. The evaluation index system of

sustainable development and its index are more and more recognized as an effective evaluation tool in practice, and also an effective tool for policy formulation and public communication (Singh R K, 2009). Most of the current researches focus on the application and review of PPP mode in environmental pollution control. On the basis of the feasibility study of environmental pollution control by the third party, the existing projects are discussed (such as Liu Jun, 2016; Zhao Baoqing, 2016; Yin Tailing, 2016).

Overall, due to a late start, at present the evaluation research on PPP mode of water pollution prevention, especially from the angle of sustainable development, are very few. In applied research, the research on water environment pollution control is less and stays on the conceptual framework level, and there is no further analysis on the sustainability of water environment pollution control. Therefore, in-depth study of practical applications may be particularly important and urgent.

#### **4. Feasibility of Introducing PPP Mode into Water Environment Prevention and Control Project**

##### *4.1. Economic Growth*

After thirty years of development, China's economic development has made great achievements, China's folk has accumulated enormous wealth of society. by the end of 2014, China's savings rate is as high as 50%, of which private savings accounted for the proportion of total savings reached 90%, the savings amount reached 48 trillion yuan. In the government limited financial resources, private capital investment potential does not effectively guide the social development, the participation of private capital investment to the prevention and control of water pollution is an effective way to promote private investment. Research Report by the world bank research institutions show that when the water pollution control investment accounted for the proportion of fiscal expenditure 0.5%-0.7% interval, water pollution can be prevented, when the time reaches 0.7%-1% water environment quality can be improved significantly. In 2015 April, "water pollution prevention action plan" is formally introduced, opening a water pollution control market with 2 trillion investment feast.

##### *4.2. The Government Has Created a Favorable Institutional Environment for the Implementation of the PPP Mode for Water Pollution Control Projects*

The government has been encouraging private capital to enter the field of public utilities, and has issued a series of laws and regulations to create a good system and policy environment for the introduction of PPP mode. In 2015 May, the Ministry of finance, Ministry of environmental protection jointly issued "Opinions on the implementation of government and social capital cooperation (PPP) in the field of water pollution prevention and control", put forward to perfect the relevant rules and norms, optimize the public-private cooperation mechanism design, supply mode transformation, improve management mode, accelerate the prevention and control of water pollution. The PPP mode should be popularized in the field of water pollution prevention and control, and the PPP mode should be taken into the first place in the areas where the key water pollution basins and the capital gap are prominent[7].

##### *4.3. Technological Progress Has Created a Competitive Environment for Private Capital to Enter the Field of Public Goods Supply*

The progress of science and technology to reduce the monopoly of public utilities, natural monopoly supply of public goods and services is relative, with the progress of technology, the market structure is changing, the natural monopoly of the strength of the trend will change. The supply of public goods is broad and the demand for funds is huge. With the progress of technology and the establishment of property right system, it is possible to introduce the PPP mode into the public goods supply field and introduce the market competition mechanism[8]. The field of water pollution control through the introduction of the PPP model, the advantages of the public and private sectors, to solve the water pollution prevention and control of the single investment structure, low operation efficiency of water pollution control projects, high operating costs, such as the poor quality of service.

#### **5. Main Problems in PPP Mode of Water Pollution Control Project**

### 5.1. *The Laws and Regulations are Imperfect and Not Unified*

1. A nationally consistent organization which is responsible for PPP mode application is lacking

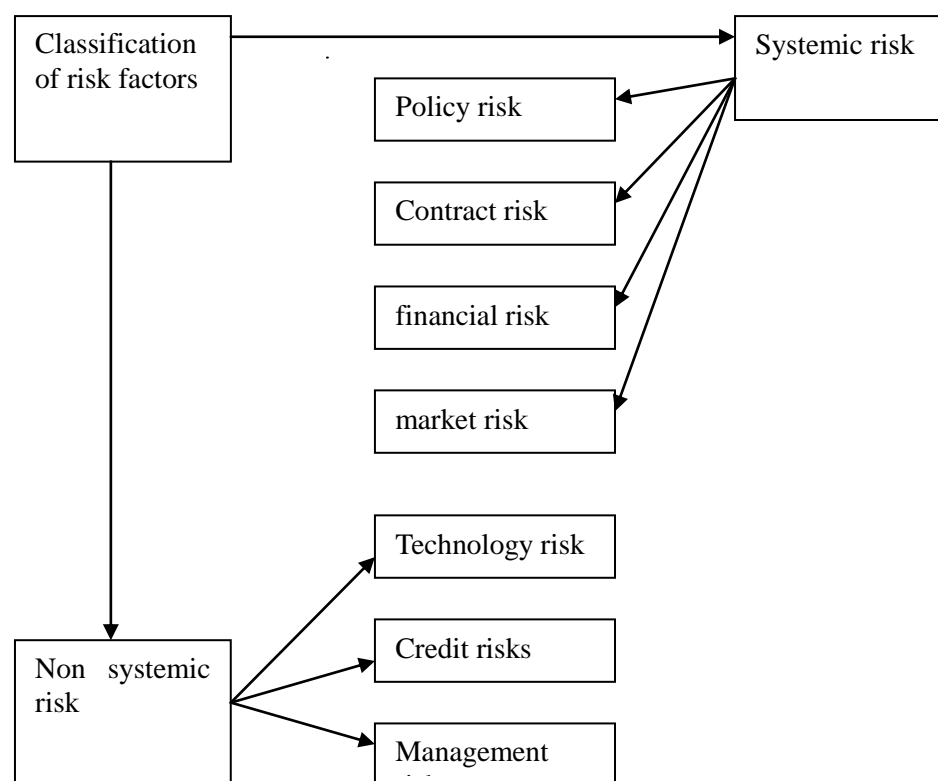
In developed countries, such as Europe and America, they set up a professional organization to be responsible for the improvement of the laws and regulations of the PPP mode. For example, the United States set up public-private partnerships Commission, which is responsible for the problems of system, laws when it encountered in the process of implementation of the PPP project and the regulations to conduct a comprehensive, scientific, authoritative interpretation[9].

2. A national uniform law which is applicable to the PPP model is lacking

The Lacking of a national level of unified regulations, easily lead to contradictions between the PPP mode of water pollution control project and other laws or regulations. This is common in china. The general solution is to report to the NDRC and the State Council, which greatly increases the cost of cooperation between the two sides.

### 5.2. *Risk Sharing is Unreasonable*

Because the PPP project construction and operation cycle is long, the amount of investment is large, and the components of the participants are more complex, it will cause many uncertainties, namely risk in PPP project construction and operation process as shown in Figure 1.



**Figure 1.** Classification of risk factors of PPP

### 5.3. *The Role Change of Government is Difficult*

The Chinese government is always the role of the production government. In the past, the government has carried out all round intervention in financing, construction and operation of water pollution control projects. But in the PPP mode, the government needs to change their roles, the role of the government is not exhaustive, but provides the key implementation of policies and regulations and system guidance and support. From the direct investment, construction and operation management of the water pollution prevention project to the supervision of the project, the government changed from

"paddle" to "steering". For the government, it is not only the change of the system, but also the change of the long-term idea.

## **6. Policy Recommendations for Improving PPP Mode of Water Pollution Control Project**

### *6.1. Improve the Relevant Laws and Regulations System*

A scientific, complete, clear, effective and unified system of laws and regulations is the necessary condition for the successful implementation of the PPP mode. Because of water pollution in the life cycle of PPP project faces the risk of the change of policy change, it is necessary to establish a perfect system of laws and regulations, in order to avoid the financial difficulties which are brought by inconstant policy[10].

### *6.2. Change the Government's Role Indeed*

In the PPP mode, the role of the government should be divided into two perspectives:

#### (1) Macro role

##### a. Political risk control.

Political risk mainly includes two aspects: first, the government change will bring the validity of the commitment.

The two is the stability risk of the government economic policy, and the change of the government's fiscal and tax policies. The government should control the risk, first they can set the system mechanism to ensure the effectiveness of government commitment, and then establish a compensation mechanism to deal with the risk due to policy changes brought to the PPP project.

##### b. Improve relevant laws and regulations

As a new mode of public-private partnership, the PPP mode involves complex aspects, such as guarantee, finance, taxation, contract, entrustment, etc.. The government should improve the relevant laws and regulations to lay the foundation and premise for the operation of PPP project[11].

##### c. The government should cultivate the industry and guidance the policy

The PPP mode has the advantage that other cooperative models do not have. For our country, it is still in a stage of introduction and absorption. The government should assume the guidance and promotion of PPP model in china.

#### (2) Micro role

##### a. Providing support

From a micro perspective, supporting PPP projects is one of the responsibilities of the local government, including economic support, political support and other support.

##### b. Cooperation and supervision

The government has changed from the role of former project leader to supervisor and collaborator, and the role of cooperation is that the government should take the management work to the private sector[12]. At the same time, another important role of the government is supervision, government supervision includes two aspects: first, the supervision of water pollution prevention and control of PPP project financing, construction, and the use of funds. Two is for water pollution prevention and control PPP project itself, the government should to supervise the effect of pollution control.

### *6.3. Reasonable Determination of Price*

For the prevention and control of water pollution PPP project, if the water pollution treatment cost and reclaimed water price are not reasonable, it will be a serious threat to the existence of PPP project. If the price is too low, it will affect the enthusiasm of private investment; if the price is too high, it will damage the interests of the public.

### *6.4. Encourage Public Participation*

Water pollution prevention and control PPP project has a strong utility spillover, water pollution prevention and control is in line with the interests of the public. People are demanding the clean water. Public participation is to a great extent play a supervisory role, although the government to some extent represents the interests of the public, but they are subject to government management, some policy bottlenecks. the participation of social groups which represent the interests of public are lack, it

is difficult to guarantee the interests of the public to make people get good maintenance in operation management process.

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