

## The Reference and Enlightenment of the Application of PPP Model in British Transportation to China

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**Abstract:** The UK has more practical experience in the field of infrastructure construction using the PPP model. This paper firstly combs the development history and policies of the UK PPP project, and then analyzes the project analysis and selection, project procurement procedures, project design and management, partnership management, project handover, performance evaluation and many other aspects. Finally, it is proposed to learn from the British practice to provide some useful experience and enlightenment for China to develop PPP mode in the field of transportation infrastructure.

### 1. The origin and background of the development of PPP projects in the UK

There are still some controversies about the definition of PPP in the world. Broadly speaking, PPP refers to the various partnerships established between the public and private sectors to provide public goods. However, due to the fact that the specific practices around the world are not identical, there are currently differences in the definitions of PPP in various countries. China's Ministry of Finance defines it as based on China's existing practice: PPP refers to a long-term cooperative relationship established in the field of infrastructure and public services. The usual model is that private capital undertakes most of the work of designing, building, operating, and maintaining infrastructure, and obtains a reasonable return on investment through “user pays” and necessary “government payments”. Government departments are responsible for the price and quality supervision of infrastructure and public services to ensure that public interests are maximized.

From the perspective of the whole world, the development of PPP has been around for a long time. In the 18th century Britain, there were big businessmen who jointly set up trust-like companies to borrow money from private individuals to repair roads and set up fees on the roads they repaired as a source of repayment. In the modern sense, PPP appeared in the United Kingdom and the United States in the 20th century. Therefore, this paper will present the enlightenment of the development of China's PPP project by combing the development history, experience and problems of the UK in the field of PPP.

The UK is one of the countries in the world that has adopted the PPP model for infrastructure construction. In the 1980s, the private sector began to participate in the construction and management of UK infrastructure. In 1992, the UK faced a recession, public expenditures continued to expand, lack of government investment, resulting in a lack of infrastructure, and the funding gap required for infrastructure construction exceeded the public sector's financial capacity. Therefore, the government proposed a Private Finance Initiative (PFI). ) to facilitate the involvement of private capital in the infrastructure sector and to transfer more risks to the private sector. The UK PPP is broadly divided into two categories: one is a franchise, where all users pay for it is called a franchise; the other is a private financing plan (PFI). PFI is a UK-specific model for infrastructure investment, construction and operations management. As of March 2014, there were 728 PFI projects in the UK with a cumulative total of 56.6 billion pounds. The project involved education, medical care, transportation, and municipal construction. For ease of presentation, this article no longer distinguishes between franchising and PFI, collectively referred to as PPP.

In the transportation infrastructure sector, the first three PPP projects managed under the user-paid model are the Queen Elizabeth II Bridge, the Second Severn Crossing and the M6

motorway. Since 1996, the UK's new PPP contract no longer uses the user-paid model, but uses shadow charging or direct government payment to provide free road services to users. The government allocates funds from the budgetary funds to the private sector based on factors such as service availability.

## **2. The development of UK PPP policy**

With the continuous improvement of the understanding of the conditions of PPP projects and the introduction and revision of relevant laws and policies, the PPP model has been continuously adjusted in practice. In 1998, the National Audit Office (NAO) released the PFI report for the first time. According to the report, the PFI project can achieve the desired goals through Value for Money (VfM), and it also helps to improve risk allocation and optimize contract terms.

Subsequently, the UK also adopted a series of measures to improve PPP related policies, such as the development of PPP standard contracts, the protection of the legitimate interests of government employees, and the space for contract adjustment. At present, the standard contract has been used. If there is a difference between the final contract and the standard contract, the relevant approval procedures must be fulfilled.

In addition, the UK is also very focused on the protection of government employees when promoting PPP. If an asset or service is offered to a private provider or operator by signing a contract, the employment law provisions protect the legitimate interests of public sector employees. In addition, for long-term contracts, there will inevitably be corresponding contract modifications and adjustments compared to standard contracts. Therefore, it is required to leave enough flexibility in the terms of the contract for future negotiations.

PPP projects account for a small proportion of the UK road network system, but they play an important role. The Highways Authority is a division of the UK Department of Transportation that manages more than 4,300 miles of highways and major trunk roads in the UK and performs important duties on PPP projects. According to statistics, since 1996, the scale of investment through the PPP model has been increasing. By 2012, the cumulative investment in UK highways and major trunk road PPP projects reached approximately £3.8 billion (U.S. DTFHA, 2009).

## **3. The application and management of PPP mode in British highway projects**

### **3.1. Project analysis and selection.**

Deciding whether a project is suitable for adopting the PPP model is an important task. The UK Highway Authority stated that the PPP model requires the public sector to have clear requirements for project output and is fully prepared for the project. The UK Highway Authority decides whether to implement a project mainly considering several factors: first, the necessity of the project construction; second, other projects under construction or construction; third, the total investment of the project; fourth, the road network for each project Implement priority order requirements on delivery time, etc. The UK requires that for any major project (usually investing £100 million), the PPP model should be considered first, and for projects with an investment of less than £7.5 million, traditional construction should be used.

After a project is identified and analyzed as a potential project in the PPP model, the project will be determined by the major project and the procurement bureau. For potential PPP projects, first of all, value assessment is needed, mainly from five aspects: First, whether the project size is large enough to offset the transaction costs incurred in the procurement and implementation process; second, whether the public sector is the output and service requirements can be clearly defined; the third is whether the private sector has sufficient experience to implement the project; the fourth is whether the output and services can be quantified throughout the life cycle; and the fifth is whether there is a reasonable way to evaluate the performance of the private sector. If the above five aspects of the evaluation are passed, it shows that the project can achieve value for money by using PPP.

### **3.2. Project procurement procedures.**

A transparent procurement process is an important prerequisite for cooperation between the public and private sectors. Sufficient transparency provides reliable and predictable information to actual and potential participants, procurement officials, legal parties and the public. Transparency is especially important for large and complex highway PPP projects. Because the public, government officials, and the media are highly concerned about such large-scale projects, the private sector is also very cautious when investing its funds in such projects.

For highway PPP projects, the UK usually uses a competitive procurement approach to select the private sector. The procurement process mainly includes four main stages: first, prequalification; second, bidding; third, negotiation; fourth, signing a contract. Among them, pre-qualification includes: issuing advance notice of information, informing the market that a project is about to be purchased; issuing an announcement on the official EU journal OJEU; issuing a pre-qualification announcement, introducing the project status, project output requirements and description, and evaluation criteria. The bidding includes: issuing bidding documents (including contract model, bid description and guide, feasible design plan of the project, project schedule); bidding requirements and answers to relevant questions; submitting bid documents; evaluating bidders, selecting candidates the list is finally determined to have a priority.

### **3.3. Project design and construction, operation management and handover.**

During the project design and construction phase, the UK introduces an independent auditor as a third party to review the project, such as verifying the payment request, and checking whether the project output meets the standard requirements through on-site visits. There are two main payment methods for hiring an independent auditor: one is shared by the public sector and the private sector; the other is if the payment is below a certain limit, and the private sector is responsible for the payment. If the fee exceeds the limit, the excess will be shared by both parties, and the excess will still be borne by the private sector. Often, if the fees paid to an independent auditor are too high, the private sector is underperforming.

During the project operation phase, the contract manager of the UK Highway Authority acts as a public sector representative for long-term cooperation with the private sector. The main duties of the contract manager include highway performance testing, private sector financial supervision and contract management. During the longer operating period, the contract manager must carefully handle the risk allocation and service standard implementation in strict accordance with the contractual agreement between the two parties to balance the relationship between the public and private sectors. To do this work, the contract manager needs the support of employees within the private sector. If the private sector does not operate according to performance standards, the public sector can follow these five steps: the first step, comments and criticism. The contract manager informs the private department in writing that the conduct does not meet certain requirements or criteria. The second step is to submit a non-conformity report. The contract manager issues an official report on non-compliance with the private sector. The third step is the remedy. The contract manager warns the private sector that if the request cannot be fulfilled or meets the criteria within a certain time limit, appropriate penalties will be imposed. The fourth step is to implement punishment. The contract manager signs the non-conformity report and takes punitive measures against the private sector. The fifth step, warning. The contract manager informs the private sector that the major terms of the contract may be enforced and that there will eventually be government involvement. For breach of contract, it should be dealt with as soon as possible with the principle of minimum loss. So far, there has not been a fifth-step warning phase in the UK PPP project.

Project handover. In the UK, the project transfer terms will clarify the remaining useful life of the project assets at the end of the franchise based on the structure of the highway. The UK standard is 25% of the remaining value of the assets when the project is handed over. The project handover procedure agreed in the franchise agreement is different from the delivery after the completion of the project construction. Usually, a joint inspection process is established between the government and the private sector to determine whether the maintenance status of the project meets the

standards. The terms also provide a more detailed description of how to remedy a situation that does not meet the requirements. For example, there are provisions in the agreement that explicitly establish an action plan and schedule to bring the facility to the expected standard.

### **3.4. Performance evaluation.**

Establishing a scientific performance evaluation method based on project output is an important means for the public sector to carry out effective supervision and management. The UK uses Key Performance Indicators (KPIs) to assess the performance of private sector services provided during PPP project operations and to use the results as a basis for rewards or penalties for the private sector. In practice, the private sector can extend the contractual terms agreed in advance if it maintains or exceeds the performance levels specified in most of the contract terms. For example, in the M25 project, the UK combined its KPI with its private sector payment system. The payment system is tailored to six aspects, including Lane availability, Route performance, Condition criteria, Safety performance, Unplanned events, and Value-added services (Proactive Management), where Lane availability is the main factor.

## **4. The Reference and Enlightenment of British Development Experience to China**

Under the background of deepening the reform of financial investment and financing system in China, promoting the development of PPP mode in the country is of great significance to China's further improvement of transportation infrastructure construction and improvement of public service level. At the same time, private capital has the opportunity to participate in social construction and share economic development results. It is also conducive to raising public awareness and increasing private capital investment channels. However, China needs to absorb the development experience of the UK in promoting the PPP model.

### **4.1. Protecting the public interest while engaging the private sector.**

Highway PPP projects must simultaneously protect the public interest and attract private participation. This requires the government and the public to accept reasonable prices to obtain marginal profits, while the private sector must follow the principles of pursuing reasonable risks and returns, and controlling transaction costs. To achieve this goal, the public sector needs to identify factors that affect the life cycle value of the project based on case analysis, develop risk allocation plans, clarify public needs, and develop appropriate key performance indicators based on demand. In attracting the private sector, the public sector adopts a competitive procurement process. First, select potential competitors or investors to a small number; then, based on reducing transaction costs, adjust project output requirements and bidding conditions to enhance transparency and accountability. The public sector believes that this competitive procurement process can avoid excessive profits in the private sector, which in turn can promote public confidence in the government.

### **4.2. Give the private sector enough room for innovation.**

The private sector engaged in highway PPP projects is usually a company with many advantages in technology, law, and business. This is quite different from the model in which traditional projects require facilities to be built and delivered according to certain technical specifications and requirements. Under the PPP model, the public sector authorizes the private sector to invest in building specific projects within the scope of the agreement and to provide sufficient room for innovation and adjustment. Therefore, the private sector needs to strike a balance between project management, engineering specifications and requirements to achieve its goals while meeting public sector goals.

### **4.3. Continuously strengthen the relevant capabilities of the public sector.**

The ability of the public sector is very important for the effective development of PPP projects. From the practical experience of the UK, the practice of the PPP model presents new challenges to

public sector officials. As the PPP project becomes more mature and the capacity of officials gradually increases, the public sector's reliance on external consultants or institutions is gradually reduced. This aspect comes from experience, including the formation of best practice groups, the establishment of PPP-related principles and guidelines, the development of standards and procedures, etc., all of which have a positive impact on the development of public sector capacity. On the other hand, public sector officials are constantly replenishing relevant areas of expertise and skills, such as legal and financial knowledge, based on job needs. In addition, for the public sector, there is still a need for standardization and proceduralization in PPP management. This is of great significance for the development and supervision of PPP projects. It is not possible to correctly recognize this point and it is likely that the management capabilities of the public sector will not be met actual needs.

#### **4.4. Improve laws and regulations on PPP.**

In the development of PPP mode, the UK is also constantly improving the relevant policies and regulations of PPP. It can be seen that the successful promotion of PPP mode depends on a clear rule of law environment. Therefore, when adopting the PPP model in China's transportation infrastructure construction and operation projects, in order to enhance the predictability of the business environment and ensure that project risks are controllable, relevant departments should improve relevant legislation as soon as possible, and clarify the responsibilities of different departments in PPP development and avoid management confusion caused by long-term supervision.

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