

## The Study on the Risk Factors and the Success Factors of Public Private Partnership Project: Focusing on China and the Middle East

Song-Il Kim<sup>1,1</sup>, Dong-Youl Lee<sup>2,2</sup>, Yong-Jun Lee<sup>2,3</sup> and Min-Jae Lee<sup>2,4</sup>

<sup>1</sup> K-WATER, 200beon-gil, Sintanjin-ro, Daedeok-gu, 306-711 Daejeon, Korea  
<sup>2</sup> Dept. of Civil Engineering, Chungnam National University, 99 Daehak-ro, Yuseong-gu,  
305-764 Daejeon, Korea  
[songil@kwater.or.kr](mailto:songil@kwater.or.kr), [dylee@cnu.ac.kr](mailto:dylee@cnu.ac.kr), [yjlee@cnu.ac.kr](mailto:yjlee@cnu.ac.kr),  
[lmjcm@cnu.ac.kr](mailto:lmjcm@cnu.ac.kr)(corresponding)

**Abstract.** This study was conducted to derive the risks and the success factors of the public private partnership (PPP) projects in the field of water management in the world by analyzing the cases in China and the Middle East where PPP projects are widely implemented. The history, classification, characteristics, and project financing of PPP projects were investigated. The problems of the PPP projects in the water management field in China and the Middle East were investigated. Also, the representative risks and the success factors which should be considered when entering into the water management market were derived and appropriate countermeasures were suggested.

**Keywords:** Public Private Partnership (PPP) Project, Risk, Management, Water Resources

### 1 Introduction

In this study, cases reports of the projects in water management field implemented in China and the Middle East, which are the promising lands of water management market, were analyzed and the actual cases of projects which are currently implemented by Korean companies were investigate to indentify the risk factors and the success factors. Moreover, among the many types of PPP projects, the project types which are appropriate to Korean companies entering in the abovementioned regions were proposed by considering the recent international trend, the technology level, and the current conditions. The projects which were the subjects of this study were the PPP projects of Build-Operate-Transfer (BOT), Build-Own-Operate-Transfer (BOOT), and Rehabilitate-Operate-Transfer (ROT) types which included operation and management in the field of water management.

## **2 Analysis of Risk Factors and Success Factors of PPP projects in Water Management Field in China**

The major risk factors identified in literature review and case analysis were investigated and analyzed for each factor and each case. The major risk factors were selected among those which are recent issues and those which have been considered as unique risk factors in China since long ago. The analysis of the risk factors showed that improvement of the water flow rate and increase of sales are the most important and realistic issues. The issues may be resolved by such efforts as applying the know-how of the specialized water management institutions to improve the water flow rate and increasing investment in facilities as much as possible. In addition, it may be appropriate to develop a new project or promote a project of asset sale/company take over/share sale types after carefully considering the relevant risk factors.

## **3 Analysis of Risk Factors and Success Factors of PPP projects in Water Management Field in Middle East**

Different from China, risk factors in the Middle East have not been identified for each project. Considering the previous studies and case reports, it is difficult to win a PPP project contract in the Middle East. Therefore, the focus should be made not on the difficulties in operation but on the strategies to win a contract. As EPC-based profit creating is possible in the Middle East, water management BOT projects may be promoted by the cooperation of the public and the private sectors to create national wealth and maximize profitability.

## **4 Conclusions**

The PPP types appropriate in the viewpoint of future private investors were identified and the following conclusions were made. Some risks factors are the general risk factors of PPP projects and others are the unique risk factors only found in China. With respect to the operation projects, water sales (demand) and water flow rate are the most threatening risks. Fare rate policy, the low market price, difficulty in raising the price, and the unique Guanxi-based culture were also classified as important risk factors. The risks require application of water flow rate improvement technologies such as replacement of old water pipes and establishment of block system as well as installation of flowmeters at proper places and meterman education. In addition, it is also necessary to predict accurate demand, promote a contract guaranteeing sales, insertion of a penalty article to repress groundwater use, and an organic cooperation with local governments to repress use of conventional groundwater. In the current water market in China, it is difficult for a Korean company to create profit through EPC. The technologies and accomplishment accumulated in the wide water supply system operation and management and the commission management of local water

supply should be actively applied. The PPP project models which are the most appropriate for avoiding the risk factors in each step of the investment project such as political, constructional, and finance supply risks are TOT type and shares takeover type projects. The steps to approach the Chinese market are, first, to selectively promote shares takeover type or TOT type PPP projects for medium and small sized water supply facilities in China, based on the business feasibility analysis results, and then to win a contract for a project generated from the previous projects such as a pipe rehabilitation project or a facility improvement project. On the basis of the accomplishments of the above projects, a company may attempt to win a contract for an operation and management contract and a water and sewage treatment BOT project which are widely implemented in Middle East countries such as Saudi Arabia. This approach will increase the possibility of a success in the Middle East region. The pattern of the orders placed in the Middle East was analyzed and the result showed that an operation and management contract through a water management specialist company may be more promising than a full concession project. As EPC-based profit creating is possible in the Middle East, water management BOT projects by the cooperation of the public and the private sectors may be promising.

## References

1. Choi Jae-ho, Lee Seungho , "Key Risks and Success Factorson the China's Public-Private Partnerships Water Project", Korean Journal of Construction Engineering and Management, vol. 11, no. 3, pp.134-143, 2010.5
2. Choi Jae-ho, Li Shousuang , Lee Seungho "Risk Assessment on the Water BOT Business Participation in China : Domestic EPC Contractor's View", KSCE Journal of Civil Engineering vol. 28, no. 5D, pp.695-703, 2008.9
3. Tillmann Sachs, Robert Tiong, Shou Qing Wang, " Analysis of Political Risk and Opportunities in Public Private Partnerships(PPP) in China and Selected Asian Countries : Survey results, Chinese Management Studies, vol. 1, Issue 2, pp. 126-148, 2007
4. OECD, "Progress in Public Management in Middle East and North Africa Case Study on Policy Reform", 2010
5. Richard Keenan, in Dubai, "PPP in the Middle East", CHADBOURNE & PARKE LLP, January, 2011