Public-Private Partnership in Infrastructure Development

Case Studies from Asia and Europe

This book, produced by the EAP³N Project with contributions from its members, all of whom are active academics and practitioners in the field of infrastructure PPP, is intended to be as an aid to greater mutual understanding in this area.

It is structured into two parts and consists of one Introduction chapter and five case studies, each focusing on a specific project and each highlighting key issues and problem areas.

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Univ.-Prof. Dr.-Ing. Dipl.-Wirtsch.-Ing. Hans Wilhelm Alfen

Marienstraße 7a

99423 Weimar, Germany

Phone: +49 (0) 3643 584592

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Fax: +49 (0) 3643 581156

Email: verlag@uni-weimar.de

Authors

Hans Wilhelm Alfen, Satyanarayana N. Kalidindi, Stephen Ogunlana, ShouQing Wang, Martinus P. Abednego, Andrea Frank-Jungbecker, Yu-Chien Amber Jan, Yongjian Ke, YuWen Liu, L. Boeing Singh, GuoFu Zhao

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Table of Contents

1 AN INTRODUCTION TO PPP CONCEPT 8

1.1 What is PPP? 9

1.2 Definition and Delimitation of PPP 9

1.3 Advantages of PPP: Efficiency Gains 11

1.4 Elements Determining the "PPP Business Model" 13

1.4.1 Basic Model: Urban Development versus Public Service Provision 14

1.4.2 Forms of Privatisation and Privatisation Development Path 14

1.4.3 Kind of Partnership 16

1.4.4 Mode of Sector Financing 17

1.4.5 PPP Contract Models in International Practice 17

1.5 Phases of a PPP Project 19

1.6 Enabling Framework 21

1.6.1 Legal Framework 21

1.6.2 Regulatory Framework 21

1.6.3 Administrative framework 21

1.7 Contractual Framework 22

1.8 Project Agreement 23

1.9 Project Shareholders and their Perspectives 23

1.10 PPP Project Stakeholders' Perspective 27

1.11 PPP Project Financing 29

1.11.1 Funding Sources and Financial Instruments 29

1.11.2 Financing Strategy – Major Issues 30

1.11.3 Financial Package and Risk Profile 32

1.12 Risk Management 34

1.12.1 Risk Identification 35

1.12.2 Risk Assessment 37

1.12.3 Risk Allocation 38

1.12.4 Risk Mitigation 40

2 CASE STUDY I - DIFFERENT RISK PERSPECTIVES IN THE 2ND STAGE CIPULARANG TOLLWAY PROJECT 42

2.1 Infrastructure Development in Indonesia 42

2.2 Tollroad Development in Indonesia 43

2.3 The 2nd Stage Cipularang Tollway project 45
2.3.1 Project Background 45
2.3.2 Problems Encountered in Project 49
2.4 Issues on Differences in Perspectives between the Government and Private Sector 50
2.4.1 Project Success 51
2.4.1.1 Government's Perspective on Project Success 52
2.4.1.2 Private Sector's Perspective on Project Success 54
2.4.2 Project Efficiency 56
2.4.2.1 Government's Perspective on Project Efficiency 56
2.4.2.2 Private Sector's Perspective on Project Efficiency 57
2.4.3 Project Risks 58
2.5 Conclusion 60
3 CASE STUDY II - GOVERNANCE ISSUES IN THE YEN LENH BRIDGE BOT PROJECT 63
3.1 Infrastructure Development in Vietnam 63
3.2 BOT Projects in Vietnam 64
3.3 Yen Lenh Bridge BOT Project 66
3.3.1 Project Background 66
3.3.2 BOT Project Risk Identification 69
3.3.2.1 Land Acquisition Delay 70
3.3.2.2 Delay in Approval from Government Agencies 71
3.3.2.3 Risk of Transportation Network in Region Influencing the BOT Project 72
3.3.2.4 Cost Overrun 73
3.3.2.5 Unrealistic Forecast on Future Economic Development & Demand of the Society 74
3.3.2.6 Increasing Inflation Rate 74
3.3.2.7 Incorrect Analysis of Ownership Duration 75
3.3.2.8 Interest Rate Fluctuation 75
3.3.2.9 General Corruption and Untrustworthiness of Public Official 76
3.3.2.10 Actual Traffic Revenues Lower than Estimated 76
3.3.3 Risk Perceptions in the Project 77
3.4 Governance Issues in Project 81
3.4.1 Fairness 83
3.4.2 Transparency 83
3.4.3 Accountability 84
3.4.4 Sustainability 85
3.4.5 Effectiveness and Efficiency 86

3.5 Conclusion 86

4 CASE STUDY III - "WARNOWQUERUNG ROSTOCK" EXPERIENCES FROM THE FIRST GERMAN PPP ROAD PROJECT UNDER THE F-MODEL 89

4.1 Project Background 89

4.1.1 Project Objectives 90
4.1.2 Project Scope and Site 90

4.2 Legal Framework 91

4.2.1 Federal Private Road Financing Act of 1994 (FStrPrivFinG) and F-Model 91

4.3 Contractual and Financial Framework 94

4.3.1 Stakeholders and Project Structure 94
4.3.2 Sources of Finance 95
4.3.3 Risk Allocation 95
4.3.4 Traffic Forecast 96

4.4 Current Developments 97

4.5 Lessons Learned 98

5 CASE STUDY IV - LAIBIN B POWER PROJECT – THE FIRST STATE-APPROVED BOT PROJECT IN CHINA 101

5.1 Project Background 101

5.2 Project Description 101

5.3 Project Partners 102

5.3.1 Central Government 103
5.3.2 Provincial Government 103
5.3.3 Sponsor 103
5.3.4 Project Company 104
5.3.5 Lender 104
5.3.6 Customer 104
5.3.7 Supplier 104
5.3.8 Contractor 104
5.3.9 Operator 105

5.4 Development Process 105

5.4.1 Initial Planning 105
5.4.2 Prequalification 105
5.4.3 Tendering 106
5.4.4 Tender Evaluation 107
5.4.5 Evaluation Criteria 108
5.4.6 Critical Success Factors 108

5.5 Legislation Driving the Project 109

5.6 Basic Deal Structure 112

5.6.1 Concession Agreement (CA) 112
5.6.2 Power Purchase Agreement (PPA) 113

5.7 Financial Analysis 114

5.8 Government Initiatives 115

5.8.1 Exclusive Concession Granted 116
5.8.2 Power Purchase Guarantee 116
5.8.3 Fuel Supply Guarantee 117
5.8.4 Force Majeure Guarantee 117
5.8.5 Foreign Exchange Guarantee 118
5.8.6 Compensation under Government's Default and Political Risks 118
5.8.7 Tax Incentives 119
5.8.8 Guarantee of Lenders' Right 119
5.8.9 Land and Utilities and Other Support Measures 119

5.9 Risk Management 120

5.9.1 Tariff Adjustment 120
5.9.2 Chinese Parties' Reliability & Creditworthiness 121
5.9.3 Dispatch Constraint 121
5.9.4 Change in Law 121
5.9.5 Exchange Rate & Convertibility 122
5.9.6 Force Majeure 122
5.9.7 Financial Closing 123
5.9.8 Delay in Approval 123
5.9.9 Expropriation 123
5.9.10 Corruption 124
5.9.11 Risk Allocation 124

5.10 Summary 126

6 CASE STUDY VI - THE NATIONAL STADIUM BOT PROJECT FOR BEIJING 2008 OLYMPIC GAMES 130

6.1 Introduction 130

6.2 Project Objectives 131

6.2.1 State Level 131
6.2.2 Project Level 132

6.3 Development Process 133

6.4 Project Partners 134

6.4.1 The Public Partner 134

6.4.2 The Private Partner 134
6.4.2.1 China International Trust and Investment Corporation135
6.4.2.2 Beijing Urban Construction Group Corporation..... 135
6.4.2.3 Golden State Holding Group Cooperation..... 135
6.4.3 Project Management Advisors 136
6.4.4 Project Structure 137
6.5 Project Scope and Location..... 138
6.5.1 Project Scope 138
6.5.2 Location 139
6.6 Government's Supports and Incentives..... 140
6.7 Basic Deal Structure 142
6.7.1 The BMG's Obligations 142
6.7.2 The Project Company's Obligations 143
6.7.3 The Project Company's Revenues 143
6.7.4 The Competitive Stadiums 144
6.8 Sources of Finance 144
6.8.1 The Shareholders of the Project 144
6.8.2 The Financial Arrangements of the Project 145
6.9 Insights into Major Issues 146
6.9.1 The Disputes in the Project..... 146
6.9.1.1 Disputes among the Project Company's Partners.... 146
6.9.1.2 Disputes between the Project Company and The BMG147
6.9.1.3 Dispute between the Project Company and the Design Consortium..... 147
6.9.2 The Impacts of Canceling the Retractable Roof..... 148
6.9.2.1 Pros of Canceling the Retractable Roof 148
6.9.2.2 Cons of Canceling the Retractable Roof 149
6.9.3 Risks in the Project 150
6.10 Summary..... 152

1 AN INTRODUCTION TO PPP CONCEPT

by Prof. Dr. Hans-Wilhelm Alfen and Yu-Chien Amber Jan,
Bauhaus-Universität Weimar
and Prof. Dr. Satyanarayana N. Kaladindi and L. Boeing Singh,
Indian Institute of Technology Madras

Development of infrastructure projects with private capital through Public Private Partnership (PPP) route has become one of the commonly adopted procurement strategies in developed and developing countries. All over the world where PPP procurement has been used in one form or another, the way in which it is carried out has become an important issue. This chapter covers the general issues of PPP implementation and presents an overview of the use of PPP in the delivery of public infrastructure and services across the world. There is no standard method of PPP implementation as each country adapts the process as appropriate for its own culture, economy, political climate and legal system. It is therefore essential that all parties likely to be involved have a common understanding of the principles underlying PPP structures and an appreciation of the key issues from the standpoints of the private as well as the public sectors.

The quantum of investment in the infrastructure projects by the private sector entities depends on the position of the project on the continuum between service contract and divestiture. PPP projects with substantial private investments such as Build Operate Transfer (BOT) and its variants involve participation of stakeholders with diverse perspectives. The diverse perspectives can lead to different perceptions on the viability of the project by the stakeholders. The first section of this chapter covers in brief the different stakeholders' perspectives and the parameters commonly used to measure the viability of the project from their perspectives. The second section discusses about the types of financial instruments used in financing PPP projects. The strategies employed in selecting financial instruments to fund the activities in the three broad phases of PPP project lifecycle are also discussed in this section. This section also covers the relationships between the financing strategy used for funding the activities involved in the phases of the project implementation cycle and the risk profile of the project over these phases. The chapter concludes with the section on the brief introduction to the risk management process employed in PPP projects.

1.1 What is PPP?

Public-private partnerships (PPP) in infrastructure development involve private sector participation in any or all of the design, construction, financing and operation phases of a public utility infrastructure, service or both. Examples of infrastructure developed through PPP models abound worldwide. It has been used in industrialised countries, such as the UK and Germany, and in newly industrialising countries with tremendous infrastructure demands, such as China and India, as well as in some developing countries in particular in Latin America. The capital-intensive nature of basic infrastructure and competition for limited government budgetary resources have prompted governments to invite private investors to fulfill the widening demand-supply gap for infrastructure while the governments are endeavoring to meet the social commitments within the fiscal constraints.

Attention has been drawn that the level of adoption of PPPs across the world differs widely. Typically, in industrialised countries, PPPs are used in areas of public service provision including education, health services, waster management and public buildings. While in industrialising countries with enormous needs for basic infrastructure, PPPs are often seen in the power, water or road sectors in order to sustain the countries' rapid economic growth.

1.2 Definition and Delimitation of PPP

There is a great variety of definitions for PPP available worldwide. The contents and objectives may vary according to the country specific background and the specific interests of the individual author. Some academic and industrial practitioners still regard the definition of PPP as being very ambiguous. In some cases, the term public-private partnership describes a wide range of arrangements whereby government responsibilities are outsourced to commercial partners, and risk is shared between the public and private sectors to bring about desired outcomes in areas associated with public policy.

As one example, the official definition of PPP by the "Federal Report on PPP in Public Real Estate, Part I: Guideline", commissioned by the German Federal Department of Transportation, Construction and Real Estate (BMVBW) in 2003, is as follows:

> *"The term PPP refers to a long-term, contractually regulated cooperation between the public and private sector for the efficient fulfil-*

ment of public tasks in combining the necessary resources (e.g. know-how, operational funds, capital, personnel) of the partners and distributing existing project risks appropriately according to the risk management competence of the project partners".

There is a long tradition of the involvement of the private sector in the development, maintenance and funding of public facilities and services. PPPs, however, go beyond traditional contracting of private sector organisations. EAP3N studies have concluded that, typically a PPP scheme allows the private sector to gain and retain control over a facility for a long, pre-specified period of time and is made responsible for its operation before it is handed over to the public sector at the expiry of the contracting period. And that period should be sufficient to enable the private sector to recover construction and maintenance costs and achieve the required rate of return on its investment, through either user fees like tolls, water tariffs, ticketing or down payments like availability payments made by the principal. The private sector assumes substantial risk that would otherwise be held by the public sector, in exchange for compensation and the public sector ceding substantial control over the delivery of infrastructure services.
In addition, there are four main characteristics of PPP:

- efficiency gains through appropriate sharing of risks and responsibilities; the public sector retains mainly sovereign tasks and the private bears those for implementation;
- lifecycle and private investment as crucial elements of PPP's incentive structures;
- long term contractual relationship; and
- innovation, in particular through output specification, service levels and payment mechanisms, as a new way of describing the services to be supplied.

One of the major objectives of PPP is to transfer tasks and responsibility for the provision of infrastructure to the private sector, in order to gain efficiency, cost reliability and financial security. The traditional procurement of public infrastructure and its related services has given way to the private sector assuming responsibility for design, construction, operation, management, maintenance and finance, with the public sector as the customer or, sometimes, as the direct user, paying for the provision of a service. The public sector, nevertheless, should not lose its sovereign task such as assessing and determining infrastructure needs, monitoring and supervising of an efficient and competitive pro-

curement system, and assuring all required environmental and safety standards in the service delivery.

The principal aim of PPP here is to involve the private sector in the provision of public services, shifting the role of the public sector from the owner and provider to purchaser and guardian of the interests of the public. It is driven by the belief that the public sector should focus on its core functions, leaving the private sector to perform those functions which it can often do more cost-effectively and efficiently. One of the key political drivers behind the PPP is the desire to improve the nation's infrastructure and supporting public services without placing undue strain on scarce public funds and without having to increase taxation.

1.3 Advantages of PPP: Efficiency Gains

Generally, the advantages of PPP are considered as follows:

- to remove the responsibility of funding the investment from the government's balance sheet;
- to introduce competition;
- to adopt managerial practices and experience of the private sector;
- to restructure public sector service by embracing private sector capital and practices; and
- to achieve greater efficiency than traditional methods of providing public services.

The last one, efficiency gain, is the main source of sustainable public savings and, therefore the main objective of and justification for PPP. In the UK, the Treasury estimates that the use of PPPs has produced average savings of 17% to 25% over all sectors during the past 10 years.

Most governments are drawing their decisions for PPP based on greater efficiency the private promoter delivers in comparison to the traditional public procurement. Major drivers for efficiency gains are transfer of risk to the private sector, long-term nature of contracts, incentive structures and payment upon performance, output-oriented service specification, competition between bidders, incorporate feedback and negotiation in the procurement process, innovation and management skills by the private sector, and administrative cost reduction.

For example, in Germany, the basis for the decision whether to adopt a PPP approach or to procure the project conventionally through government resources lies in the evaluation of the Public Sector Comparator (PSC). Each PPP project is, before being tendered, compared to traditional public sector procurement by a so called "value for money test" (or efficiency comparison test), which comprises quantitatively a comparison of the net present value of all cost occurred during the intended contract period, i.e. for design, construction, finance, maintenance, operation etc. for the traditional (PSC) and the PPP option. A simplified structure of such a calculation is demonstrated in Figure 1.

Also in many other industrialised countries, efficiency gains have to be proven before the contract award and the governmental agency estimates the cost of traditional public procurement by setting up a PSC. Structuring a PSC, however, bears numerous sources for false estimations. Common critics are the lack of reliable historic data for lifecycle cost estimation, over-optimistic assumptions for public delivery in time and on budget, selection of appropriate discount rates and mechanism applied for risk stress testing.

PSC therefore may not be the only approach in assessing efficiency gains. The key decision criterion for PPP should be determined by a suitable framework to assess and control efficiency gain with respect to a country's economic and legal conditions. In many Asian countries, no PSC is being set up for determining efficiency gains. Efficiency is achieved by assuming, politically, that the private sector is by nature more efficient than the public sector in delivery services. PPP tendering is done without any PSC test and past experiences have shown that greater efficiency has been achieved through competition among bidders and introduction of the market feedback period.

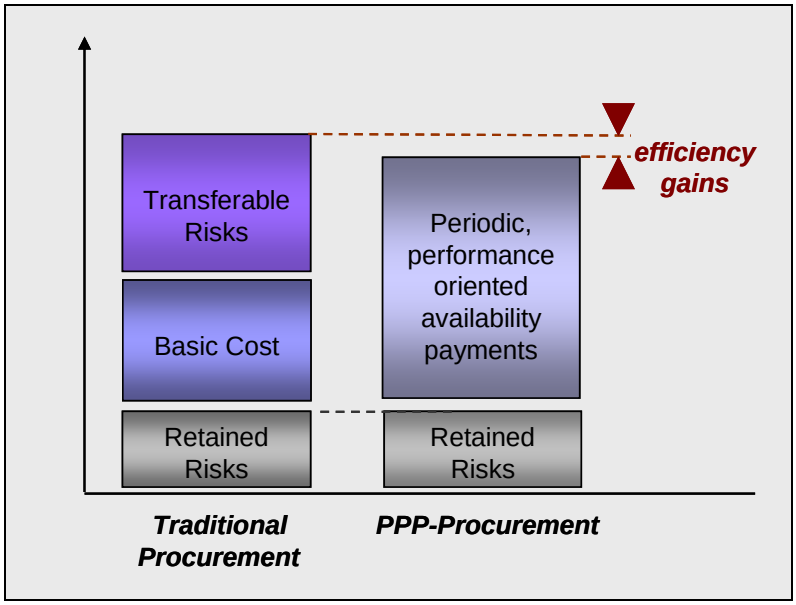

Figure 1 – Structure of an Efficiency Comparison or Value for Money Test

1.4 Elements Determining the "PPP Business Model"

PPP schemes are often country specific and determined by the existing individual legal, institutional, political, administrative and economic framework as well as by sector and even project specific aspects. However, we can still find some "toolbox" of typical PPP procedures and instruments that is quite independent from any country, sector, and project specific framework and insofar more generally applicable and valid (see Figure 2).

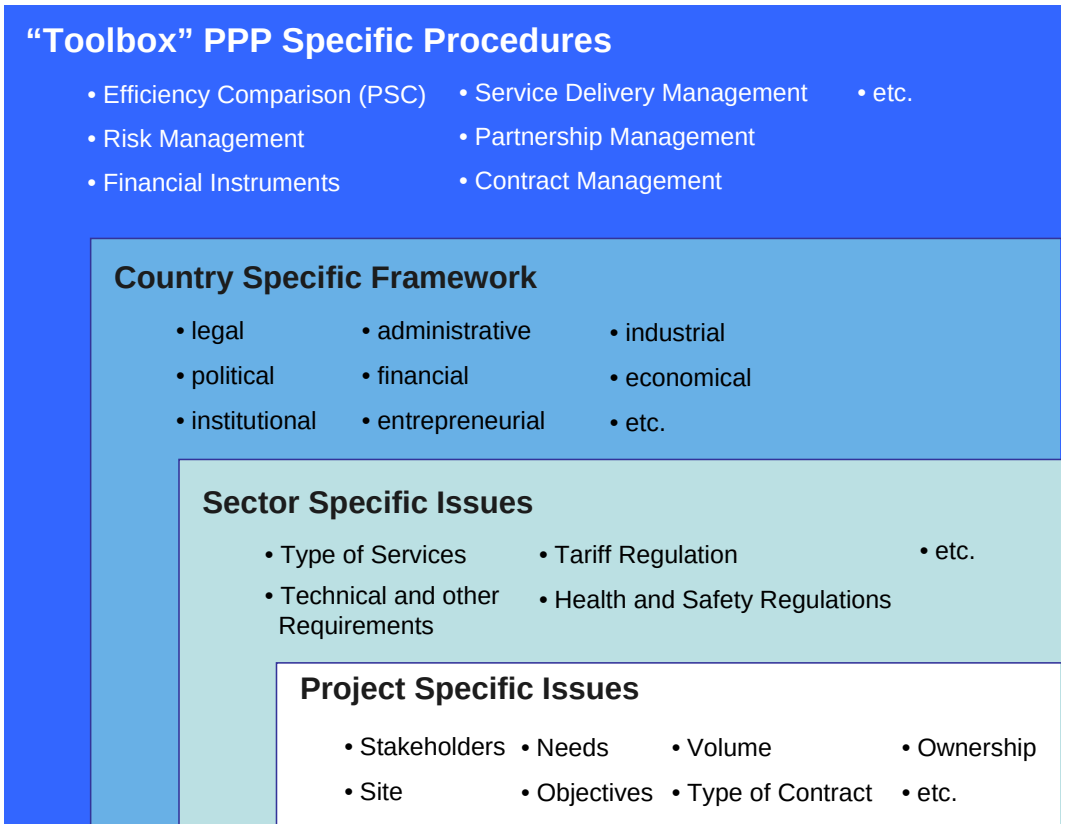

Figure 2 – PPP Specific Procedure Toolbox

In order to give an overview of PPP from an international perspective and to take into account its variety and complexity, the most appropriate way seems to be to first define categories of PPP and their classifying criteria. Such categories are shown in Figure 3 and basic distinction between different categories will be explained in the following sub-sectors.

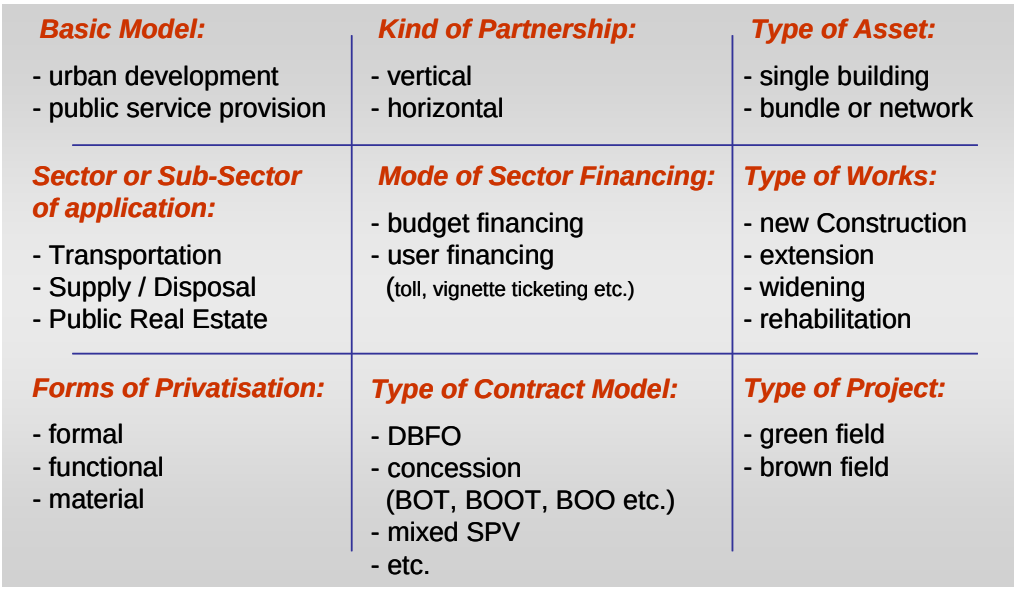

Figure 3 – Elements determining the PPP-Business Model

1.4.1 Basic Model: Urban Development versus Public Service Provision

Generally, there are two fields where PPP can be applied: (1) in urban development and (2) in public real estate/ infrastructure management. PPP is one option available for governments to tap private capital and competence into developing urban areas and revitalising deteriorated urban neighborhoods. However, such PPP may not address the long-term problems in all public properties due to inevitable profit oriented approach by private developers. In this book, our focus is therefore on studying PPP as a management tool in public real estate and infrastructure.

The provision of infrastructure and public services involves various tasks, and it is assumed that there are efficiency gains to be achieved by appropriate delegation of tasks and responsibilities. In this light, PPP is a tool at government disposal in the pursuit of efficiency because it is, in particular, predicated on the assumption of the proper sharing of risks, with each risk born by the partner best able to manage it. Under such circumstances, the application of PPP ultimately secures value for money.

1.4.2 Forms of Privatisation and Privatisation Development Path

PPPs derived from the evolution of infrastructure privatisation and the origin of privatisation can be traced back to the concept of optimising public administration, which is now usually referred to as the *'new public management'*

and means that the government adopts proven management techniques like reorganisation, restructuring and improved monitoring and controlling systems into its administration.

In order to provide a clear understanding for the different PPP models, we should first describe the privatisation development path, along which three principle forms of privatisation emerge, namely formal, functional and material privatisation (see Figure 4).

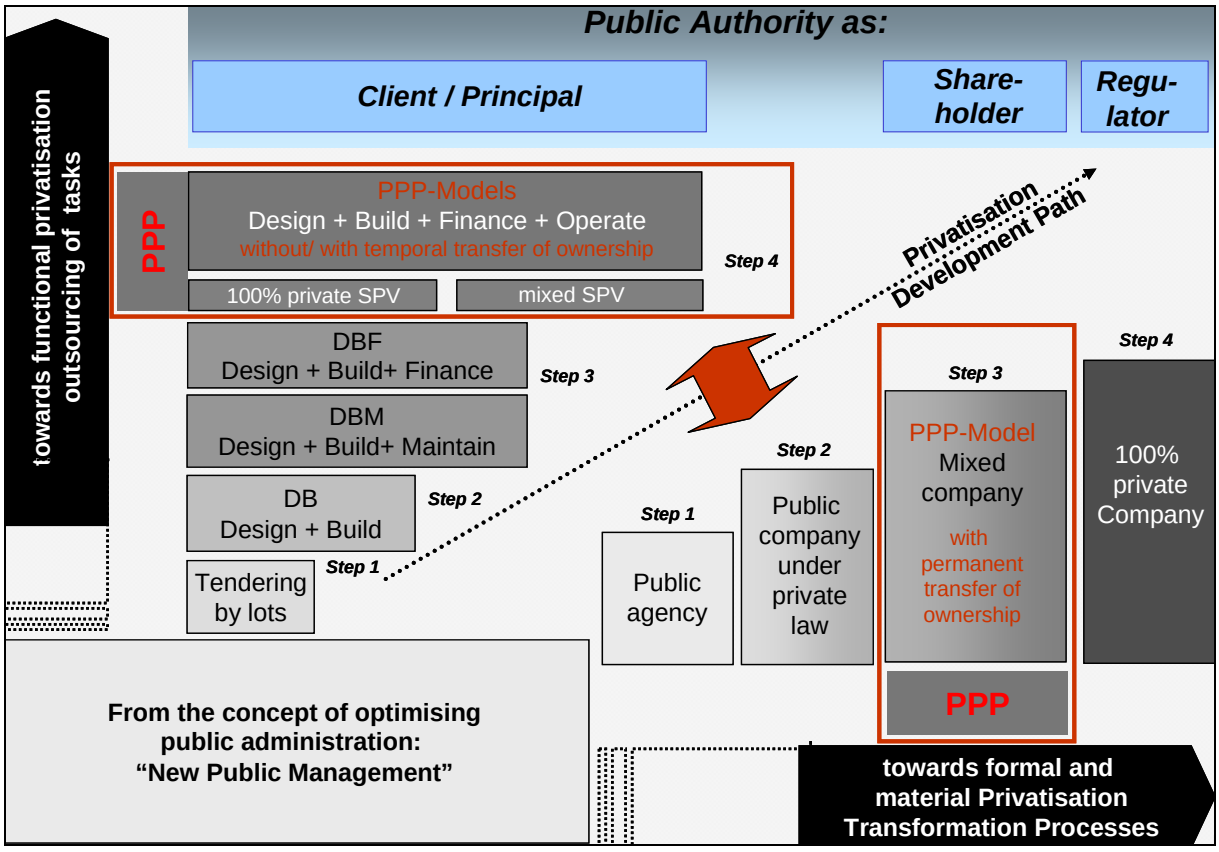

Figure 4 – PPP and Privatisation

1. Formal Privatisation

It means that public tasks are bundled and outsourced to a legally privatised enterprise which remains nevertheless 100% state-owned. Since there is no real private partner, it is considered only as a form of privatisation but not as a PPP.

2. Material Privatisation

It refers to the permanent transfer of former public tasks, including property rights of the infrastructure asset, through sale or stock-market flotation (IPO) to

either a complete private entity or a mixed entity with both private and public shareholders. The former is termed as full material privatisation and the latter as partial material privatisation or *'horizontal PPP'*.

3. Functional Privatisation

It refers to the transfer of former public tasks to a private partner for a certain period of time. It may concern, firstly, the conventional outsourcing of partially dividable services lot-wise, e.g. "design and build", "build and maintain", and "build and finance", etc. And secondly, when the tasks are regarded as a fully integrated value chain and delegated to a private partner. *'Vertical PPP'* is subordinate to this form of functional privatisation. It is based on a so-called lifecycle approach and has one common characteristic - the transfer of responsibility for design, construction, finance, operation and maintenance to the private sector for a longer period, usually 25 to 30 years, without transferring property right.

Sometimes a specific kind of horizontal PPP may also exist under a functional privatisation, namely under the form of a "mixed" Special Purpose Vehicle (SPV) or Project Company, which is, nevertheless, established for a limited period of time defined in the PPP contract and does not involve transferring of property rights.

1.4.3 Kind of Partnership

By far we distinguish PPPs with regards to kinds of partnerships. The public-private relationship in PPPs can either be "horizontal" or "vertical" in nature. In a *horizontal partnership* both partners are directly engaged as shareholders in a special purpose vehicle (SPV), which is to providing required infrastructure services. In a *vertical partnership* the public sector contracts with the private partner through a concession agreement or a PPP-contract, and the latter is responsible for providing required services. Figure 5 illustrates again the structures of these two partnerships. Some existing literature classifies PPPs according to the corporation organisation which undertakes the public services.

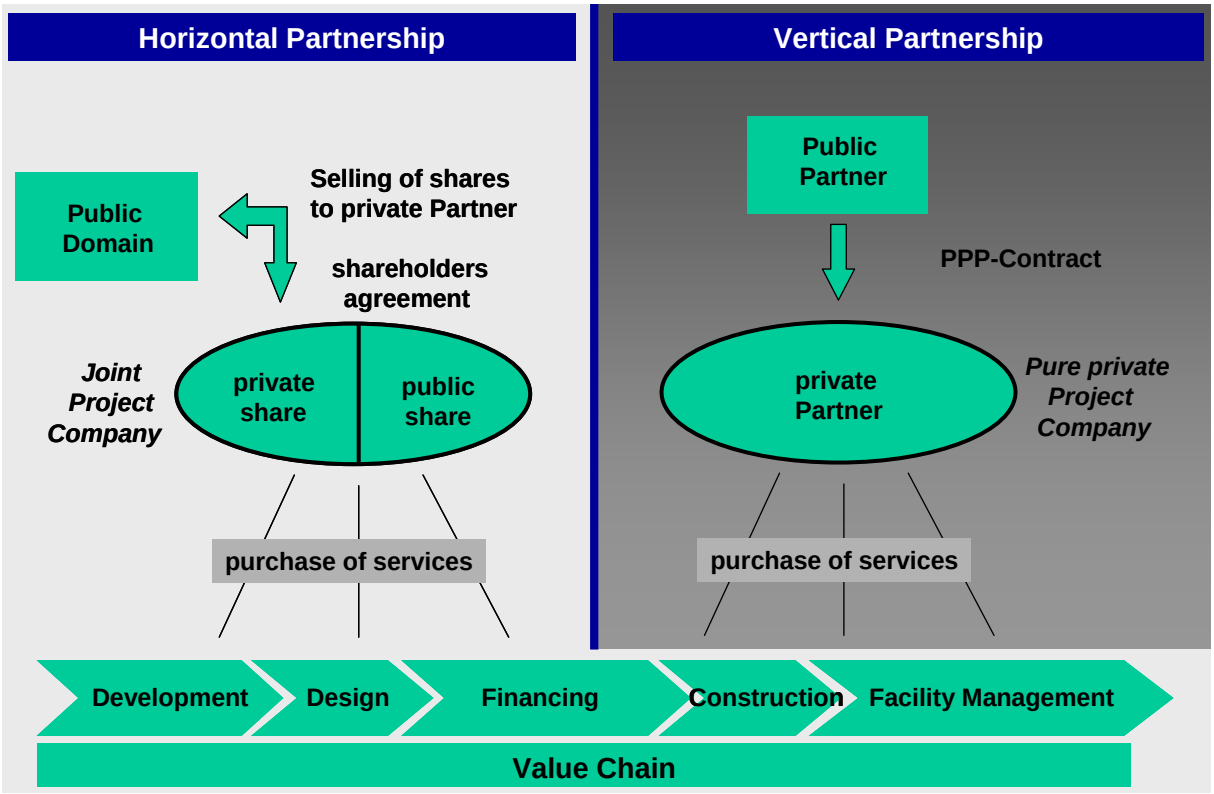

Figure 5 – Horizontal and vertical Partnerships

1.4.4 Mode of Sector Financing

PPPs can further be divided according to the existing mode of sector financing into user-financed and budget-financed models. Under the former model, the private partner has its investment recovered through user charges that are directly linked to the infrastructure or services, such as tolls, vignette, licensing fee, water tariffs and ticketing. While under the latter model the private partner delivers service in return of down payments made by the public partner that are commensurate with the service level provided or upon availability of the facility. A key government responsibility here is to decide which mode of financing to apply and the choice is subject to the nature of infrastructure service as well as political and economic circumstances of that country. The structure of financing will also affect the level of efficiency gains achieved. More details will be given in Chapter Two.

1.4.5 PPP Contract Models in International Practice

Under functional and material privatisations, there are various PPP contract models employed in the international practice for different sectors, as shown in Table 1 below:

Table 1 - Different PPP Contract Models

PPP [functional]		PPP [material]	
(D)BOT	(Design) Build (Finance) Operate Transfer	**(D)BOO**	(Design) Build (Finance) Operate Own
	Concession Model	**BDBOO**	Buy Design Build Operate Own
(D)BOOT	(Design) Build Operate Own Transfer		
DBFO(T)	Design Build Finance Operate (Transfer)	**DBROO**	Design Build Rent Operate Own
	Availability Payments Model		
(D)BOOT	(Design) Build Operate Own Transfer		
DBLOT	Design Build Lease Operate Transfer		
DBROT	Design Build Rent Operate Transfer		
	Contracting Model		

These varying models of PPPs have become commonly known by the acronyms of the tasks delegated. The following gives more details regarding what these models might entail:

1. *Build-Operate-Transfer (BOT)* arrangement involves the transfer of responsibility for constructing, financing and operating a single facility to a private sector partner for a fixed period of time. At the end of that period, the responsibility reverts to the public party. The bundling of building and operations allows for "lifecycle efficiency". The additional financing cost incurred by using the private sector can be offset by a reduction in operating costs resulting from the lifecycle approach in design, construction and operation. BOT is perhaps the most familiar models of PPP and the basic concept has been employed with some variations in many different ways, including *BOOT*, *DBLOT* and *DBROT*. Some models are more prevalent in some nations than others.
2. *Design-Build-Finance-Operate (DBFO)* means that the private sector partner is also asked to supply resources for having the project built. His future revenue streams are usually based on availability payments made by the public sector or shadow tolls. Hence this contract model belongs to typical budget-financed PPPs.

3. *Build-Operate-Own (BOO)* involves the granting of ownership rights in perpetuity to develop, finance, design, build, own, operate, and maintain an asset. The private sector owns the asset outright and retains the ownership and operating revenue risk, with no transfer to the public sector. It is hence categorised as material PPP.

1.5 Phases of a PPP Project

The phases of PPP projects may vary with the different categories of PPP described so far, but PPP generally evolves through a series of the following phases and the Figure 6 depicts its outline. The following description of the procurement process refers to a vertical rather than to a horizontal partnership.

Phase I: Needs assessment & option appraisal
At this initial stage of project formation, the need for a particular infrastructure facility is identified, normally by the government or more often by the project executing organisation. The needs assessment is usually done in form of a cost-benefit analysis. It will then consider what means it has for financing that facility and whether it is affordable. Also part of that Phase 1 are first considerations concerning the procurement method to be applied by undertaking a preliminary qualitative PPP Test. It analyses, whether the project might at all be suitable for being carried out on a PPP basis by investigating qualitative "no-go criteria" of legal, political, organisational or technical character.

Phase II: Preparation & conception
Once the project proves the primary feasibility to a PPP solution, the preparation works proceed by a detailed development of the PPP option in order to enable a comparison with the traditional one. At this stage, governments are drawing their decisions for PPP based on greater efficiency the private sector will deliver in comparison to the traditional public procurement. In some countries, PPP projects are compared to traditional public sector finance by a quantitative public sector comparator (PSC) calculation.

Phase III: Tendering process & contract award
Once the government has determined to proceed with PPP, it will decide what procurement procedure to follow, given the applicable laws. Commonly the government will employ competitive tendering. It will include detailed

output specifications as to the infrastructure facility and the length and terms of the PPP contract in the invitation to tender. Accordingly, prospective sponsors, usually acting as consortia, will carry out their own feasibility studies and prepare to submit bids. The government will evaluate these bids and select a number of preferred bidders for negotiation, during which the terms of the project will be discussed and redrawn. At the end the contract is awarded to the bidder that best conforms with the defined awarding criteria.

Phase IV: Implementation & contract management

The implementation starts with the construction of project facilities. After passing agreed completion tests, the facilities will be accepted by the government and can commence operation. In the case of user financed schemes, the SPV will use the revenues generated by the project to operate and maintain the facilities, to repay the finance and to pay a reasonable rate of return to its investors. Otherwise, in budget financed schemes, the SPV will receive periodical down payments e.g. based on availability of the asset.

Phase V: Contract termination

Upon the termination of the contract, the project facilities under those functional PPP models will be transferred to the government, usually for nil or nominal consideration and up to standard and conditions predefined in the PPP contract.

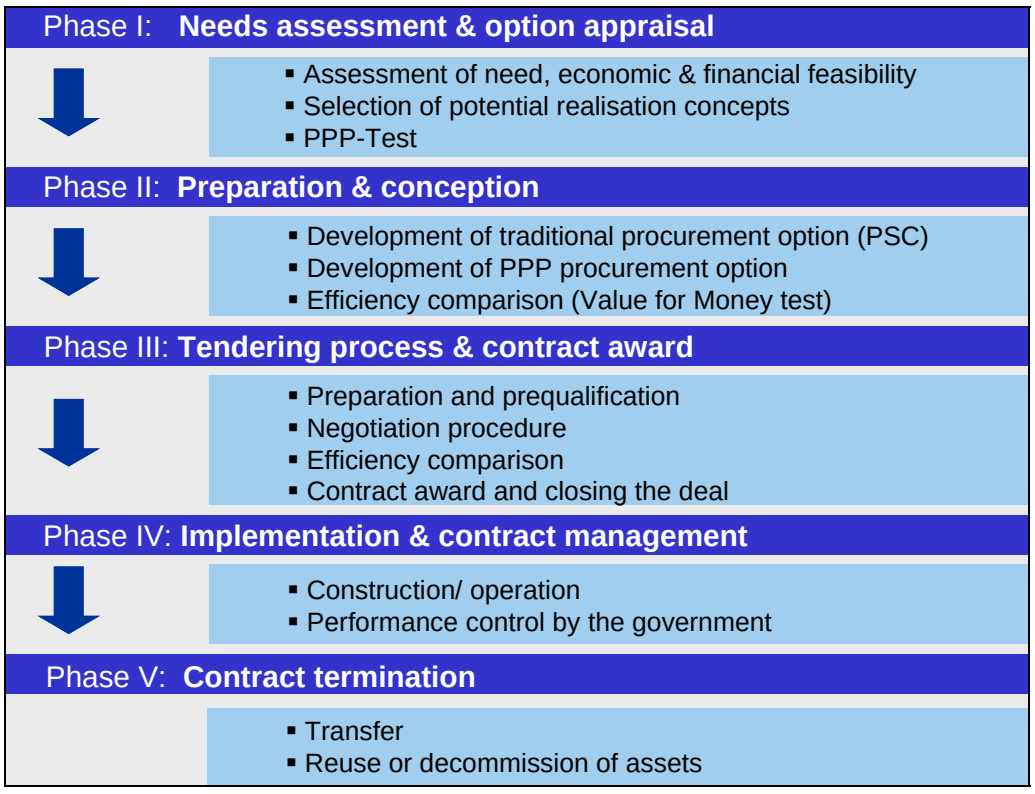

Figure 6 – Typical Procurement Process for functional/vertical PPPs

1.6 Enabling Framework

1.6.1 Legal Framework

Enabling legislation must be in place before PPP programmes can be embarked on in a country. The government has to demonstrate a clear, long-term political commitment to the use of PPP. Such commitment may manifest itself in a variety of practical ways. PPP inevitably involve highly complex commercial and financial structures. This is attributable to, firstly, the many stakeholders involved and, secondly, the wide range of risks associated with the project which has to be allocated properly. A third factor is the long-term nature of PPP schemes, which means the arrangements must be flexible and responsive to circumstances changing over time. To meet these requirements will necessitate the existence of a reliable and well-developed legal framework. Such issues can be addressed by introducing some specific 'PPP laws', as we have seen in many Asian countries. However, in spite of whether such specific legislation is in place, certain legislative changes are necessary to assure that PPP concept is consistent with the country's constitution. It sometimes takes years for the national or state parliament to enact the appropriate legislation.

1.6.2 Regulatory Framework

Usually sectors in infrastructure services, such as power, gas, water or transport, are among the most heavily regulated areas of economic activity. Hence the investors will require an optimum balance between the regulators objectives that are capable of impacting on project cash flows, such as pricing or service levels. In addition, governments will wish to ensure that there is an effective regulatory system to protect, on the one hand, the investor from direct political interference and, on the other, the user from negative impacts of monopolies.

1.6.3 Administrative framework

A legal framework that is favourable to the private sector in the rights it confers or protects is worthless if it is not underpinned by an effective system of public administration. PPP involves a redefinition of the role of government. With PPP projects, government's role becomes that of exercising general supervision throughout the project lifespan, including inspecting, monitoring and

regulating. One of the most important functions of government here is to manage an appropriate procurement process, so that the project will meet the objectives set.

1.7 Contractual Framework

A PPP project involves a number of important contractual arrangements among the participants. It is a complex network of relationships involving multiple parties and their formal relationships are defined by contracts. Figure 7 illustrates the principle parties and contracts in a typical PPP project structure.

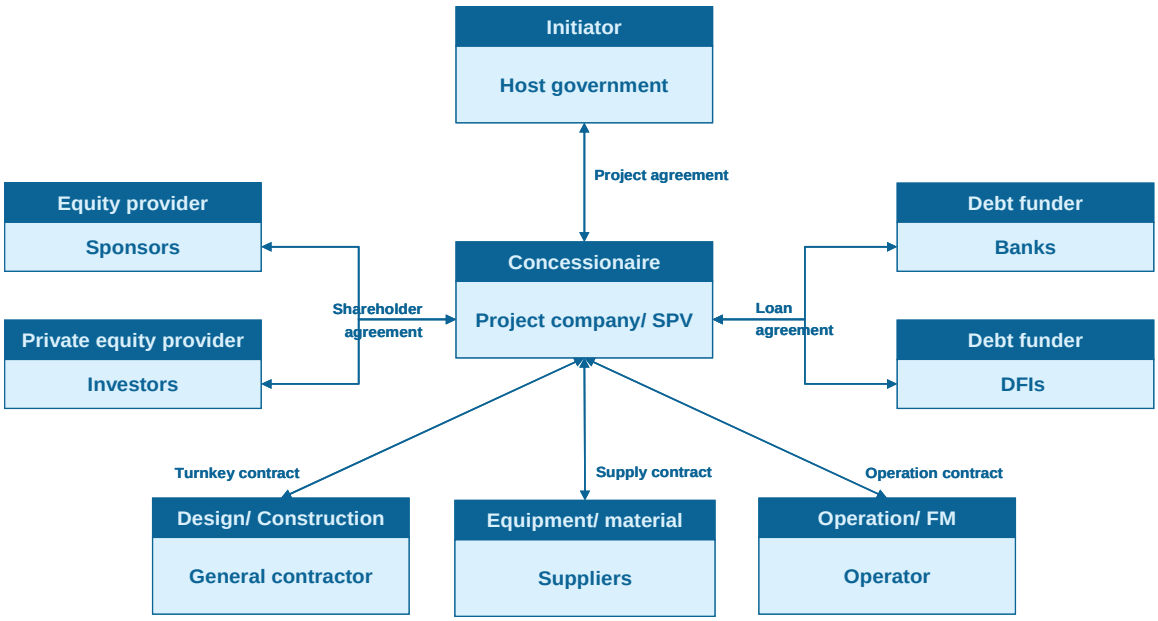

Figure 7 – Principal parties and different kind of contracts in a typical PPP structure

Instead of the public sector procuring a capital asset by paying it up-front and in full out of the state budget, in a typical PPP project a single, stand-alone, special purpose business, the Project Company (or SPV), is created. This company is operated and financed by the private sector alone or with public shares, and delivers the necessary service to the public sector under the framework of a long-term concession in return of payment commensurate with the service levels provided. The Project Company raises the required finance, both debt and equity, secured against the performance of the contracts for the underlying service. The funds are raised against the expectation of the projected cash-flows generated by the project.

1.8 Project Agreement

The project agreement is the foundation upon which the project is developed. This is the principle agreement in any PPP transaction and it sets out the relationship between and the rights and obligations of the public and private sectors. It is the centre of the complex web of various financial, constructions and consultant contracts constituting the whole project contract package, i.e. it underpins the entire matrix of contracts needed to implement the project. Many of the key provisions of other contracts will be driven by its terms. At the very least, all the contracts must fit together into an integrated whole and be compatible with the project agreement.

The project agreement is the core contractual document in any PPP project. Lying at the heart of the contractual framework, it governs the relationship between the awarding authority and the project company. It is also the main legal instrument for the government to regulate private sector's activities and decisions. The role of the project agreement is to set out the core obligations of each of the public and private parties and to establish the allocation of risks between them. Whilst project agreements vary depending on the particular category of PPP project and between sectors, there are recurring issues and themes. A number of these are contractual contents with regards to financing, design and construction, operation and maintenance, land issues, termination, guarantee agreements, monitoring and variation procedure, and dispute resolution.

1.9 Project Shareholders and their Perspectives

Every PPP project will involve the following main shareholders. It is difficult to generalise each of their objectives because of the diversity of subject-matter of PPP projects. However, those objectives at the highest level remain the same from one project to another. The principal project stakeholders and their contributions to the project are summarised in Table 2.

1. The project executing organisation

The project executing organisation or agency perceives the need for an infrastructure project and determines whether the project is suitable for financing on a PPP basis. In addition, the government has to enact legislation specific for the implementation of PPP and provide for the regulatory regime within which the project is to function, depending on the political and economic

circumstances of the country. In some cases, the government will provide support for the project in some form. This might include the provision of land, incentives for investment, and the granting of licenses and consents required.
The objectives of the project executing organisation will always be to transfer risks to the private sector and to achieve greater efficiency. Risk transfer is at the heart of the PPP and if risks are transferred to the private sector correctly, the efficient management of those risks by the private sector can often offset the private sector's higher cost of borrowing. The elements of risk transfer are considered in further detail in Chapter Two.

2. The project company

The project sponsors will normally form a Special Purpose Vehicle to act as the concessionaire. The SPV is capitalised by the sponsors through equity funding and the relationship between the sponsors themselves is set out in a shareholders' agreement. This agreement addresses issues such as the capital investment proportions and each one's obligation, partly supported by parent or affiliated companies, throughout the concession period.
The sponsors are mainly looking for a proper return on their equity. Inevitably, in many respects their objectives will be the converse of the government's objectives, particularly in relation to the area of risk transfer.
The SPV may have other private equity investors, either initially or as the project progresses. These private investors also have the primary goal as to maximise the return on the investment.

3. Lending banks

Many PPP projects are funded to a great extent by commercial debt. The banks usually finance the project on a 'non-recourse' or 'limited recourse' basis. This means they look only to the project's assets and revenue stream for repayment set forth in the project agreement, but not to additional sources of security, such as the total assets or balance sheet of the sponsors.
The banks will therefore conduct evaluations to identify and test sensitivities to ascertain whether the project financials are sufficiently robust to attract non-recourse finance. The fact that the commercial lenders will be committing substantial sums on a limited or non-recourse basis provides additional assurance that the financial viability of the project will have been thoroughly analysed at the outset by knowledgeable financial experts. The banks will also exercise certain degree of control over the progress of the works and contract administration to ensure cost, schedule and completion guarantees.

4. Development finance institutions (DFIs)

Development finance institutions have similar objectives as lending banks in terms of their position in PPP projects. Difference is made in their mandate to promote economic and social progress of the countries or regions where they operate.

5. Contractor, operator and other supplier

The construction contractor and the operator of the project facilities are typically also project sponsors, or affiliates of the sponsors. They are employed by the SPV in accordance with fixed price turnkey contracts. Under such contracts, the contractor and operator took over principal risks inherent in construction, operation and maintenance from the SPV.

Table 2 – Principle project stakeholders and their contributions

Objectives	Contributions
Project executing organisation	
Efficiency gain	Concession/ licenses
Leveraging of government budget	Service fee
Acceleration of the project	
Better service quality	
Compliance with requirement and regulations	
Sponsors	
Adequate rate of return	Equity
Strategic capability	Competence and experience
Investors	
Maximising of return	Private equity
	Monitoring of quality
	Financial competence
Lending banks	
Loan repayment	Debt
Careful financial evaluation	Monitoring of quality
	Financial competence
Development finance institutions (DFIs)	
Loan repayment	Debt
Support of development goals	Monitoring of quality
	Financial competence
Construction contractor	
Sufficient margin	Required construction work
	Turnkey fixed-price contract
Facility manager and operators	
Sufficient margin	Required service
	Fixed-price contract

Recommendation for Further Reading

1. Weber, Barbara, Alfen, Wilhelm and Maser, Stefan. Projektfinanzierung und PPP: Praktische Anleitung für PPP und andere Projektfinanzierungen. Bank-Verlag, Köln, 2006.
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3. Verlag C. H. Beck, München, 2006.
4. Sapte, Wilde. The Guide to Financing Build-Operate-Transfer Projects: Uses in PPP. Euromoney Publications, London, 1997.
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1.10 PPP Project Stakeholders' Perspective

The stakeholders to PPP projects have different perspectives for participating in the projects. Public entities are more conscious of the need for investment in infrastructure as it has spillover effects with widespread social and economic costs and benefits. However, allocation of budgetary resources in building the infrastructure is constrained by the need for huge investments in social and economic development projects. Governments are motivated to procure infrastructure projects through PPP route in view of theirs desire to reduce sovereign borrowings, leverage the scare budgetary resources, bring in efficiency in the erstwhile inefficient public procurement system, and the consideration of benefits due to sharing of the financial risks and rewards between public and private sectors (Grimsey and Lewis 2002). These have inspired the public entities to shift their role from being creator of the infrastructure with regard to the traditional public procurement system to facilitator in PPP mode of procurement. They are more concerned in creating an enabling environment to attract private investment and introduce reforms in the public procurement process in order to facilitate participation of the private sector bodies.

The private partners in the public private partnership have a different perspective from those of the public partners. The private sector bodies that form the other partner of the partnership come from different industries with diverse core competencies. From the financing perspective, the two key players constituting the private sector can be broadly classified as investors and lending agencies. The major private entrepreneurs providing equity to PPP projects are the EPC contractors, O&M contractors, governments (providing equity in the form of subsidies and grants), and capital markets. Whereas, the organisations providing debt financing are, but not limited to, commercial banks, national and regional development banks, and multilateral and bilateral organisations. The active investors like EPC and O&M contractors are the strategic partners. They are more focused on gains that can be expected from the construction and operation of the projects. The lenders look at the higher returns that can be achieved by investing in infrastructure projects in comparison with other investment avenues. There is also a difference in perspectives of the investors and lenders. Investors are more focussed on the opportunities associated with the project while lenders are more concerned with the downside risks of the project.

Public entities and private sector bodies analyzed the viability of the project from their perspectives to examine the fulfillment of theirs objectives. Governments give more focus on the economic appraisal while the private parties do concentrate more on the financial appraisal of the project.
The financial appraisal of PPP project systematically evaluates the monetary costs involved in the development, construction, and operation of the project and the projected monetary revenues from the operation of the project over the concession period. The financial appraisal besides giving an idea on the return that could be expected from the project also gives an estimate of the size of the funding gap that have to be met by the public sector contribution, influence of the relative proportion of the equity and debt components of the capital structure, and relationships between the cost of the capital and the risk/reward appetite of the funding agencies. Some of the measures commonly used to assess the financial viability of the project by the investors and lenders based on the project's financial characteristics are (Walker and Smith 1995):

- Return on investment
- Return on equity
- Net present value
- Payback period
- Debt service coverage ratio

Economic appraisal is the systematic way of analyzing all the costs and benefits of all the ways in which the project objective can be met (New South Wales Policy Guidelines 1999). Economic appraisal is concerned with the wider economic costs and benefits associated with the project, beyond the monetary return to the project company. Economic viability is more or less computed in the similar manner as financial viability as far the method of computation is concerned. In order to assess the economic viability of the project, the monetary costs and revenues associated with the project excluding the financing-related cash flows are converted into direct economic costs and benefits. The implications of the project on the host country economic environment in the form of, viz: the growth and employment generation in other industries, technology transfer, and labour force skills give an estimate of the indirect economic costs and benefits of the project. The net benefits of the project derived from the direct and indirect economic costs and benefits are discounted to get an idea on the economic viability of the project.

1.11 PPP Project Financing

The success of PPP projects greatly depends on the financial structuring of the project. The projects have to make judicious selection of financial instruments to bring the financial cost of the project to an optimal level with enough incentives for all the parties to the projects to perform at their best. The following sections will briefly describe the typical funding agencies, kinds of financial instruments used for funding PPP projects, issues considered during the formulation of financing strategy, and the relationship between the structure of the financial package and risk profile of the project.

1.11.1 Funding Sources and Financial Instruments

PPP projects are characterized with high debt component in their capital structure. The equity component of the capital structure is normally provided by the project promoter, government promoting the project through PPP route, or infrastructure investment fund. The debt financings are normally provided by the commercial banks, capital markets, and national and regional development banks. In addition to these, the other agencies providing funding to PPP projects are:

1. EPC contractors
2. Equipment suppliers
3. Entrepreneurs
4. Export Credit Agencies
5. Bilateral and Multilaterals organizations
6. Institutional Investors
7. National and Development Banks

These funding agencies provide different categories of financial instruments in financing the PPP projects. Table 3 shows the wide range of financial instruments used in financing PPP road projects.

Table 3 – Financial Instruments used in PPP Road Projects, Source: World Bank 1999

Financing Means			Private Funding	Public Funding
General funding			None	Common tax
Specific funding			None	Earmarked tax
Equity			Common stock	
Mezzanine finance	**Equity type**		Preferred stock, stock with selling option, etc.	
	Debt type		Subordinated loan, subordinated bonds, convertible bonds	
Debt	**Loans**		Commercial loans (syndicated loans)	Loans from government or international financing agencies, regional development banks
	Bonds	**Private placement**	Project Bonds	Government guaranteed bonds, municipal bonds, public corporation bonds, bonds guaranteed by international financing agencies
		Public Offering		
Guarantees			Guarantee by commercial bank, credit line, standby facility, monocline insurance	Guarantee by government, govt. financing agencies, international agencies, regional agencies
Project Income			Toll revenue, income from supplemental projects	
Retained earnings			Retained surplus, retention fund	
Asset securitization			Bond	None
Stock increase of capital			Stock market flotation	None
Value Capture; partial use of profit from development due to the project			None	Increased tax on real estate, benefit assessment, special impact fee, dedication, assessment district, space lease, tax increment financing

1.11.2 Financing Strategy – Major Issues

The project sponsor as part of the consortium formed to prepare and submit the financial and technical bids appoints partners and experts from various disciples, including engineering, legal, and finance. Financial adviser is appointed to assist the project sponsor in the financial structuring of the project. Financial adviser focus on developing a financing strategy that aims at diverting the risks associated with the project from the sponsors while maximizing the

project leverage through a judicious mix of the various sources of funds available in the market. Besides this objective, the financing strategies adopted for the project should result in a financial package with low capital cost; high credibility; minimal financing risk to sponsors; and minimum burden of debt servicing capacity on revenue (Tiong and Alum 1997).

The critical issues which need to be considered while developing the financial strategy for the project by the financial adviser are: (1) what does the market wants; (2) what should be the average maturity of the securities; and (3) what should be gearing ratio of the project capital structure (National Treasury 2001).

Market Requirements: The needs of the investment market can be appreciated via the risk/reward appetite of the investors and the considerations which are used to assess the risk/reward appetite of the investors are:

1. Fixed or variable interest rate: Investors whose liabilities are fixed will prefer a fixed-rate investment
2. Short-term or long-term investment: Investors with long-term liabilities prefer a long-term investment
3. Industry type: Investment in a particular industry for increasing its holding in the concerned industry
4. Location: Certain locations may be more attractive to investors
5. Economic expectations: Expectations about the growth of specific industry and/or sector and the economic gain expected with this growth
6. Demographic expectations: Investors expect the middle class to grow and investors may be interested to invest in market targeting the middle class
7. Development of partnerships: Investors in anticipation of the partnerships in the near future invest in the current project
8. Debt vs equity: Investors heavily exposed to debt would like to invest in equity or pseudo-equity.

Securities' Maturity: As a rule, the average life of the project's assets should determine the average maturity of the project capital structure because amortization of project debt should reflect the depreciation patterns of the assets and matching the project capital with the project assets will assist in reducing the cash flow implications of the repayment of the debt principal.

The financial adviser also needs to consider the average maturity of the financial sources for the investors. The financial sources for commercial banks are saving deposits which have a maturity of about 5 years while pension and insurance funds are contract saving and these expired at the end of around 25 – 30 years. Innovative financing mechanisms are employed in project financing

to overcome this asset-liability mismatch of the commercial banks and one of the mechanisms commonly employed in developing countries like India is take-out financing scheme (Murti 2005).

Gearing Ratio: The capital structure of the PPP project is determined by the gearing ratio designed for the project. Sponsors, normally, want to maximize the gearing ratio but doing this increase the financing cost as lender charge higher interest rate and increased the magnitude of interest payments. Even though, earnings decrease due to higher interest payments, but earning per share increases.

The gearing ratio of the project is influenced by a host of factors, including lender's cover requirements, lender's views on leverage in a specific sector and industry, degree of certainty in future cash flows of the project, restrictions imposed on the degree of leverage in specific sector and industry by regulating bodies, and level of bankruptcy risk associated with the project. Besides these factors, PPP projects in developing economies are exposed to numerous institutional and transactional hurdles such as: stability of the political environment; guarantees for the loan; stability and enforceability of institutions; Instability of local currency; credit support for the loan; availability of public information; availability of private information; and local financial market development (Devapriya and Alfen 2004).

1.11.3 Financial Package and Risk Profile

The procurement of projects through PPP route is a time consuming process. The process of development of project from identification to financial closure may take couple of years (Development Phase), followed by 2 to 3 years constructing the facilities (Construction Phase). Then, the project is put into operation during the concession period, which may span over 15 to 30 years (Operation Phase). These three phases of the project are exposed to different risks. During development phase, project is exposed to critical risks such as Land Acquisition Risk and Delay in Financial Closure Risk. The project is exposed to Completion Risk and Cost Overrun Risk during the construction phase. While, Demand Risk and Traffic Revenue Risk are some of the critical risks during the operation phase. The exposure of the project to the different risks, during the various phases of the project, dictates the risk profile of the project. Figure 8 highlights the change in the risk profile of the project over the three phases of the project.

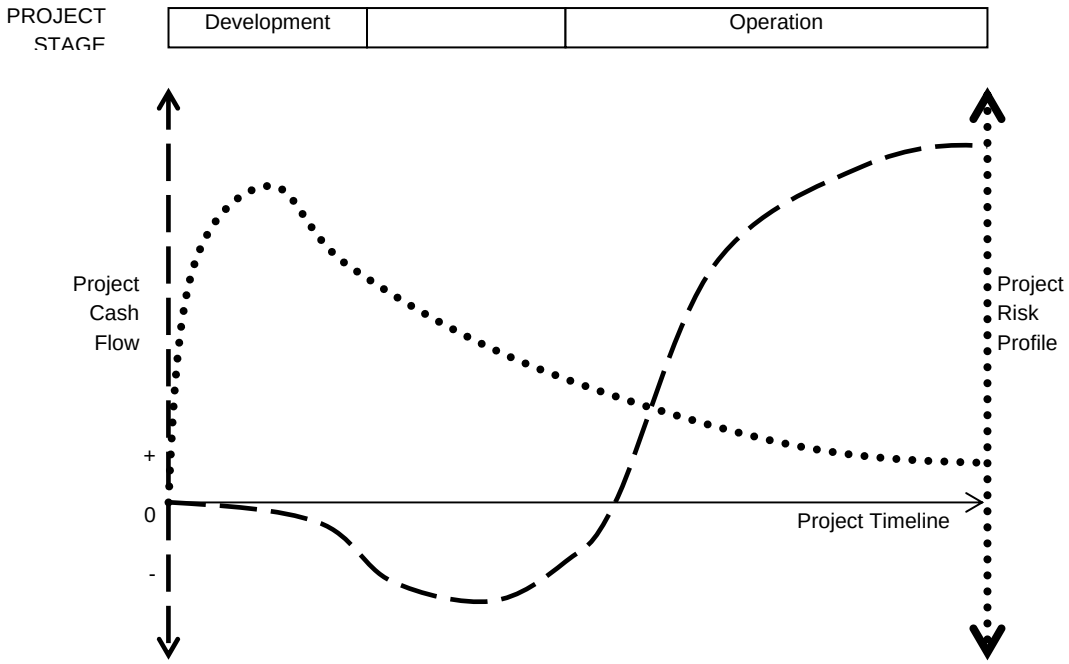

Figure 8 – Typical Risk and Cash Flow Profile of the PPP Road Project along with the various Funding Sources, Source: Industry Canada (2005)

PPP projects employ tailor-made financial package consisting of a spectrum of financial instruments to finance the constituting activities of the three broad phases of project. It is observed that the choice of the funding sources and hence the financial package is greatly influenced by the risk profile of the concerned phase of the project and risk/reward appetite of the funding agencies [Please refer Table 4]. The financial package used is said to be successful if different investors are provided with financial instruments that match their risk/reward profile with the implication that financial structuring is used as a medium for risk management.

Table 4 – Financing Sources and Project Phases/Activities

Industry Canada (2005)		**UNIDO (1996)**	
Project Phases	Financing source (s)	Project Phases / Activities	Financing Source (s)
Identification, Evaluation, and Development	Sponsors Sovereign Infrastructure Development Program Development Financial Institutions Export Credit Agencies International Financial Institutions Equity Funds	Pre-Investment Cost	Sponsors' Equity
		Bidding and Procurement Related Costs	Governments bear the collating information for bid documents and negotiations with bidders Bidders also bear this costs with risk capital
		Project Development Costs	Sponsors' Risk Capital
Construction and Commissioning	Investment Banks Non-banking Financial Institutions Commercial Banks	Construction Costs	Equity Commercial Bank Loans Bilateral/ Multilaterals/ ECAs funds Institutional Investors
Operations	Capital Markets Institutional Investors Internal Cash Flow	Operating Costs	Internal Revenue Short-term Commercial Bank Loans

1.12 Risk Management

Project finance has been the most prevalent mode of financing for infrastructure projects developed through PPP route such as BOT, BOO and BOOT. The term project finance refers to cases where the loan for the capital costs of the project is repaid through the cash flows generated with the operation of the project. The lenders advancing debt financing to the project on project finance basis have either no or limited recourse to the project sponsors' assets and/or cash flows. Lenders are more concerned with the project capacity to generate sufficient revenues to service the debt obligations. On the other

hand, investors focus on whether the project can provide an adequate return on their investments. Risk, as per Webster's dictionary, is defined as the possibility of loss, injury, disadvantage, or destruction. From a PPP project perspective, the realization of different risks over the lifecycle of the project can create different scenarios where project benefits and costs can differ greatly from the projected base conditions. Identification, assessment and management of the risks associated with the project that can threaten the project capability to provide sufficient revenues to service the debt obligations and earn return on equity investments have been of paramount importance in procuring infrastructure projects through PPP route.

Risk management is an ongoing process over the lifecycle of the project. The process of risk management can be broken down into the following activities (Department of Economic Affairs 2006):

1. Risk Identification: It is the process of identifying all the risks relevant to the project.
2. Risk Assessment: It refers to determination of the degree of likelihood of the risks and the possible consequence if the risk occurs.
3. Risk Allocation: Assigning the responsibility of the consequence of the risk to one or more of the parties to the contract.
4. Risk Mitigation: The process of controlling the likelihood of occurrence of risk and/or the extent of the consequence of the risk.

1.12.1 Risk Identification

It is difficult to generalize the risks inherent in PPP projects as the risk profile of a PPP project varies with a number of factors, including the country in which the project is situated, the type of infrastructure sector, and the unique socio-economic environment surrounding the project. The uniqueness in the risk profile of PPP projects has led to use of risk identification techniques that are based on the knowledge of the experts in the related fields and experience with similar projects. Some of the other risk identification techniques in addition to experience and experts are intuition, checklists, site visits, case studies, brainstorming sessions, allied organizations, databases, and workshops (Akintoye, Beck et al. 2001).

The type of risks to which the PPP projects are typically exposed to can be broadly classified into two broad categories (UNIDO 1996):

1. General or country specific risks: These are the risks normally associated with the political, social, and economic environment of the host country and over which the project promoter have no control.
2. Project specific risks: These are the risks to which the project sponsors have control to a certain extent.

The general or country specific risks comprise of factors that can influence the demand of the project outputs or services and the projects' ability to meet their contractual obligations. The general risks can be further divided into three major categories of political risks, country commercial risks, and country legal risks.

- Political risks: These risks are associated with the nature of the political support towards private sector involvement in infrastructure development, changes in the country's taxation regime, the likelihood of nationalization or expropriation of infrastructure by the host government, failure to honour the concession agreement, imposition of restrictions on import/export, and delay or failure in issuing the necessary permits and clearances for the implementation of the project.
- Country commercial risks: The country commercial risks are concerned with the restrictions imposed on convertibility of the revenue from the project into foreign currencies, foreign exchange, fluctuation in the interest rate and inflation.
- Country legal risks: Some of the factors which are related with the country legal risks are changes in laws and regulations, framework regarding the enforceability of the contracts, and the delays in calculating the compensation.

The lifecycle of PPP projects may be divided into three stages of development, construction, and operation and the project specific risks associated with these phases are:

- Development phase: The risks which are more prevalent during this phase are the bidding risk, delay in planning risk, and approval risk. Bidding risk refers to the likelihood of loss of tender to other competitor resulting in the loss of the expenditures associated with the bidding. These expenditures relating to preparation of detailed design, comprehensive planning, and preparation of extensive bid documents could be very large in case of large PPP projects.

- Construction phase: The major risks related with this phase are the risks that actual cost of construction is more than the budgeted cost of construction; time taken to complete the project is more than the projected time to completion; and failure to achieve completion.
- Operating phase: The projects start generating revenues during this phase of the project. There are certain risks that can have a bearing on the project capacity to earn its projected revenue and in meeting the budgeted operating and maintenance expenses. Some of the risks that are normally associated with the operation phase are (1) technical risk; (2) demand risk; (3) force majeure risk; and (4) revenue risk.

1.12.2 Risk Assessment

The techniques available for risk assessment can be classified into two broad categories: quantitative techniques and qualitative techniques (Tanaka, Ishida et al. 2005). Quantitative techniques are used to assess the risks and represent the likelihood and impact of the risks in terms of either time or money. Two of the commonly used quantitative techniques are deterministic and probabilistic analyses. Sensitivity analysis is the most representative approach amongst the deterministic analyses. Sensitivity analysis examines the variations in the values of the model's dependent variable by changing the values of one or more of the input variables to the model. Performing the sensitivity analysis by changing the value of just one variable at a time helps in analyzing the influence of the independent variable on the dependent variable. The other type of sensitivity analysis is scenario analysis, which allows interpretation of the influence on the model output due to combinations of simultaneous changes of the input variables, known as scenarios. In most cases, three types of scenarios are considered in scenario analysis: optimistic scenario, base scenario, and pessimistic scenario. The sensitivity analysis, even though, is simple but has shortcomings and some of them are: (1) the technique does not take into account the interactions between the input variables; (2) the technique assigns equal probabilities of occurrence to all the scenarios; and (3) the number of scenarios can become quite large in case of very big projects.

Analytical and simulation approaches are the two approaches to do quantitative risk assessment using probabilistic techniques. In analytical approach, probability distribution function (PDF) is assign to the uncertain variable and PDFs of the input variables are mathematically combined to derive the probability distribution function of the model output. This approach is more practical

in case the risk model can be made up by combining two simple and independent distributions. The simulation techniques such as Monte Carlo simulation technique do the analysis through random sampling of values for each probability distribution within the model to produce number of scenarios that are used to create the probability distribution of the model outcomes.
Qualitative techniques are predominantly used to list the likely risk sources and their consequences. Some of the commonly used qualitative techniques are risk registers and probability-impact tables. Risk registers have a tabular form to compile all the risks relevant to the projects along with the information necessary for management of the risks. In probability-impact tables, the probability and impact of the risks are subjectively assessed using qualitative scaling factors (e.g. very high, high, medium, low, and very low). These scaling factors are then converted into values/weights and the scores of the risks are computed by multiplying the values of probability and impact.

1.12.3 Risk Allocation

The distinguishing feature of PPP mode of procurement from the traditional public procurement system is with respect to the amount of risks allocated to the private sector parties. The profile of the risks allocated to the private sector can be explained with the position of the form of PPP model, used for the project, on the continuum between service contracts and divestiture. At the one end of the spectrum is the traditional public procurement contracts where the government bears all the risks and responsibilities associated with the project. On the other end is the divestiture or privatization in which private sector assumes almost all the risks associated with the project. In between there are number of PPP models in which the risks are allocated in varying degrees between the private sector and public entity. Figure 9 shows the risk transfer continuum.

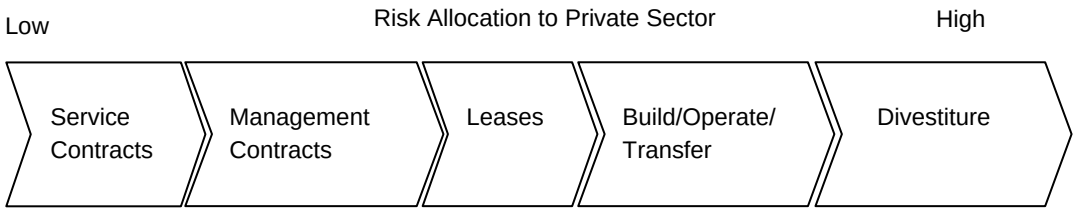

Figure 9 – Risk Transfer Continuum of PPP Projects

The notion of risk allocation in PPP projects is that risks should be borne by the party best able to assess, and manage them or the party with access to hedg-

ing options or lowest costs of bearing the risks. Even though the criterion for risk allocation is very simple, however in practice risk allocation is very complicated. It has been observed that in some of the PPP projects allocation of risks is greatly influenced by the negotiating power of the parties to the contract. One of the major considerations that play an important role in designing the risk allocation framework of the project is the concept of "Value For Money". In PPP models such as BOT and BOOT, public entities award a concession to the private party to implement the project and provide services or outputs to the users. The public entities do not assume the risks associated with implementation, commissioning, operation of the project, and the longer-term risks of asset depreciation and technological obsolescence. If the public entity can procure the project through PPP route at a cost less than the cost to the public entity itself, then the outcome is value for money.

PPP projects target at an optimal risk allocation strategy that enables the project to achieve value for money by minimizing the project costs. Allocation of risks to party not in the best position to manage the risks will charge premium for assuming the risks and this will increase the project costs and, at the same time, diminish the project's value for money.

The project agreement between the project company and the public entity granting the concession gives the basic framework for risk allocation between the government and the project sponsor. With the project agreement at the heart of the contractual network of the project, project sponsors also enter into contracts with other parties to reallocate the risks allocated to project promoter by the government through the project agreement. The set of contracts that are relevant for risk allocation normally includes the following:

1. Shareholders agreement between the project sponsors
2. Credit agreements with the project lenders
3. EPC contract
4. Operation and Maintenance contract
5. Supply contracts

The public entity granting the concession allocates the risks related with design, construction and operation of the project to the project sponsors. The project sponsors, then, allocate the construction and completion risks to EPC contractor and the operating risk to the O&M operator. Governments bear the political risks due to delays in obtaining required approvals, permits, and licenses and they either compensate the project company accordingly or prolong the concession period. However, the risks of change/imposition of taxes, tariffs, or custom duties will be borne by the project company if there are no compensa-

tion for these as no government will give an assurance that tax will not be increased or imposed. The demand and revenue risks are amongst the set of risks where there is disagreement between the public and private parties on the level of sharing between them. In case, the project company assumes these risks then the project company normally demands guarantees for a minimum demand/revenue level or insists on other credit enhancement measures.

1.12.4 Risk Mitigation

Risk mitigation refers to the practice that can reduce either the likelihood of occurrence of risk or the impact of the consequence in case the risk occurs. One of the most commonly used risk mitigation practice is to transfer the risks to another party who is in a better position to manage and control the risk at a lower premium. In PPP projects, network of contractual relationships is used to achieve this. Project Company transfer the risks related with the construction and design of the facility to the EPC contractor, the operation and maintenance of the facility to the O&M contractor. The risks will be further reduced if the project company selects parties which are experienced and qualified.

Insurance is another risk mitigation strategy used in PPP projects. With insurance, in addition to transfer of the risk, the implication of the consequence of the risk is also capped at the risk premium. Project sponsors can select from a wide range of insurance instruments to mitigate various risks such as owner's liability, some of the force majeure events, business interruption, and legislative and government policy risks such as convertibility of currency and, to a limited extent, change of law.

Other risk mitigation practice is to employ hedging instruments to mitigate the macroeconomic risks such as interest rate risk, inflation risk, and foreign exchange risk. The hedging instruments available in the capital market include forwards, futures, cash swaps, and options.

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2 CASE STUDY I – DIFFERENT RISK PERSPECTIVES IN THE 2ND STAGE CIPULARANG TOLLWAY PROJECT

by Prof. Dr. Stephen Ogunlana and Martinus P. Abednego,
Asian Institute of Technology

2.1 Infrastructure Development in Indonesia

Just like in any other developing countries, the Government of Indonesia acknowledges the importance of investing in infrastructure development such as roads, water supplies, energy, telecommunications and other basic infrastructure services to sustain the country's economic growth. As a matter of fact, private sector participation has been encouraged by the Indonesian government by allowing the private sectors to invest in power generation activities as well as tollroad BOTs since the early 1990s. From 1994-1999, the total private investment in Indonesian infrastructure was more than US$20 billion, with US$7.3 billion and US$3.6 billion investment in 1996 and 1997 respectively. In terms of the number of projects, the transport sector led with 20 projects with private participation (table 1) while sub-sectors of the energy and telecom sectors led with 14 projects each (table 2).

Table 1 – Number of infrastructure projects with private participation in Indonesia by primary sector, 1984-2002, Source: World Bank, PPI Project Database

Primary Sector	**Number of Projects**
Energy	16
Telecommunication	14
Transportation	20
Water and Sewerage	8
Total	**58**

Table 2 – Number of infrastructure projects with private participation in Indonesia by sub-sector, 1984-2002, Source: World Bank, PPI Project Database

Sub-sector Sector	**Number of Projects**
Electricity	14
Natural Gas	2
Potable water	8
Seaports	7
Telecom	14
Toll Roads	13
Total	**58**

Moreover, Greenwood, Jr. (2006) informed in his report that the Asian Development Bank had provided more than US$20 billion in cumulative development assistance to Indonesia since 1969, with the infrastructure sector consuming a significant share. What is more, the study also revealed that Indonesia would require an estimate of US$150 billion in the next 10 years for its infrastructure development. Therefore, private sector participation is needed more than ever to provide the capital investments required for infrastructure development so that it may instigate better economic growth.

Before the financial crisis period, Indonesia had actually made great investments in infrastructure development which accounted for approximately 6% of its GDP. However, there was a significant drop in infrastructure spending right after the crisis. Currently Indonesia is still recovering from the crisis since its infrastructure investment only accounts for around 2% of its GDP and that private investors are yet to make an active comeback, causing it to be left behind by neighboring countries that were once out-performed in terms of infrastructure development.

Nevertheless, the Indonesian government has attempted to increase private sector participation (PSP) and stimulate private investment through Public-Private Partnerships (PPP) by establishing a sound regulatory framework that follows international practices as well as amending and modifying laws and regulations related to private investment in Indonesia. Such efforts display the awareness of the Indonesian government in recognizing the need to attract private investment for its infrastructure development and to provide reassurance for the private sector to invest by providing them guarantee through the establishment of appropriate regulatory policies.

2.2 Tollroad Development in Indonesia

Road transportation has always been the dominant mode of transportation in Indonesia. Furthermore, strong economic growth prior to the financial crisis in addition to the inadequate condition of its public transportation causes an increasing demand for the use of private vehicles. As a result, most of the roads, especially in urban areas, are easily congested, thus forcing the government to provide a more adequate road network to reduce traveling time, reduce pollution and increase efficiency.

Due to such demand, the government planned the construction of 688 km of tollroads by 1999 and 1935 km by 2020. Although several international organiza-

tions, such as the ADB and World Bank, provided financial assistance for infrastructure developments in Indonesia, however, the Indonesian government played a major role in financing tollroad projects that were developed between 1978 and 1990. Based on the World Bank report (2002), the 46 km Jagorawi tollroad was the first toll road built in Indonesia and Jasa Marga, which is a state-owned road agency, was given the responsibility of collecting and maintaining it. In addition to that, Jasa Marga also operates the other tollroads in Indonesia and became responsible for financing and constructing tollroads in the later years. Their role in tollroad developments in Indonesia is further strengthened by being granted a license by the government to develop, construct and operate tollroads together with the private sector. Through the Presidential Decree No.25/1987, the Indonesian government required Jasa Marga to be involved in all tollroad constructions and that private entities must set up joint ventures with Jasa Marga if they are to be involved in those constructions. Most of these collaborations were either in the form of BOT or Modified Turnkey.

Just before the 1997 financial crisis, the total operating tollroads had reached 472 km, of which approximately 148 km was built and operated by private concessionaires. The 15.5 km Cawang-Tanjung Priok elevated highway was one of the first tollroads to include private participation. The project was developed by a joint venture company formed between Jasa Marga and PT. Citra Marga Nusaphala Persada (CMNP), a local private company, and they were granted the project in 1993 with a 30 years concession period. Moreover, the Jakarta Outer Ring Road project was the first international joint venture tollroad project in Indonesia. The consortium included Brey Contractors, Jasa Marga and two other private Indonesian companies. Another tollroad project which involves foreign investors was the 59 km Cikampek-Padalarang tollroad. Trafalgar House (UK) formed a consortium with Jasa Marga to finance this project and it took approximately 6 years of negotiation before the concession agreement was finally signed in 1995. Unfortunately, full financing for this project was not secured before the financial crisis and since Indonesia suffered heavily from it the government was forced to review the project along with the other ongoing projects. During that period, approximately 237 km of tollroad were still under construction and were planned to be completed by 2000.
In order to reinstate private sector's confidence to invest and be actively involved again in infrastructure development after the financial crisis, the Indonesian government must be able to formulate unbiased and non-discriminative regulatory policies, as a form of guarantee for the private sector, which hopefully may sustain their long-term partnership. This can be achieved as long as both the government and private sector have a common understanding re-

garding the risks that may occur in the project. Therefore, it is necessary to discover and understand the perception of risks from both parties. For this purpose, the 2nd Stage Cipularang tollway project is selected as the case study.

2.3 The 2nd Stage Cipularang Tollway project

The Jakarta-Bandung corridor had been recognized to have a high traffic volume for many years. Although there are several alternative routes connecting these two cities, they were unable to cope with the increasing traffic volume. One alternative route in particular, which goes through the city of Purwakarta, experienced an average traffic volume increase of 7-9% per year in 3 years leading to 2002 (PT. Jasa Marga, 2002). Such condition occurred mostly due to the vast development of the industrial sector just outside the East Jakarta region, such as Bekasi, Cikarang, Karawang, Tasikmalaya and Garut, as well as the economic development in Purwakarta, Subang, Plered and Cikalong Wetan.

Due to these conditions, the Indonesian government realized the urgency to develop a high standard primary road in order to increase transportation efficiency, so that it may decrease the required traveling time. Moreover, it was also intended to accommodate the growing traffic volume between Jakarta and Bandung.

2.3.1 Project Background

As mentioned previously, the project was proposed as a solution to solve the traffic problems along the Puncak route and Purwakarta area, which were the main alternative routes between Jakarta and Bandung. Its development was also expected to stimulate the economic development in the West Java area as well as encouraging the development of Jakarta and Bandung in becoming mega-cities.

As a follow up to this national plan, the Indonesian government initially appointed PT. Citra Ganesha Marga Nusantara (CGMN) in 1994, a local private company, as the main investor and contractor for this 2nd Stage Cipularang Tollway project. A concession was then created between CGMN and Trafalgar House Construction, a British investor, along with PT. Jasa Marga as well as several other small local investors. CGMN was the consortium leader and had received licensed agreement from PT. Jasa Marga to finance, construct and

operate this tollway project. As for Trafalgar, it provides additional financial support and construction technology.

However, due to the financial crisis in 1997, the project along with several other infrastructure projects was reevaluated based on the Presidential Decree No.39/1997. Since there was no significant progress made by the joint venture, the project was then suspended and resulted in the termination of the joint venture, including the withdrawal of CGMN as the investor. In 2000, a Presidential Decree No.64/2000 was issued by the Indonesian government to confirm the continuation of this project and appointing PT. Jasa Marga as the main developer.

The 2nd Stage Cipularang Tollway has a total length of 41 km that connects the north side of Purwakarta (Sadang) with Cikamuning, which is located at the west side of Padalarang (Figure 1). It connects the Padalarang-Bypass Tollway with the Jakarta-Cikampek Tollway, thus making it the longest tollway network in Indonesia (Hasanudin, 2005).

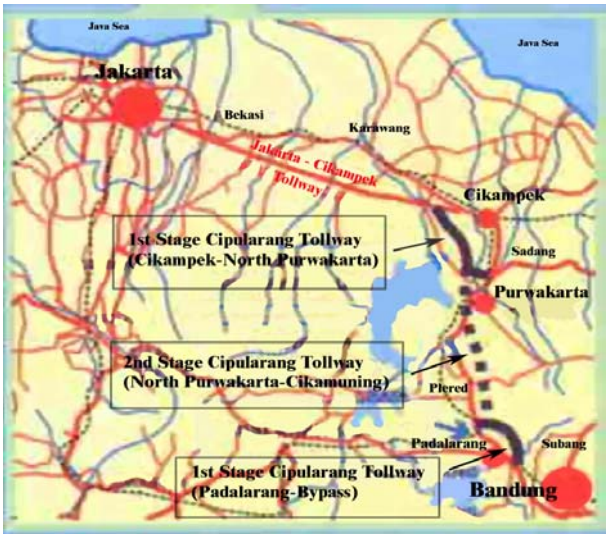

Figure 1 – Map of the 2nd Stage Cipularang Tollway, Source: Abednego (2006)

Initially, the project was divided into 4 work packages with an average length of 8.5-12 km for each package. However, since Indonesia will be hosting the 50th Asia-Africa Conference in Bandung in 2005, Megawati Soekarnoputri, who was the Indonesian President at the time, had requested PT. Jasa Marga through the Ministry of Public Works to accelerate the construction time of the project so that it may be completed just before the conference. To comply with this demand, the project was then divided into 9 packages or sections as follows to accelerate the construction process:

1. North Purwakarta-South Purwakarta (Section 1)
2. South Purwakarta (Section 2)
3. Plered-Darangdan + Ciujung Bridge (Section 3.1)
4. Darangdan-Cikalong Wetan (Section 3.2)
5. Cisomang Bridge (Section 3.3)
6. Cikalong Wetan-Cikubang (Section 4.1)
7. Cikubang Bridge (Section 4.2)
8. Cikubang-Cipada + Cipada Bridge (Section 4.3)
9. Cipada-Cikamuning (Section 4.4)

Nine local contractors were selected through a tendering process and nine project managers from PT. Jasa Marga were selected to supervise each of these sections, coordinated by a project director. Several consultants were also appointed to provide professional assistance to each of those project managers. Additionally, a group of experts from various academic institutions was also hired to provide PT. Jasa Marga professional advice on problems encountered during the design and construction stage of the project. Figure 2 illustrates the organizational structure during the construction phase.

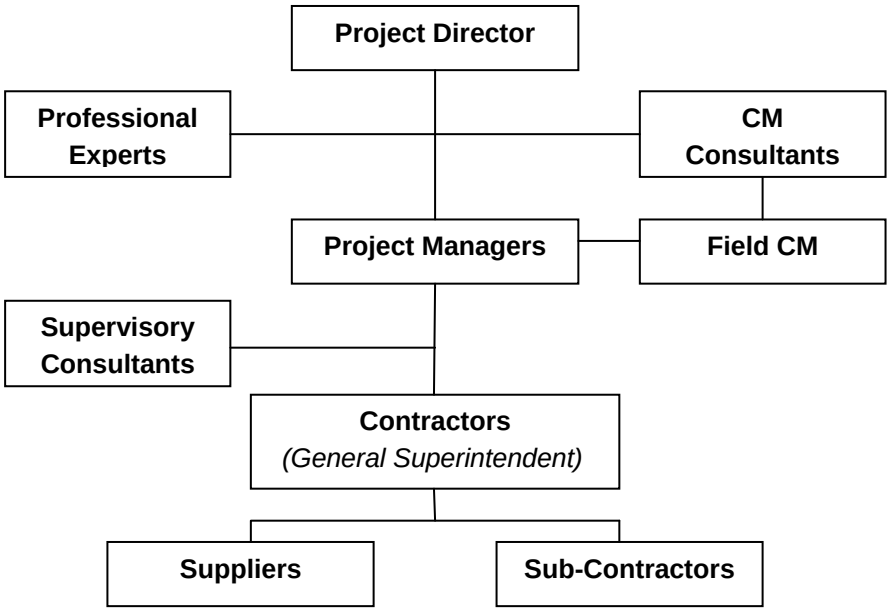

Figure 2 – Organizational structure of the project, Source: Abednego (2006)

In terms of project financing, the Indonesian government, who was represented by PT. Jasa Marga in this project, was faced by limited capital due to high constraint of the construction time and limited liquidity. In order to anticipate the consequences that may arise due to this situation, PT. Jasa Marga

developed a new financial strategy that would ensure financial security for the project as well as maintaining a healthy condition on the company's cash flow. Thus, the Contractor's Pre-Finance (CPF) system was developed.

In this system, several local banks (government and private) agreed to make a commitment with PT. Jasa Marga to finance the project by providing loan for all of the nine appointed contractors. In addition to that, these banks also agreed to apply a fixed interest rate for the whole loan and payback period. They were willing to provide such demanding commitment because of the guarantee from PT. Jasa Marga that the project will be completed and will not be suspended at any time during the construction phase. In other words, the banks were guaranteed to get their money back no matter what happens with the project. The agreement was then formulated in the form of Letter of Comfort which is then used by the contractors to request for a loan from these banks.

The difference between the CPF system with the other financial strategies, such as the conventional project financing or BOT, is that in the CPF system the project does not need to look for an investor to finance the project and they are not in debt to the banks who provided the loans during the construction phase because the contractors borrowed the money directly from the bank and these debts will only be acknowledged by the project owner after the project is completed and handed over to the owner. As long as it is still in the construction phase, the contractor is fully responsible for the loan debt to the bank. After the project is completed, the project owner has the responsibility to repay the loans made by the contractors to the bank within a certain period that has been agreed previously by the owner and the banks. On the other hand, conventional project financing requires the owner to ask for loan directly to the bank, appoint contractors to carry out the construction work and finance the project with the loan; while the BOT system requires the owner to look for an investor through a tendering process to help finance the project and form a concession with the investor. Figure 3 illustrates how the CPF system works.

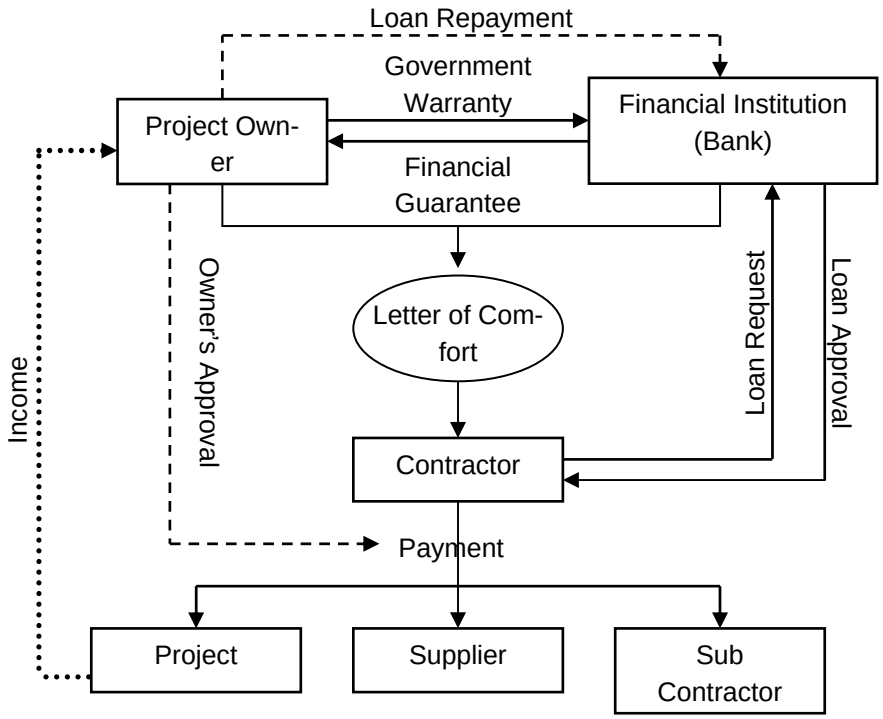

Figure 3 – Contractor's Pre-Finance (CPF) scheme, Source: Abednego (2006)

2.3.2 Problems Encountered in Project

The problems that were encountered in the project can be classified into 2 broad categories (Abednego, 2006):

- Problems experienced during the construction process
- Problems caused by the construction of the project

In the first category, the problems are mostly caused by the geographic conditions of the project. In addition to the hilly train at the project site, some areas within the project site have quite a unique soil characteristic, such as the instability of the underground soil which shifted easily during the rainy season. The result of this condition could vary from minor cracks on the road surface in some areas to an extreme ground settlements as well as land-slides. Besides geographic problems, the weather condition also played a significant part in causing delays during the construction process.

As the source of problem, the existence of this project causes an increase in the traffic volume in the Jakarta-Bandung corridor which resulted in serious traffic problems, especially in the city of Bandung. This condition is worsened due to the inadequate road network within the city of Bandung and also by the fact that the vehicle growth in this city had exceeded the infrastructure growth (info-ri.com, 2005).

2.4 Issues on Differences in Perspectives between the Government and Private Sector

In theory, the party that should accept the consequences of any particular risk event, which is usually the result of the activities of one or more parties, is the one who has control over that risk (Edwards, 1995). Moreover, primary considerations that have significant influence in the allocation of risk are described as follows (Chapman & Ward, 1991; Flanagan & Norman, 1993 and Edwards, 1995):

- Risk should be allocated to the party with the best capability to control the events that might trigger its occurrence.
- Risks must be properly identified, understood and evaluated by all parties involved in the project.
- A party must have the technical/managerial capability to manage the risk.
- A party must have the financial ability to sustain the consequences of the risk or prevent the risk from occurring.
- A party must be willing to accept the risk.

In practice, however, it is quite difficult to have a proper risk allocation arrangement. The reason for this is because that each party that is involved in a project frequently has different perceptions/perspectives regarding project risks (Chapman & Ward, 1991). As a consequence, each party might wish to implement different kinds of strategy to manage these project risks. Furthermore, these differences occur because different parties typically have different knowledge and perceptions about the nature of project risk sources, and that they tend to have different objectives which form their perception on the meaning of project success.
Therefore, it is very important that all of the parties involved in the project understand and acknowledge the objectives of each party so that each of them

may have a common understanding of the project risks. If they do not have this mutual understanding, it may create a mismanagement of the event that may cause these risks to occur by assuming the event or its consequences are not their responsibility (Hartman & Snelgrove, 1996). Such mismanagement could further cause inefficiencies in a project and increase project cost (Hartman, 1993).

In order to understand the different perspectives between the government and private sector regarding project risks, discovering their perspectives regarding project success as well as project efficiency is very much necessary. For such purpose, the following sections provide an overview of the government as well as private sector's perspectives on the success and efficiency attributes of the 2nd Stage Cipularang Tollway project.

2.4.1 Project Success

An extensive literature review on project management by Baccarini (1999) shows that the term "project success" was not defined consistently. This finding also confirms with previous observations done by McCoy (1986) and Wells (1998) that there is no standardized definition of project success and that there is a lack of attention to really define success, except in general terms. However, it is very important to understand the concept of project success and it is reflected by the Project Management Institute (PMI) at its 1986 Annual Seminar & Symposium (Baccarini, 1999).

Project success is a topic that is frequently discussed and yet rarely agreed upon. Theconcept of project success has remained ambiguously defined. It is a concept which can mean so much to so many different people because of varying perceptions, and leads to disagreement about whether a project is successful or not.

(Liu & Walker, 1998)

Moreover, Belout (1998) believes that success is synonymous with effectiveness, such as the degree of achievement of objectives. It is well understood that all projects are formed to accomplish the objectives that have been set previously and that success is measured in terms of how well these objectives have been met. Based on this understanding, interviews with people who were involved in the 2nd Stage Cipularang Tollway project were carried out to discover both the government and private sector's perspectives on project success as well as project efficiency. The analysis results of these interviews are presented in the following sections.

2.4.1.1 Government's Perspective on Project Success

According to the government, the factors that are considered to have significant impact in determining the success of a project are as follows:

Project quality achievement and on-time project completion
These 2 factors are considered as the basic and standard value in assessing a project and to determine whether the project can be considered as a success, in general terms.

Functionality of the end-product
Since the end product of this project is in the form of a tollroad, therefore, the owner consider it to be successful if the product is functioning accordingly to its planned purpose which is to provide service and satisfaction for its end-users.

Government total support
It is in the form of unbiased and non-discriminative policies, laws and regulations. The government is also expected to provide reliable information regarding the national infrastructure network development plan, so that a more accurate project estimate could be produced and used for preparing a more proper project plan.

Good coordination
Good coordination between government agencies as well as between government agencies and private entities is essential in ensuring an effective and efficient project development process.

Proper project financing strategy
In order to reduce any financial problems that may occur during the construction process, it is necessary to plan, develop and apply the most suitable financing strategy, such as the CPF system in the case of this particular project.

Trust

A sense of trust must transpire between all of the involved parties. With respect of this particular project, a sense of trust was developed between the government and financial institutions which is shown through the formulation of the Letter of Comfort.

Good system for contractor selection

Selecting the most capable contractor to perform the construction works must be done carefully, thus the requirement of a good assessment and selection system. The term capable does not only mean having similar experience in past projects and possessing sufficient financial strength, but also possess a sense of professionalism which was actually lacking in this particular project. This lack of professionalism influenced the efficiency and effectiveness of that particular contractor, thus affecting the project overall performance which is essential for achieving project success.

Information dissemination and communication system

Since it is important that all information related to the project must be distributed to the right party at the right time; therefore, it is necessary for the project to have a suitable communication system to accomplish this objective.

Compelling managerial capabilities

In order to achieve a successful implementation of the information and communication system, it also requires compelling managerial capabilities of the human resources involved in the project. Such managerial capabilities would enable key decision makers, whether that is the owner of the project, the contractors or the other parties involved in the project, to make the most appropriate decision at the right time. Nevertheless, such level of managerial capabilities could be achieved through continuous managerial training, i.e. training courses and on-the-job training.

Continuous project monitoring and control

The government believes that continuous monitoring the project's work progress, constant control of all the resources required for the project and maintaining a constructive interaction within the project would also provide significant contribution for achieving project success.

2.4.1.2 Private Sector's Perspective on Project Success

The factors that are considered by the contractors to have significant impact in determining the success of a project are as follows:

Profit (Financial achievement)
Since all contractors are business oriented companies, profit gaining is considered as the most important element in determining the success of any kind of project.

Project quality achievement and on-time completion
Similar to the government's perspective, the private sector also consider these 2 factors as the basic and standard value in assessing a project and to determine whether the project can be considered as a success, in general terms.

Experienced human resources
In order to be able to provide properly trained and experienced human resources for the project, contractor companies require their employees to attend seminars and training to enhance their technical as well as managerial capabilities. However, if the company does not have the required amount of skilled human resources available for a project, human resources outsourcing is generally carried out by the contractor in order to comply with the situation, as what happened in this particular project.

Good coordination
Good coordination between the government and private sector is also considered to be one of the most important project success factors. In addition to that, although good coordination between the contractors and sub-contractors as well as the suppliers is also necessary to increase the competition level within the project, however, lack of coordination between government agencies, especially between the central and local government, would create problems for the contractors during the construction process. As an example, although the central government had informed their project development plan in a particular area, most of the times the local government in that area does not appreciate and is unable to recognize the importance of such information. Added by the insufficient and incomprehensive level of information provided by the central government, such circumstance would create further difficulties towards the construction process (i.e. land acquisition problems).

No political pressure

Political pressure from the government towards the construction process will not provide positive influence in any way. Although some may say that this particular project was a success due to the continuing pressure from the government to complete it before the 50th Asia-Africa Conference so that it can be used for the event, however, there are trade-offs that must be accepted, such as the increasing project cost and the quality of the product.

Community participation and support

The community around the project site also plays an important role in determining the success of the project. The community provides the necessary elements for the project such as access roads, hard labor, standard daily provisions, etc.

Information dissemination and communication system

With the presence of a project director from the project owner, all of the required information was able to be distributed to the right party at the right time. Such condition is ensured by carrying out a routine meeting between the contractors, the owner's project managers and the project director.

Equality and balance in terms of rights and responsibilities

Such equality between the public and private sector is important because the expected profit from the project is very much dependent on a balanced partnership. Unfortunately, most of the times the government do not realize that infrastructure projects such as tollways are part of their own development program and not purely business development opportunity. Moreover, since the government requires assistance from the private sector, especially financially, the relationship between the government and private sector should be more of a partnership instead of hierarchical which is mostly based on superiority. If the government focuses only on the business aspect in this kind of project, the private sector would also focus on the business aspect, thus ignoring the people/community who is actually the end-users of the product.

Proper planning in infrastructure network development

Due to the lack of coordination between government agencies as well as the government's main focus on the business aspect in this kind of project, the government would be unable to develop proper planning for the infrastructure network development. As a result, it would cause further problems such as inappropriate budget estimation to be allocated in the national annual development budget.

Government support

Contractors expect the government to provide total support to ensure project success. Examples of these supports can be in the form of government policy that would strengthen the partnership between the government and private sector, government regulations that have the ability to monitor and control the stability of construction materials and other laws/regulations that are unbiased and non-discriminative which are able to facilitate the private sectors in fulfilling their responsibilities.

2.4.2 Project Efficiency

2.4.2.1 Government's Perspective on Project Efficiency

Value engineering was applied by the government in order to increase the project's efficiency. It involves construction design simplification as well as the application of new and innovative construction technology. In addition to that, project's efficiency level was also maintained by balancing the required design change with the available budget. However, the government also realized that the project's efficiency level did not reach the expectation in some parts. One major reason for this is because there was no distinct difference in terms of obligation and responsibility between the supervisory consultants and construction management consultants. Thus more often than not, these two different consultants performed the same scope of work. Through their experience in this project, the government discovered that one way to improve such condition is to upgrade the specifications and requirements that are used for selecting the consultants, experts as well as contractors.

Another issue that is considered by the government to cause inefficiency in this project is the insufficient time for project design development and planning. As a result, the government decided to exercise a design-and-build method in some parts of the project in order to be able to proceed as scheduled. However, since only a preliminary design was produced from the project's feasibility study, it increases the uncertainty level within the method because its detail design work was based only on a preliminary design. Although basically there is nothing wrong with the design-and-build method, the project's circumstances make it less suitable to be implemented in the project. Moreover, even though this approach also enabled acceleration in the construction process, however, it resulted in an additional cost for repair and maintenance work as a trade-off.

2.4.2.2 Private Sector's Perspective on Project Efficiency

In order to increase the project's efficiency, main contractors generally distributed their work load to sub-contractors. The main reason for this is because most contractors in Indonesia are specialized only in a specific field while most of the available projects consist of different kinds of work which are sometimes outside the contractor's area of expertise. Therefore, the work loads are distributed or outsourced to a more specialized party/subcontractor. Nevertheless, a strong network must be established under the coordination of the main contractor to support the construction work and to ensure these works are done efficiently.

In addition to that, the contractors believe that the project efficiency level could also be increased if the government provided some sort of incentives for any contractors that are able to complete their work ahead of schedule or below the budget while maintaining the quality. Another type of motivational incentive is that if the government would guarantee future projects for contractors that are able to produce high-quality performance on the previous project. However, these ideas are very unlikely to be implemented by the government, especially the Indonesian government, due to the culture of its construction industry and the government regulation which requires a project with a construction cost above a certain level to go through a tendering process.

The government is also considered by the private sector to have a lack of commitment in maintaining professional relationship with them. According to the contractors, the relationships atmosphere created by the government is not partnership, but is more towards superiority-inferiority relationship. In other words, it is more of a hierarchical relationship based on superiority, which would only complicate the bureaucracy procedure and affect the project's efficiency. Furthermore, the efficiency of this particular project could also be improved if the government had made a proper planning, provide more accurate information essential for the project success and delegate more authority towards their representative in the project site. The latter is very much necessary so that these representatives may make decisions that are required to be taken immediately in order to maintain the flow of the construction process.

2.4.3 Project Risks

Nur Wulan (2005) carried out a research to identify the risks that may occur in a tollway project in Indonesia and these risks were classified into the following categories:

1. *Political risks*, which include discontinuation of concession, tax increase, inappropriate tariff implementation, inappropriate tariff increase, new government policy, etc.
2. *Construction risks*, which include inappropriate design, land acquisition, project delay, project site condition, contractor's failure, etc.
3. *Operation and Maintenance risks*, which include tollway network condition, operator's incompetence, construction quality, etc.
4. *Legal and Contractual risks*, which include concession time warranty, flawed/inconsistent contract document, etc.
5. *Income risks*, which include inaccurate traffic volume estimate, inaccurate tollway tariff estimate, construction of a competing alternative road, etc.
6. *Financial risks*, which include inflation, devaluation, interest rate, changes in monetary policies, limited capital, etc.
7. *Force major*, such as weather condition, war, natural disasters, etc.

With respect to the government's perspective, risks that are considered as their main concern in the 2nd Stage Cipularang Tollway project are *limited capital* and *unpredicted project site condition*. The former was a high concern for the government due to their liquidity limitation and high constraint on the construction time as a result of being the host for the 50th Asia-Africa Conference. However, they were able to develop and apply a new financial strategy, the CPF method, to ensure financial security for the project as well as maintaining a healthy cash-flow. As for the latter, the highly unpredicted geological condition within the project site had resulted in their inability to provide accurate information regarding the soil characteristics of the project area. This situation then causes further consequences in the form of improper design; structurally, technologically and methodologically.

As for the private sectors that were involved in this particular project, the risks that they consider to be main concerns were *government's lack of support, inaccurate information provided by the government, design changes, government's unpreparedness, land acquisition, late decision making, unequal com-*

petence and *decrease in profit*. Government's lack of support was demonstrated by the insufficient warranty given towards the contractors for negotiating construction loan with the financial institutions. This is due to the fact that the agreement between the government and financial institutions can be different than the agreement between the contractor and the financial institutions. To be more precise, the warranty, in the form of *Letter of Comfort*, merely stated and confirmed that the mentioned contractors had been formally and legally appointed to construct the project. Moreover, it also guarantees that the government will return all of the loans made by the contractor to construct the project after being handed over to the government, including the interest rate that had been agreed previously. However, the warranty did not determine that the interest rate applied on PT. Jasa Marga, who acted on behalf of the government and would eventually responsible for paying back all of those loans, has to be the same value as the interest rate applied on the contractors who actually made the loan. In other words, even though the banks applied an 11% of interest rate towards PT. Jasa Marga for the whole loan and payback period, there is a possibility that the contractors may be applied more than this. When such situation occurred, the government would only acknowledge the 11% interest rate while the exceeded amount of interest rate must be endured by the contractor.

In terms of information related to the project, some of the essential information provided by the government, such as the result of soil investigation, was still considered to be inadequate by the contractors. Therefore, there is a consequence of inaccuracy in the project design which was developed based on this information. In turn, such inaccuracy in the project design would result in changes in the project planning and design while also influencing the quality of the project as well as its total construction cost. Furthermore, such condition also showed that the government was actually unprepared for developing this project. As a result, the contractors were forced to accept the consequences and perform extra works to obtain all the necessary information, which was not their responsibility in the first place, spent extra time and resources while also fulfilling their obligations for this project within the accelerated construction time.

With regards to land acquisition, problems occurred due to the changes that were made in the project planning and design stage. As mentioned previously, the inaccurate information regarding the result of the soil investigation study caused changes in the project design. However, the changes were not only in terms of structural changes but also the lay-out of the structure. As an example, the Right-of-Way in some areas of the project need to be adjusted during the construction phase based on the new design, yet the construction process was not able to be carried out immediately because the land had not been acquit-

ted by the government. As a result, the project was not able to keep up with the schedule and to make up for this loss of time the contractors had no choice but to work over time, thus increasing the total cost of the work.

Moreover, problems also occurred due to the late decision-making process by the government. The project managers, who are government representatives, were not given sufficient authority to make some significant yet simple decisions. Due to such partial authority delegation, these project managers were not able to make any decision even though the situation requires direct and fast decision making in order to proceed with the construction process since they need to discuss the situation with their superior before making the decision. On the other hand, the contractors generally assign their representative in the project site with full authority to make decisions on behalf of the company. Therefore, there is an unbalanced ability or unequal competence between the owner's project managers and the contractor's project managers in terms of decision-making authority.

As a cumulative of all these risks, the contractors were forced to accept the consequences such as an increase in the overall project cost. Although the contractors had submitted their claim on this increase to PT. Jasa Marga as the government's representative, there is still a possibility that the claim would not be acknowledged, thus resulting in the decrease of the contractor's profit.

2.5 Conclusion

In this project, PT. Jasa Marga had the tendency to deal with the project risks as soon as the threats of consequences emerge. In contrast the contractors tend to sort things out from the project initiation stage, but were forced to act on the contrary due to the unbalanced condition between the number of contractors in the industry and the amount of available projects. As a result, the private sectors more often than not lose their bargaining power because the government has the tendency to select a contractor that has the ability to complete the project with the least construction cost even though it may jeopardize the quality.

This condition caused contractors to accept every opportunity that comes by, even if it means accepting the risks that are outside their own capabilities and responsibilities, thus creating an unhealthy competition between the contractors in the industry. Moreover, contractors are also forced to follow government's officious way and be controlled by it, and disregard any chance of an equal and professional partnership. In other words, contractors are accepting the project risks not because they have the capability and willingness to control and manage the consequences, but mostly

because they have no other choice which shows the government's dominance in the risk allocation process.

In dealing with the consequences, solutions are generally sought whether through the application of new construction methods, on-site design simplifications, etc, in order to cope with particular problems during the construction stage. Although those solutions were more or less effective, it would have been better if preventive action had been taken. As an example, if the government had conducted a more thorough and detailed feasibility study, it would have been able to provide a more useful and accurate information which could have been used to develop a more detailed design, more accurate estimation as well as better project planning. However, since the feasibility study was not performed properly, both the government and contractors were confronted by problems on the project site. Even though the problems were solved and the project was managed to be completed within the schedule, however, actions such as on-site construction method modifications and design simplifications during the construction stage resulted in a significantly increased project cost. Furthermore, these actions could also affect the structure quality in the long-rum which would evidently affect the maintenance cost.

These findings show that the government considers a risk had been properly allocated as long as its consequences can be minimized, no matter where and how, and their strategy is more into problem-solving rather than preventive actions. As for the private sector, they do not have many options but to accept the circumstances that they are inferior to the government and must accept this condition due to high competition.

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3 CASE STUDY II – GOVERNANCE ISSUES IN THE YEN LENH BRIDGE BOT PROJECT

by Prof. Dr. Stephen Ogunlana and Martinus P. Abednego,
Asian Institute of Technology

3.1 Infrastructure Development in Vietnam

Investments made for infrastructure development in Vietnam was a major contributing factor for its impressive GDP growth in the past decade. Based on a World Bank report[1], approximately 9-10% accounted in Vietnam's GDP was from the total spending for infrastructure development and results from its studies also shows that there is a strong link between infrastructure investment and Vietnam's economic growth. With regards to the transportation sector, Vietnam had experienced quite significant improvements and it is shown by the total length of road network which had doubled since 1990 as well as its substantial quality improvement.

World Bank report had also confirmed that Vietnam will require an approximate sum of 11.4% of its GDP to support its infrastructure development until 2010, in which the transportation sector requires 4.1% of the GDP per year.[2] Moreover, the proposal for capital spending on transportation sector development is estimated to be US$ 4.3 billion from 2006-2008.[1] Most of the funds for previous infrastructure developments had originated from the State budget (11%) and 37% were from the official development assistance (ODA). However, Vietnam could experience major difficulties in the future if it only relies on these sources. This is due to the fact that Vietnam had experienced a significant economic growth, especially in the past decade, and its GDP per capita had exceeded the permissible threshold of the donor community which makes Vietnam no longer entitled to preferential loans from donors. Therefore, private sector participation is expected to play a more major role in providing the necessary capital for infrastructure development in Vietnam.

So far, the public sector has frequently played the major role in financing, constructing and operating transportation infrastructure development and private investment in this sector has been very low with accounting for just 2% of its total capital expenditure in the last decade.[3] While the implementation of Vietnam's transportation construction projects is managed by the Project Management Units (PMUs), the construction itself is usually carried out by some State-Owned Enterprises (SOEs) who are mostly attached to the Ministry of Transportation (MoT) as well as the provincial government, along with sev-

eral private companies. Currently, there are approximately 200 SOEs under the MoT of Vietnam and most of them are grouped into 12 corporations, such as the 5 Civil Engineering Construction Corporations (CIENCOs).[3] Although these SOEs are principally independent, they are practically under the instruction of the MoT.

The government of Vietnam has a very strong commitment to modernize the country's transport system because they believe that such development would support the country's overall economic growth. This commitment is shown through the real expenditures that the government made for the development of the transportation sector which experienced an increase of 21% annually between 1994 and 2002.[3] Furthermore, the government had also introduced the Law of Foreign Investment in Vietnam as a mean to expand its foreign economic cooperation due to their awareness of Vietnam for being a highly attractive investment environment for foreign investors as a result of its strategic location, which is in the center of a dynamic economic growth region.

3.2 BOT Projects in Vietnam

As a form of Public-Private Partnership (PPP), the Build-Operate-Transfer (BOT) scheme is considered as an attractive means by the Vietnamese government to develop new infrastructure projects. This is due to the fact that the Vietnamese government has very limited budget to fund these kinds of projects and they are also aware that the country's economic growth could be deterred if its infrastructure development falls behind. In such scheme, the partnership between the government and the private sector is more in the form of an indirect partnership, where the government agrees to delegate the rights to build and operate infrastructure facilities to private investors. Therefore, the government would have access to the private sector's capital as well as expertise, and use them as the main resources for the infrastructure development.

In the case of Vietnam, the country had announced its desire for foreign private investment since the early 1990s, especially for its power sector development. The government's factual determination was shown through the passing of the BOT law during this period.[4] However, there have been quite a few problems in the development of infrastructure projects with private participation in Vietnam. Most of these problems occurred due to the difficulty in the negotiation process with the government agencies and also due to the

reluctance of the majority of government officials to provide the necessary guarantee and appropriate assurance towards the private sector regarding the long-term security of the project's revenue stream.[4] In addition to that, private sector's constant skepticism towards the government had also played a major part in some of the delays that had occurred in the development of infrastructure projects in Vietnam. BOT Legislation in Vietnam was passed by the government as the legal framework for all infrastructure projects that are developed under these types of procurement system. Under this legislation, BOT companies can secure foreign loans by using their assets that are financed by loan as a guarantee or other forms of security as long as it is in accordance with Vietnamese laws and regulations. However, the company may not grant a mortgage of land-use rights to any foreign investors/lenders. Instead, it may provide guarantees (through State approval) such as the following:

- Buildings, equipments and other assets constructed or purchased with the invested capital of the BOT company (invested capital includes the loan capital)
- Other assets owned by the BOT company
- The *value* of the land-use rights
- The property rights of the BOT company

Nevertheless, the legislation may agree on the application of a foreign law, provided that it is not contrary to the Vietnamese law and that it is approved by the Ministry of Justice.

In the past 15 years, Vietnam has had more than 100 infrastructure projects developed under the BOT scheme. However, some of these projects could not be completed on time and some had experienced budget overrun. These problems occurred mostly because there is a lack of knowledge in terms of project procurement system/procedure and the risks that have the possibility to occur in the project were not assessed properly during the project development stage. Moreover, disputes between the project stakeholders often occurred due to their misunderstanding and different perceptions on construction, financial and legal issues of projects that were developed under a BOT scheme.[5] If negotiations and reconciliations fails, disputes may be resolved either by a Vietnamese arbitration organization, an arbitration established by agreement of the stakeholders or an arbitration established and operating in a third and neutral country.

As an encouragement for private sectors that are involved in any BOT company, the government of Vietnam provides various advantageous tax schemes and other incentives such as[5]:

- BOT companies are entitled to a payment of business income tax (BIT) at the rate of 10% for the whole concession period, after the exemption and reduction that are referred in the following articles
- BOT companies are exempted from payment of BIT for the first 4 years (8 years if the project is in an area where investment is encouraged by the government) from the company's first profit-making year, followed by a 50% reduction in BIT for the next four years
- BOT companies are entitled for an import duty exemption on equipment, machinery and specialized vehicles (including spare parts and accessories) that are utilized for creating assets of the project, as well as fuel, raw materials and other kind of supplies used for the BOT project
- Protected industrial property rights, technical know-how, technological process and technical services required to implement a BOT project are exempted from payment of taxes relating to the technology transfer

3.3 Yen Lenh Bridge BOT Project

This 2.23 km bridge is located in the northern part of Vietnam and it spanned across the Hong (Red) River. It was constructed as an alternative route that connects the Hung Yen province, which is regarded as an essential economic region in the North Vietnam, with Ha Nam province. Previously, traffics had to use a ferry to get across this river or make an approximately 40 km detour near Hanoi which usually caused quite severe traffic jams. However, this bridge has been able to reduce the traffic from the other alternative route as well as reduce the required traveling time between the two provinces. In addition to that, the social-economic development in the two provinces as well as the entire river delta will also have the opportunity to improve, thus enhancing the entire country's social-economic development.

3.3.1 Project Background

As mentioned previously, the project was carried out in order to link two provinces in the northern region of Vietnam and to create more favorable conditions for socio-economic development in the region since it is estimated to at-

tract around 10% of the north-south traffic.[6] The construction work itself took approximately 23 months, which was 10 months ahead of schedule. Although the project was developed under a BOT scheme, more than half of the project cost was funded by the State and the local governments of the two provinces (± US$11 million), while Thang Long Construction Corporation and the Civil Engineering Construction Corporation No.4 (CIENCO No.4) cover the remaining cost. The concession company was granted a 17 years of concession period for their investment in the project.

The East Sea Project Management Unit (ESPMU)[7] was appointed by the Ministry of Transportation (MoT) to act on behalf of the ministry in the concession company, with the Vietnam Road Administration acting as an independent reviewer for the concession company to ensure the quality of the construction design and implementation. The Transportation Engineering Design Corporation was then appointed by the concessionaire and ESPMU as the consultant company to design and supervise the project. The concession company was also supported by the central government through agreements with the Ministry of Finance and the Ministry of Investment and Planning, while the Vietnam Development and Investment Bank provided investment fund and financial guarantee towards the concessionaire to help ensure the project's financial stability, especially during its construction stage, and the Vietnam Insurance Company agreed on providing insurance premium to guarantee the construction of the project. In addition to that, the Yen Lenh BOT Company was established by the concessionaire in 2003 to operate the project for as long as the agreed concession period. Figure 1 illustrates the structure of the stakeholders in the Yen Lenh BOT bridge project.

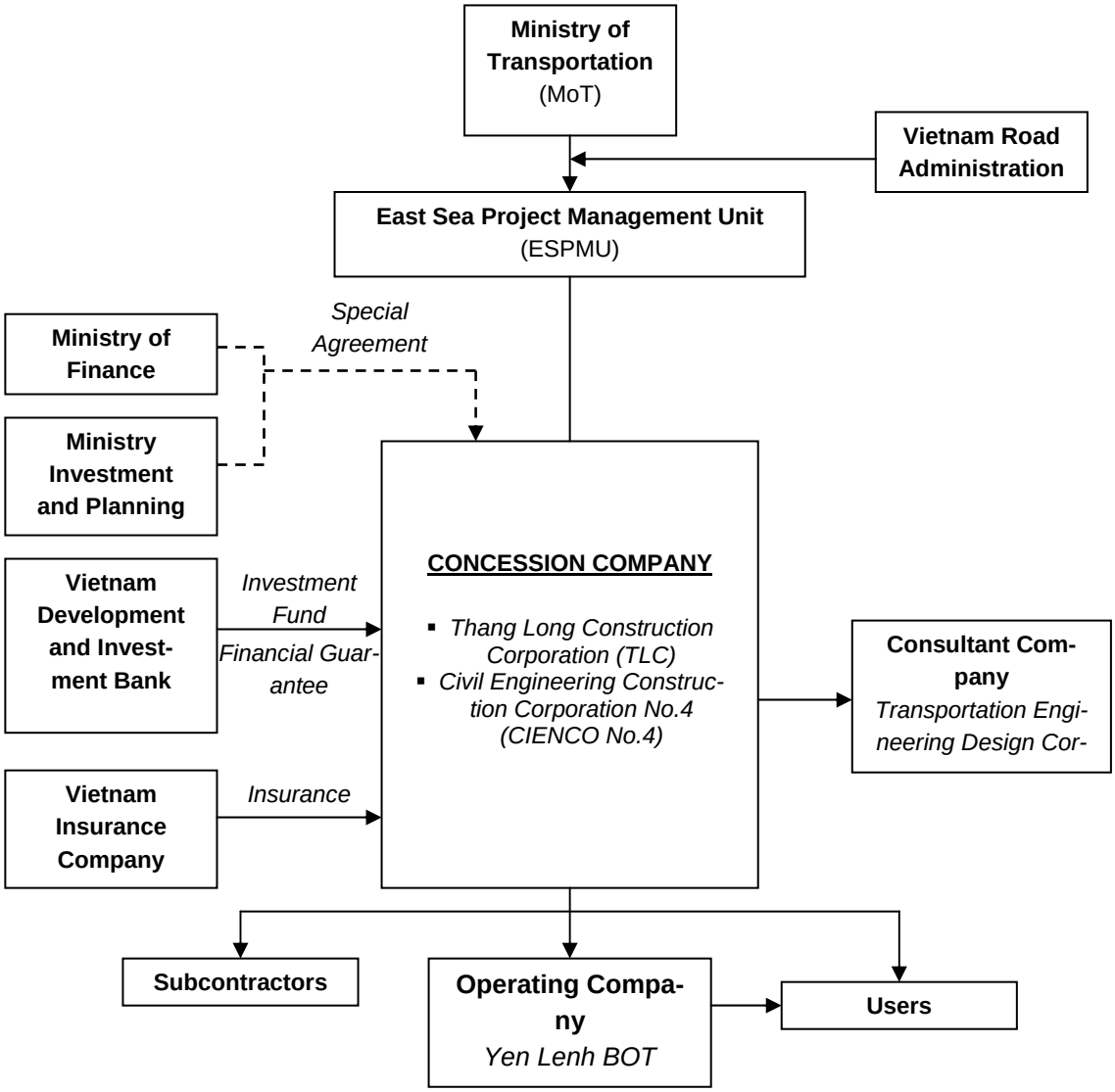

Figure 1 – Structure of stakeholders in the Yen Lenh BOT Bridge Project, Source: East Sea Project Management 2002

3.3.2 BOT Project Risk Identification

As part of a main research that has an objective to assess the relationship between proper risk allocation and project success, Ninh[5] carried out this case study research on the Yen Lenh Bridge BOT project to assess the stakeholders' perspective on risks and opportunities in the project. Questionnaire surveys were carried out as part of the data collection process with a purpose to discover the types of risks that are considered by the project's stakeholders to may influence or have an impact on the efforts to achieve a successful project. In addition to that, the stakeholders were also requested to determine the level of impact that these risks may have on the project so that the risks can be ranked based on their level of impact from the perspective of each of the stakeholders.

The target of this questionnaire survey includes government officials, financers (i.e. investors, bankers, etc.), insurers, consultants, contractors and subcontractors. Forty questionnaires were distributed and 35 questionnaires were returned, making the return rate to be approximately 87.5%. The respondents consist mostly of managers since they are considered to have more comprehensive knowledge on various topics such as management, technology, finance, organization, etc., thus making them as a reliable source of information. Moreover, about 54.3% of these respondents have at least 10 years of experience, therefore considered to have substantial knowledge that are relevant to this kind of project.

As a result of the survey, top ten risks that are considered to have the ability to influence BOT infrastructure projects in Vietnam are as follows:

1. Land acquisition delay
2. Delay in approval from government agencies
3. Risk of transportation network in region influencing the BOT project
4. Cost overrun
5. Unrealistic forecast on future economic development and demand of the society
6. Increasing inflation rate
7. Incorrect analysis of ownership duration
8. Interest rate fluctuation
9. General corruption and untrustworthiness of public official
10. Actual traffic revenues are lower than estimated

Each of these risks is discussed in more detail in the following sections.

3.3.2.1 Land Acquisition Delay

Land acquisition risk has always been considered as one of the risk that could have a significant impact on the overall success of an infrastructure project. On-time land acquisition is very important since a slight delay in the acquisition of only a small area of the land that is a section of a project could affect the entire schedule and viability of the project. In order to minimize this risk, the Vietnamese government had improved the existing land law so that it will enable the government to immediately acquire the required land for highway development. However, the amended law is still ineffective since land is still considered as a state subject and due to the time-consuming process of the acquisition process itself. Depending on the size of the project and the amount of political support given by the government towards the project, the land acquisition process normally will take one to three years. Figure 2 illustrates the current land acquisition process in Vietnam.

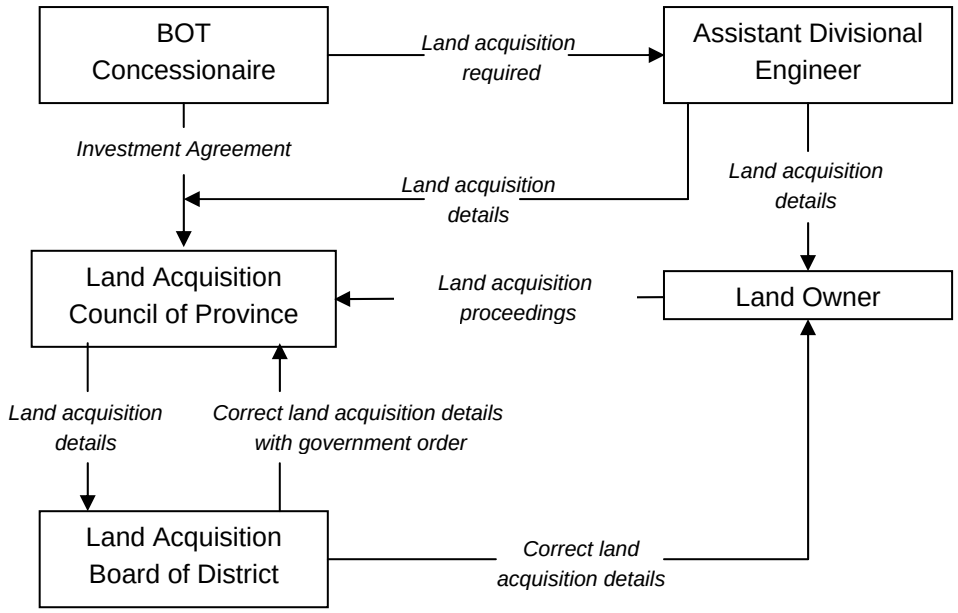

Figure 2 – Land acquisition process in Vietnam, Source: Ninh (2006)

In addition to that, the land acquisition process could also be delayed due to various reasons such as breach of agreement between the relevant stakeholders (private sector, government and land owners), legal suits for compensation, land owners' rehabilitation and resettlement issues, environmental issues, public interest litigation, etc. In the case of Vietnam, many infrastructure

projects, including this project, had to cope with the following issues in the past few years:

- The proposed compensation land price by the government is always lower than its actual market price, but the land owner must accept this condition and have no bargaining /negotiation power. Therefore, it is impossible for the land owners to purchase a new land with the same value at that price.
- There are differences in terms of land compensation price between provinces because each province has different legal documents or local law/regulations. Therefore, if a project is located in more than one province, there is a possibility that the compensation price for the land used by the project could be different. This condition could result in law suits made by those land owners who received less land compensation amount.
- In the case where the land owners are farmers, they usually turn out to be unemployed after they receive their compensation since their compensation amount is insufficient to purchase similar type of land and the government does not possess this type of land to compensate them with.
- Some areas were declared being mistakenly compensated by the government officials who were involved in the acquisition process, which result in a reduction of land compensation price, thus presenting an opportunity for corruptions.[8]
- Coordination between government agencies is very week. Each government agency/department has their own development plan and most of their projects were initiated and constructed with very little or even without synchronization with other departments, therefore resulting in a competitive environment between government agencies instead of a supportive environment.

3.3.2.2 Delay in Approval from Government Agencies

For most of the time, the Vietnamese government does not grant an approval on project-related issues on-time and sometimes they even cancel those that had been approved previously. Such condition makes the approval process a very time-consuming practice and could result in a delay on the overall project development process. Moreover, the lengthy approval process is mostly due to several causes such as the unprofessional and incompetence of the government officials, poor implementation of the law and regulations

by the government, complex and bureaucratic approval procedures, and decentralization with unclear responsibility provision which creates unnecessary requirements from many divisions and levels for just one simple problem in a project.

Looking at this situation, it is clear that most of the problems originated from the government, both in terms of the officials as well as an entity/organization. This is due to the fact that the recruitment process of government officials is not transparent, and is mostly based on the arrangements made by the ruling government. Therefore, most of these officials do not have the proper understanding regarding their post because their qualifications are mostly irrelevant and sometimes even under-qualified for their job positions.

Moreover, many current laws and regulations have become obsolete because they were not able to control the current actual demands and that some of these laws and regulations can only be applied in general cases and impossible if not difficult to be applied to specific cases due to their poor content. Also, some of these laws and regulations are updated to quickly and went through a series of amendments, thus making them difficult to be applied practically. This condition had also contributed in the approval process performed by the government.

3.3.2.3 Risk of Transportation Network in Region Influencing the BOT Project

Since the revenue gained by the concessionaire significantly depends on the amount of tollway users, therefore it is very important to discover and understand the possible causes of volatility in toll revenues. In Vietnam, quite a number of small and isolated stretches of tolled highways, by-passes and bridges, which were developed under BOT scheme, were not functioning to its capacity because there are still some remaining bottlenecks in the undeveloped area of the highway. In addition to that, the revenue of these tolled infrastructures are also threatened by the availability of alternative roads, the construction of competing routes as well as the poor and deteriorating condition of the connecting roads.

This Yen Lenh Bridge is a clear example of how conditions such as mentioned above influenced its revenue. One of the reasons for the development of this project was to increase the economic growth in the Hai Nung and Ha Nam province because it was expected to attract a large number of trucks and containers going to the central region of Vietnam from Hai Phong Port, which in turn would attract investment projects along the road. Moreover, vehicles going through Ha Noi, which has been overloaded, were also expected to be

reduced significantly through the development of this project as an alternative route. Unfortunately that is not the case. Not only that it is still unable to reduce traffic jam in the Ha Noi region, it is also unable to generate its estimated revenue. Since the central provinces have their own sea-ports, they have no demands for transporting goods from Hai Phong Port, thus resulting in a wrong estimation on the number of vehicles passing through this bridge. In addition to that, the road connecting to the bridge has not been upgraded nor expanded and therefore reducing the possible number of vehicles passing through. As a result, the project has not been able to attract its predicted revenue as expected in its feasibility study as well as functioning to its full capacity and serving its intended purpose.

3.3.2.4 Cost Overrun

Cost overrun can be caused by various things such as the inability to strictly implement the findings from the feasibility study using the right procedure and the inability to identify all the factors that have negative impact towards the project, thus making it difficult to be kept under control. Factors that are considered to have the capability to create a disadvantage towards the project are inappropriate design, lack of resources, disputes, site conditions, management errors, human resources incompetence, changes in the scope of work, unpredictable weather conditions, unsuitable technology implementation, political and economic instability, etc.

Most of infrastructure projects that are developed in Vietnam also go through the same experience, including this project. Although the quality of the design work conducted by Vietnamese contractors have shown improvement in recent years, errors on technical design as well as technology implementation still exists though not as much. As a result, the amount of additional cost to carry out repair and additional work is still significant. Since the procedure for applying, approving and authorizing repair and additional work is still complicated due to the ineffectiveness of the government agencies, it will cause further delay on the overall project completion and result in an even larger additional cost.

Poor management of the concessionaire was also one of the main causes of cost overrun in this project. The concessionaire of this project was forced to find a solution to subsidize the project's contractors since these contractors had to bear additional cost due to inflation which caused an increase in the price of construction materials, as agreed by both the concessionaire and contractors. However, this situation occurred in the first place because most of these contractors are the branch company of the investors. Therefore, the

government was given no choice but to provide these additional costs and extend the duration of concession time in order to cover this cost overrun.

3.3.2.5 Unrealistic Forecast on Future Economic Development & Demand of the Society

It is very important to know whether the public (toll users and community) have the proper knowledge, understanding as well as acceptance towards the commercialization concept of toll. Through this information, the developer of the proposed tolled infrastructure projects would have a clearer view regarding the actual demand for the project which greatly depends on its clear economic value. Unfortunately, the Vietnamese government, just like any other host government, tends to have an optimistic forecast than the private investors, thus generating a bias attitude on the actual demand of the society while also creating an unrealistic forecast on the ability of the project to instigate future economic development.

This condition is worsened by the fact that there has not been any adequate research that studies the elasticity of demand due to the introduction of tolls in the Vietnam road projects. Consequently, very few road projects in Vietnam that were developed under a BOT scheme have been able to realize their projected traffic demand. It was discovered through this case study that total traffic demand loss usually varies between 20-30%. The survey carried out in this case study also revealed that the demand risk has a very high severity impact on Vietnam BOT projects. Factors that cause this risk to occur in this project are the development or renovation of alternative toll-free road and over estimation on the socio-economic development of the surrounding region, with economic recession considered as the major cause. In addition to that, forecasting errors in the traffic projection also played a role in generating an incorrect demand analysis for this project.

3.3.2.6 Increasing Inflation Rate

An increase in the inflation rate would result in a significant amount of reduction on the value of money obtained. In other words, an increasing inflation rate could reduce the profit that should have been acquired by project investors, or even worse, result in a total loss. Therefore, it is highly essential to have an accurate forecast on the inflation rate so that all the involved stakeholders would not experience any unnecessary loss.

However, this project had to experience it. A 5% inflation rate was determined for this project based on the inflation rate data from 1995-1999, where the

annual average inflation rate was approximately 5.06%, and it was used since the feasibility study was carried out from 1999-2000. Unfortunately, the inflation rate increased rapidly in 2004 and 2005 into 9.5% and 8.3% respectively. As a result, the prices of main construction materials also increased, thus affecting the contractors which in turn causing an increase in the overall construction cost by approximately 30% from the initial budget.

3.3.2.7 Incorrect Analysis of Ownership Duration

The determination of the appropriate length of a concession period must consider the interest of both the concerned government and investors. In other words, one party must not be given more privilege at the expense of the other. Although longer concession period will provide private sectors to gain more benefits, however, this condition may induce loss on the government. On the other hand, most investors will most likely increase the service fees, if not reject the agreement, should the concession period is too short. As a result of this situation, the public (end-users) will most of the times suffer the consequences by paying a high price for using such facility.

In Vietnam, the approved technique for calculating the concession period is through the financial method which has been applied in most projects of this kind. A discount rate (*r*) is used in this method to take into account the effects of inflation, such as an increase in the operation and maintenance cost. Particularly for this bridge project, the discount rate was determined at 6% per year which means that the investors of this project will not be able to fully recover their capital investment should the inflation rate increase over 6%. In reality, the inflation rate experienced an increase during the construction stage of this project as mentioned in the previous section. Hence, the future financial condition of this facility appeared to be doubtful since the concession period was incorrectly determined.

3.3.2.8 Interest Rate Fluctuation

Instability in the interest rate would cause an undesirable financial condition of all the stakeholders in the project in terms of their expected revenue, as well as influencing the country's overall economic value. For most of the times, private sectors are directly and negatively affected by an increase in the interest rate since they usually have an agreement with banks or other financial institutions to acquire loan during the project implementation. Such increase would then reduce the private sector's potential profit. Moreover, private sectors would also have to pay additional interest if they are unable to

make the loan payments on time. Unfortunately, the government of Vietnam tends to make late payments towards the contractor. As a result, the private sector, especially the contractors, must accept the consequences of this interest rate risk even though they were not the source of the problems that are affected by this risk.

3.3.2.9 General Corruption and Untrustworthiness of Public Official

Corruption is always a threat in infrastructure projects, especially if it is in developing countries such as Vietnam. This was confirmed by the UNDP[8] report stating that corruption by government agencies are common in Vietnam and that it has spread far and deep into many government departments. As an example, two government agencies in Vietnam that are related to infrastructure projects development are ranked 5th and 7th in terms of most corrupted department, and they are the Department of Construction and the Land Administration Agency, respectively. According to Klitgaard[9], corruption can be represented into a formula where *Corruption = Monopoly + Discretion – Accountability*, therefore it requires a transparent administration and honest officials in order to minimize if not prevent corruption in these kind of projects. Although corruption could generally cause quite significant loss, however, it is considered to have less severe impact in the Vietnam construction industry compared to the other developing countries in the region. The reason for this could be because the majority of businessmen and entrepreneurs in Vietnam have become accustomed to corruption, thus making it as a common and acceptable practice.

3.3.2.10 Actual Traffic Revenues Lower than Estimated

The main source of revenue for tolled infrastructure facility operators is the amount of vehicles using the facility. The more traffic passes through the facility, the more revenue it will be able to obtain. Therefore it is very important to have an accurate estimate of the potential traffic that would use the facility so that an estimated revenue can be calculated which is one of the important factors that is used to determine the price of the toll-fees as well as the length of concession period.

However, most of the times both the government and private sectors in Vietnam failed to produce an accurate estimation and therefore resulting in a

revenue shortfall due to insufficient traffic. Six major reasons have been discovered as the cause of traffic revenue shortfall in Vietnam tolled infrastructures, they are:

1. The existing transportation network in the region creates competing environment instead of complementing.
2. Unrealistic and inaccurate forecast on future socio-economic development and demand.
3. Development of competing infrastructure by other agencies.
4. Unwillingness and resistance by facility users to pay the determined toll fees.
5. Availability of regular infrastructures which provide similar service and free of charge.
6. Insufficient road condition that are linked to the infrastructure.

Since there was quite a significant difference between the estimated and actual traffic flow, the concessionaire of this project suffered the consequences in terms of loss in its cash flow for a total of approximately 3,657 million VND, which is equal to 19.46% revenue in 2005. This revenue shortfall further affects the debt servicing of the concession company and also resulting in a lack of fund for the operation and maintenance work of the facility.

3.3.3 Risk Perceptions in the Project

As previously discussed, infrastructure projects that were developed under a BOT scheme involve a variety of stakeholders, i.e. government agencies, private companies, financial institutions, insurance companies, users, community, etc. Each of these stakeholders has different objectives which therefore influence their perceptions on the risks related to these kinds of projects. In other words, different stakeholders may have different definitions of risks and these risks may also give different meanings for each stakeholder. Some risk can be considered to have positive impact for a stakeholder while it can also give a negative impact for the other stakeholder in the same time. Moreover, some risks can even have different meaning to the same stakeholder at different times or in different circumstances. As a consequence, each stakeholder might wish to implement different kinds of strategy to manage these risks that may occur in the project. Therefore, it is very important that all project stakeholders acknowledged and understand the differences of each other's objectives so that they may have a common and identical understanding of these risks. If the project stakeholders do not have the mutual un-

derstanding of these project risks, mismanagement of risk will most probably occur in the project.[10]

Questionnaire surveys were conducted to know the stakeholders' perception of risks that occurred in this case study. The survey result indicates that approximately 80% of the respondents considered risks only as a threat while around 14% considered them as both opportunity and threat. This result reveals that the majority of respondents has adverse mind-set towards project risks and considers them as obstructions rather than challenges that could be overcome. Moreover, the result also shows that 54.3% of the respondents had experienced conflicts with other project stakeholders in terms of risk perception which were mostly caused by the lack of understanding between the stakeholders. This lack of understanding generally took place because each of the stakeholders has different objectives, interests, approach as well as values. In other words, the communication between the stakeholders is very poor thus resulting into misunderstandings.

The stakeholders in this case study were categorized into three groups, depending on their characteristics, roles and purposes in the project. The first group is the *Government* group, which consists of government agencies, departments and their officials. The second group is the *investors* group, with investors, lenders and insurers included in it, while the third group is the *contractor* group that includes contractors, sub-contractors and operators. With respect to the government's point of view, the risk that is considered to have the most threat in this project is the *investor's focus on the benefits of construction rather than the profit*. Although this is considered to be quite extraordinary, this is what actually happened in Vietnam. Since the majority of infrastructure investors in Vietnam are somehow related to a state-owned company or is a joint-venture company which the government has the major control, the government officials in-charge for this project tend to conduct as many new projects as possible within their tenure in the department so that they could gain high rewards/benefits. By doing this, they are actually not considering nor attempting to manage the company, which has been given the license and authority to conduct the construction of the infrastructure project, to sustain in the long-term. To support their purpose, they performed feasibility study and presented a very optimistic data as an effort to acquire the approval from the relevant authorities.

Other risks that are also considered in the top-five risks in infrastructure projects by the government is the *poor financial resources of investors and contractors* (2nd), which is the main reason for poor construction quality, construction delay and project cost overrun, *unrealistic forecast on future economic development and demand* (3rd) and *poor construction quality* (4th), which influence the traffic flow

while also increasing maintenance cost and reducing the expected construction life time, and it is mostly due to inappropriate technical application, bad material, construction management inefficiency and corruption. Moreover, *inappropriate facility maintenance* (5th) which is causing the quality of the infrastructure to be decreasing rapidly is due to the investors desire to reduce the maintenance cost as much as possible with the lowest acceptable level of quality. Although the government tried their best to control the construction quality through law, criteria and investigations, nevertheless their effort is still insufficient to improve the quality as expected.

In terms of the investors' point of view, *the lack of an appropriate toll adjustment mechanism* is considered as the most threatening risk since it is beyond the ability of the private sector to control. In Vietnam, the mechanism for toll fee adjustment is under the authority of the Ministry of Finance. Concessionaire can only offer toll-infrastructure in a constraint scale and they have to wait for approvals by many Government agencies whenever they wish for toll adjustments. Furthermore, *transportation network in region influencing the BOT project* (2nd) is considered by the investor to be the reason for traffic revenue shortfall and uncertain transportation demand, which result in a lower revenue flow than expected. As for the risk of *incorrect analysis of ownership duration* (3rd), it very much depends on many unpredicted variables in the long-term as well as mathematical and financial method, as discussed in the previous section, however, it is a major key for investors either to succeed or fail throughout the project. The risk of *delay in approval from government agencies* (4th) and *land acquisition delay* (5th) are more related to political risk rather than financial risk, yet they directly affect the investors' economy. For most of the times the Vietnamese government, both central and local, do not approve project related issues on time, even though they realize that time is very crucial in any project, especially BOT projects. These issues were also experienced in this case study, thus reducing the investors' confidence to participate in future infrastructure development.

Unlike the first and second group that have to face the project risks in a long-term period, the third group that consists of contractors and subcontractors is confronted with risks only during the construction stage of the project, which generally proceed for 2-3 years. As for the operators who are also classified into the third group, they are usually being involved beyond the construction stage. From their point view, the *delay in approval from government agencies* and *general corruption and untrustworthiness of public officials* are ranked as the 1st and 2nd most threatening risk in this case study, respectively. As mentioned previously, approval from the Vietnamese government requires a thorough procedure just like any other government agencies, but with unnecessary bureaucracy and complexity. In order to achieve the required progress, every

infrastructure project requires a strong support from the government. Unfortunately for contractors that are involved in infrastructure development in Vietnam and particularly in this project, they are often asked to go through difficult and un-transparent procedures. This is due to the unprofessional and incompetence of the staff of local government regulatory agencies, unclear decentralization of responsibility within the agency and relatively poor law implementation along with common corruption practices and high untrustworthiness of these government officials. The unconvincing support by the government is also shown through the *uncertainty in the critical raw material price* (3rd). As the owner of the project and the one who has the authority to make strategic decisions, the government should have provided more cooperation and be a bit more encouraging by assembling supportive regulations. Without such support, the contractors are faced with the condition where these material prices go through a significant and unmanageable increase and they are forced to find a solution for themselves in order to at least minimize the loss. *Delay in financial closure* (4th) is also the kind of risk that is considered as a threat by this group, and it is one of the consequences of delay in the approval from government agencies. Moreover, in many situations the contractors are forced to wait for the land acquisition process to be completed by the government while being instructed to start the project construction at the same time, thus making the *land acquisition delay* risk to be ranked 5th by this group. This condition creates a financial burden towards the contractors which include labor cost, cost of non-working machine, bank interest and not to mention a waste of time. Table 1 compares the different perceptions on the top-five important risks between these three different groups of stakeholders in this Yen Lenh Bridge BOT project.

Table 1 – The perceptions of top-five important risks in the Yen Lenh Bridge BOT project, Source: Ninh (2006)

Rank	Risk Factors based on the perception of		
	Government	**Investors**	**Contractors**
1	Investor's focus on the benefits of construction rather than the profit	The lack of an appropriate toll fee adjustment mechanism	Delay in approval from government agencies
2	Poor financial resources of investors and contractors	Transportation network in region influencing the BOT project	General corruption and untrustworthiness of public officials
3	Unrealistic forecast on future economic development and demand	Incorrect analysis of ownership duration	Uncertainty in critical raw material prices
4	Poor construction quality	Delay in approval from government agencies	Delay in financial closure
5	Inappropriate facility management	Land acquisition delay	Land acquisition delay

3.4 Governance Issues in Project

Governance can be defined in many ways. In general, *governance* is defined as the process of decision making. The decisions made can be either implemented or not implemented, and different organizations may approach governance issues differently. As a project developed under a BOT scheme, the Yen Lenh Bridge has short-term as well as long-term purposes. In other words, it has management concerns because it has to deal with tactical issues that relates to day-to-day operations while also having governance concerns because it deals with monitoring and overseeing strategic direction as well as strategic decision-making.[11] Therefore, this kind of project requires a strategic approach in addition to the common management approach to ensure long-term success. Nevertheless, it is important to discover what kind of governance problems is the project experiencing and what are the sources of these problems in order to determine the most strategic resolution. For that reason, governance issues that occurred in this project is discussed in more detail in this section.

Governance can be used in various contexts such as corporate governance, international governance, IT governance, including *project governance*. A good project governance (GPG) concept was developed by Abednego[12] to help evaluate the performance of projects that are developed under a PPP

procurement system. Based on this concept, key components of good project governance were determined, namely *Fairness, Transparency, Accountability, Sustainability* and *Effectiveness/Efficiency*.[13] These components are further broken down into sub-components and each sub-component is also broken down into key analytical issues as shown in table 2, which will be used to identify the governance issues in this project.

Table 2 – Detailed breakdown of GPG key components, Source: Abednego & Ogunlana (2006)13

Fairness	Project design & planning document	Identification of expert(s) responsible for project design and planning
		Project design and planning development process
		Administration process for design/planning/schedule
	Contract document	Contract document development process
	Government regulations/laws/policy	Existing government regulations related to private sector participation
		Existing legal system and laws related to private sector participation
		Existing policies related that influence construction projects with private sector participation
	Project procurement	Private sector selection process
		Proposal evaluation method
		Evaluation/assessment criteria
		Project procurement strategy/method
Transparency	Information Management	Information management system
		Information classification
		Means of communication
	Financial Management	Financial status
		Project financing/investment strategy
		Incentive/compensation program
		Payment mechanism/procedures
Accountability	User & community participation	Public participation process
		Project demand analysis
		Economic and social impact analysis
	Quality assurance	Construction supervision
		Sub-contractor selection process
		Value engineering application
	Management capability	Project management training system
		Project management training system
		Company's experience level
Sustainability	Stakeholder management	Infrastructure development plan
		Stakeholder management approach
		Coordination procedure and implementation
		Conflict resolution approach
	Operational and maintenance management	Infrastructure operation strategy
		Infrastructure maintenance program
	Organization structure	Organization's decision-making approach
		Organization's hierarchy system
Effectiveness and Efficiency	Project monitoring and control system	Progress report system
		Project review process
	Project administration	Documentation process

3.4.1 Fairness

In terms of project design and planning development process, the responsibility actually lies with the Vietnamese government. Even though the feasibility study in this project was carried out by the concession company, however, it was under the control of the government through its Ministry of Transport. The government officials who were also given the authority within the concession company to make strategic decisions did not make an effort to manage the company and help it to sustain in the long-term; instead they tend to gain as much benefit as they can for themselves during their office term. In order to do this, the result of the feasibility study they carried out would mostly produce optimistic data to maximize the chances of being approved by their superiors in the relevant government agencies. As a result, the project design and planning work was actually based on biased information, thus making it unreliable. Unfortunately, the contractors and the concession company have to accept the consequences of these unprofessional and incompetent behaviors of the government officials.

Likewise, the Vietnamese government also failed to provide the necessary support in the form of regulations, legal systems and policies. Claims and disputes are common incidents during infrastructure project development, including this particular project. Most of these claims and disputes were the results of the government's duality and inconsistency. By this, it means that the same set of regulation and policies are defined and interpreted differently by the government so that it may serve their purpose rather than letting it function for its intended purpose, hence the duality form. And since the legal system in the country was also set up and structured by the government, it is giving more advantage towards the government. Despite the fact that the law should exercise equality among all parties, however, the government generally exploits and make use of the system that they had set up to their advantage, thus the inconsistency. Therefore, it truly shows that fairness was not achieved in this project.

3.4.2 Transparency

Another kind of problem that occurred in this project was that there is a lack of understanding between the stakeholders in terms of risk perception. Since each of the stakeholders has different goals, objectives and concerns, these things influence their form of perception on which risks are considered to have the highest potential threat. As a result, each of them approached these risks with different strategies based on their needs and abilities, and in

many occasions it creates conflicts among the stakeholders. Therefore, the information regarding these differences should have been disseminated properly between the stakeholders through better communication in the first place in order to prevent future conflicts. A comprehensible information management practice and constant communication is then very much required to avoid any unnecessary conflicts between the stakeholders.

In addition to information management concern, this project also experienced some problems in terms of financial management. As previously mentioned, this kind of project in Vietnam is mostly initiated and proposed by government officials. Unfortunately, these officials tend to exploit their authority for their own benefits. As a result, the project development plan and investment strategy was flawed since it is based on biased information. The risks that were neglected before began to create problems and subsequently both the concessionaire and the government have to share this burden. Due to this situation, the consortium then had no choice but to request the government and make them agree to convert this previously BOT scheme project into Build-Transfer (BT) type project. As an effort to help the investors that has an important role in providing the necessary resources, the Vietnamese government through the Ministry of Finance suggested the Prime Minister of Vietnam to approve this proposal for converting the Yen Lenh Bridge project from BOT to BT scheme. Therefore, it is clear that there was no proper planning in terms of project financing for this project which then resulted in an ambiguous investment strategy, poor construction quality, construction delay and cost overruns. These conditions also prove that there is a lack of transparency within the project.

3.4.3 Accountability

The accountability of this project is also considered to be substandard. This condition is confirmed by the findings in the previous section where the unrealistic forecast of future economic development and demand, which is considered as one of the most potential risk, really occurred during the project lifetime. Since the forecast is based on overly optimistic data, the revenue for this tolled bridge which is primarily dependent on the amount of vehicles using the facility and the socio-economic impact of this facility on the region had also become over-estimated. In reality, the facility was not able to attract the expected revenue due to insufficient traffic. Such insufficiency is mainly caused by the existence of a competing transportation network around the region which is ironically developed by other government agencies, and also due to the inadequate road condition that links to the facility. To make mat-

ters worse, the expected economic development did not really materialize in the area around the facility which was previously predicted to gain an increased land value due to its supposedly strategic location and high demand. In other words, the government is considered to be significantly accountable for the facility's inability to neither generate the necessary returns nor produce the required impact around the region.

3.4.4 Sustainability

Coordination between government agencies as well as between government agencies and private parties was also a problem in this project. This lack of coordination is confirmed by the competing circumstances especially among the government agencies in relation to infrastructure development, rather than constructing a supportive environment through an accommodating and collaborative partnership. As a result, the nationwide infrastructure development plan is not synchronized and an achievement by one party could bring failure for the other. What is more distressing is that even though the government as well as the other parties acknowledged this situation, there has only been very little effort given to solve these kind of problems through stakeholder management approach. Consequently, conflicts are inevitable. However, since the existing and practiced conflict resolution approach in Vietnam is still insufficient and unable to impose equal treatment, it affects the project sustainability in the long-term while also discouraging future private participation which in turn would jeopardize future infrastructure development.

Moreover, the sustainability of this project is also imperiled by high maintenance cost which is due to the inefficient and ineffective construction process as well as corruption resulting in a poor construction quality. This condition is then worsened by the inappropriate application of the maintenance program and the reduction of maintenance cost by the investors to the lowest possible condition, thus rapidly decreasing the infrastructure quality. Consequently, the project will suffer in the long run while still causing continuous problems for all its stakeholders.

3.4.5 Effectiveness and Efficiency

In terms of effectiveness and efficiency, this project actually needs to improve its administration practice, especially concerning its documentation process. According to the questionnaire surveys conducted in this project, one of the most important factors that restrict the risk identification process is the lack of historical information regarding risk sources. Due to this situation, it is difficult for the government and future private investors to predict the potential risks that may occur in future infrastructure projects thus preventing them from making an accurate estimation as well as proper planning. Without having the required information regarding the risks and their consequences, it will also hinder the stakeholders to approach projects with the most appropriate risk management strategy. Hence, it is important to have proper project documentation in order to achieve an effective and efficient project.

3.5 Conclusion

Infrastructure development in Vietnam is believed to have a significant contribution towards the country's increasing economic growth. However, the situation would put Vietnam to be ineligible for preferential loans from donors, especially since its GDP per capita had exceeded the permissible threshold of the donor community. As a resolution, the private sector is encouraged to be more involved by providing the necessary resources, especially capital investments, for infrastructure development in Vietnam. In order to have more private sector participation, it is very important to have full government support and clear understanding among the stakeholders regarding their differences on risk perceptions, such as the potential risks, possible sources of these risks as well as their preferred risk management strategy. Therefore, it is necessary to discover the risk perceptions of each of the project's stakeholders.

The stakeholders of this project are categorized into three major groups, namely *government* which consists of government agencies and their officials, *investor* which consists of investors, lenders and insurers; and *contractor* that includes contractors, subcontractors and operators. Each of these groups ranked the top-five important risks differently, based on their goals, objectives, values and concerns. The differences in goals, objectives, values and concerns influenced them in forming the perception on which risks are considered to have the highest potential threat. Accordingly, each of the stakeholders approached these

risks with different strategies based on their needs and abilities, and in many occasions it creates conflicts among themselves.

Moreover, the Yen Lenh Bridge has short-term as well as long-term purposes. In other words, it requires a strategic approach in addition to the common management approach to ensure long-term success. Therefore, discovering what kind of governance problems is the project experiencing including the sources of these problems is essential to help determine the most strategic solution. Good project governance (GPG) concept was developed to help evaluate the performance of projects that are developed under a PPP procurement system. Five key components of good project governance, namely *Fairness, Transparency, Accountability, Sustainability* and *Effectiveness/Efficiency* were determined based on the concept. They are further broken down into sub-components and each sub-component is also broken down into key analytical issues 2, which is used to identify the governance issues in this project.

This project has significant governance issues. In terms of fairness, the results of the project's feasibility study was overly optimistic since the government who was also assigned into the investors consortium was concerned only for its own benefit rather than putting an effort to generate profit for the concessionaire. Both contractors and investors are then forced to accept the consequences as a result of improper project design and planning since it was based on biased information. Moreover, the government also did not provide enough support through the existing regulations, policy and applied legal system. On the subject of transparency, it was discovered that there was a lack of understanding between the project stakeholders due to the ineffective information management practice and improper communication among themselves. In addition to that, there was also no proper planning in terms of project financing for this project which resulted in an ambiguous investment strategy, poor construction quality, construction delay and cost overruns. Therefore, the project is considered to have failed in carrying out proper financial management. As for accountability measures, it is also considered to be substandard. The revenue obtained by the facility was not as expected and the socio-economic development did not occur as anticipated due to unrealistic forecast of future economic development and demand. This condition could actually be prevented if a more thorough feasibility study was conducted and a more extensive project demand as well as socio-economic impact analysis was carried out. In addition to that, lack of coordination between the project stakeholders had lead to an inappropriate nationwide infrastructure development and also a large number of unnecessary conflicts. However, due to the currently insufficient conflict resolution approach in Vietnam, it affects the project sustainability in the long-term since it will discourage potential private investors to participate in future infrastructure develop-

ment. The administration practice, especially concerning project documentation process also requires improvement so that information on all of the risks that occurred in the project, including their sources and consequences can be compiled and used for future reference. By having this kind of information, the development of future projects with similar characteristics can be carried out more effectively and efficiently.

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4 CASE STUDY III – "WARNOWQUERUNG ROSTOCK" EXPERIENCES FROM THE FIRST GERMAN PPP ROAD PROJECT UNDER THE F-MODEL

by Prof. Dr. Hans-Wilhelm Alfen and Andrea Frank-Jungbecker, Bauhaus-Universität Weimar

4.1 Project Background

The tunnel Warnowquerung in the city of Rostock is the first PPP road project realized under the German F-Model. The establishment of the act of 1994 on Federal Private Road Financing (*Fernstraßenbauprivatfinanzierungsgesetz, FStrPrivFinG)* represented the legal basis for the project and represented the precondition for participation of user financing of road infrastructure [1]. To realise the project without substantial participation of the German Federal Government the road was rededicated so that the city of Rostock became the project executing and concessioning authority.

Primarily plans for a tunnel under the river of Warnow trace back to the 1960s when they became part of the urban development plan for Rostock [3]. In the year 1992 the tunnel was included into the Federal Transport Network Plan but assigned to projects of further demand and therefore of lower priority. Shortly after the act of 1994 for private sector participation had passed the citizen council of Rostock decided to realise the project as concession under the Public Private Partnership scheme [2]. A tender procedure was launched internationally. It comprised the concession for right of design, financing, construction, operation, maintenance and levy of toll. The French contractor Bouygues Public Traveaux was selected as preferred bidder and accepted the bid. At that time Bouygues already disposed of respective experiences in France and Europe as well as internationally.

As technical solutions to cross the river Warnow different types of bridge and tunnel constructions had been analyzed. Both tunnel and bridges seemed to be feasible from a functional and economic point of view. Still, due to geographical reasons that influenced the slope of the ramps to the construction a tunnel was preferred. Moreover, a bridge would have required the construction of high embankments and close rows of columns. Due to urban planning reasons this solutions seemed less acceptable [3].

Construction started in December 2001 and operation in September 2003. Looking back to a few years only of experience in private solutions in the road

sector in 2006 it becomes obvious that Germany is a latecomer in comparison to other European countries and more then ever on international level.

4.1.1 Project Objectives

For years Rostock's cross-town link faces unbearable traffic conditions with continuous congestion. This situation burdens the citizens, the local economic development and environment of the whole region. A ring road in the north and south of Rostock was meant to release and improve the situation. To close the bypass the construction of the tunnel seemed to be crucial [2].
The construction of the tunnel has a great importance for the local economy with regard to a forward-looking and effective road infrastructure. Infrastructure conditions directly influence economic success and attractiveness of the respective location and it means that Warnowquerung strongly contributes to generate economic value for the city and the region [2]. The importance becomes even more obvious as this tunnel was the first project to be designed, build, financed and operated by a private party and it also represents the first German project to be refunded by user finance. In accordance to the contract between the city of Rostock and the project company the duration of the concession was stipulated for 30 years.
Vital for the decision for a private solution was the fact that the project had only be assigned to the Federal Transport Masterplan as subordinated demand. The rededication of the road crossing the river to the responsibility of the city of Rostock represented an essential step for the city to be able to solve the traffic problem on its own behalf and to decide for a the realisation as Public Private Partnership.
Advantages for the city are [4]:

- Relief of the urban road network as transit traffic can choose the alternative ring road.
- Traffic targeting the centre of Rostock can be distributed via the appropriate exits on the ring road without passing through the centre.

The new road system of the ring road including the tunnel circling the city centre on both sides of the river creates advantages of location by shorten the travelling time and distances. This strengthens the local economy as the seaport of Rostock and industry that has settled in the interior take advantage as well as tourism in Rostock and surroundings.

4.1.2 Project Scope and Site

In the area of Rostock the river Warnow has the shape of the letter U. The historical city centre is located in the south. Due to these geographical circumstances the existing roads followed the urban structure leading the traffic through the middle of the centre and the surrounding areas. Also, since the city is located very centrally with respect to flows of traffic up to 60.000 vehicles – urban and national traffic- using the route through the centre every day [4]. This volume of traffic leads to continuous congestions and minimized the attractiveness and possibility of development of the city enormously.

4.2 Legal Framework

4.2.1 Federal Private Road Financing Act of 1994 (FStrPrivFinG) and F-Model

Only after the Act of 1994 had passed for the first time in Germany's road sector the legislator was able to transfer all rights and liabilities of road infrastructure projects to private parties [5]. In accordance with § 2 FStrPrivFinG the act represents the legal basis for a sovereign collection of toll from the users of traffic infrastructure and thus enables the refunding of private commitments.
The model applied under this law is called the F-Model. The F-model is the longest existing PPP model in Germany's road sector. The legal fundamentals are fixed in the Federal Private Road Financing Act. In projects under the F-model the operator is obliged to establish or develop road infrastructure and to maintain and operate it for a period of 20 - 30 years and to hand it over after expiration of this duration to the public in a beforehand defined condition. The operator receives in response the right to raise a toll for refunding of its investment and follow-up expenditures [1]. These toll revenues flow directly from the users to the operators corresponding to a concession. Projects under the F-model are from legal view arranged also as building concession. The operator has to bring up capital for the investment. The Federal Government financially supports the projects usually with up to 20% of the construction costs [6].
The area of application is currently restricted for reasons of the European Law. Accordingly, the application of the F-Model has been limited in 1994 to bridges, tunnels and mountain passes assigned to the classification of multilane federal highways with separated lanes. The restriction of the application to those types of infrastructure projects was necessary since -based on the EU guideline- distances-related fees (toll) in combination with time-related fees (vignette) can be charged in exemptions only, e.g. on bridges, tunnels and

mountain passes. In Germany the so called Euro-Vignette, a time-related fee for heavy vehicles over 12 tons- was applied on highways until September 2003.

In general for the execution of projects according to the F-model the agreement and the co-operation between both the Federal Government and the Federal State are necessary. The respective Federal State is responsible as far as administration of orders for the implementation of the project is concerned. Whereas, the Federal Government holds instruction rights due to the administration of orders and has first to approve and then to disburse a public grant. The competency to stipulate the amount of toll was assigned to the Federal Government in agreement with the Federal State at first. When in 2005 the PPP Acceleration Act, a new act for simplification of German Public Private Partnerships, had passed this clause was revised. Now the respective Federal State is basically responsible for the amount of toll levied [6]. Still, the Ministry of Transport retains control over the decisions by the Federal States.

The planning process for the realisation of a project under the F-Model commences by preparing a feasibility study. In this study project expenses, expected numbers of traffic and related incomes as well as deviation effects that go along with raising toll are assessed. Essential results of the feasibility study are estimations of the project's basic feasibility to be realized under the F-Model as well as amount of toll to be levied and in relation to it the amount of grant.

Awarding of concession under the F-Model is possible at two different stages of the design process. In a so called "conventional design" the concession is awarded after the approval procedure by the public authority so that the private partner cannot take essential influence on the technical design of the project any more. In the so called "idea competition" the concessionaire can suggest alternative solutions for the technical design. Nevertheless, he then is partly responsible for the public inquiry and approval process which in most cases may constitute a serious risk for the concession company. Output oriented service specifications are recommendable to leave space for optimisation and innovation.

During the last years and since act of 1994 a variety of potential projects has been discusses starting with 32 suggestions. Still, on the bases of technical and economical considerations the figure diminished to 17 until 1997 [5]. A revised project list published in 2004 contains seven projects only.

The toll charged under the F-Model is supposed to refund the private capital investment and represents a fee that from a juridical point of view falls in the public fees regulation (*Gebührenordnung*). To calculate the amount of toll for a certain period the following costs are basically to be taken into considera-

tion: On the one hand the depreciation of the activated building cost, on the other hand the costs for operation and maintenance. For both types of costs a fixed price arrangement can be concluded in the concession contract according to §3 Paragraph 5 FStrPrivFinG. The third types of costs are financing costs for debts and return on equity. [7]
The amount of toll to be raised can be calculated by dividing the expected and chargeable costs by the expected traffic amount. It is often criticised that according to the fee regulation all road users have to be equally treated. In that way demand oriented tolling is not possible. Prize differentiations are possible only in relation to time and frequency of utilisation as well as types of vehicle [7].

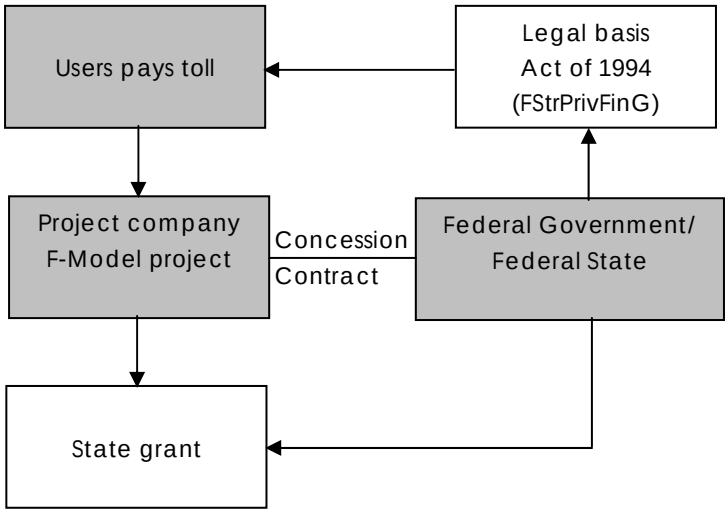

Figure 1 – Structure of German F-Model [5]

Advantages and disadvantages of the F-Modell have been described as [8]:

Advantages

- Early realisation of construction of Federal Highways
- Financial relief of the federal budget depending on the amount of state grant
- Complete user finance

Disadvantages

- Costly toll collection through expensive technology solutions
- Pre-financing of project company leads to high financing costs
- Traffic risks and revenue hard to assess

Up to now two projects have been realised under the F-Model: One of which is the tunnel under crossing the Warnow called “Warnowquerung” in the city of Rostock which is analyzed in this study. Operation started in 2003. The so called “Herrentunnel” in the city of Luebeck is the other project and under traverses the river Trave. In both projects local authorities, the city of Rostock and Luebeck, have tendered and awarded the concession [6].

4.3 Contractual and Financial Framework

4.3.1 Stakeholders and Project Structure

In 1994 the city council of Rostock decided to realize a BOT project based on the German concession model. After the pre-qualification phase a limited invitation to tender had been carried out. The future concessionaire was involved in the project from the beginning throughout the ideas competition [2]. Therefore a continuing optimization process could be achieved. The French contractor Bouygues became preferred bidder and in July 1996 the concession agreement was signed.

The the special purpose company “Warnowquerung Rostock GmbH & Co. KG“ was established by the French contractor Bouygues Construction. The scope of supply and services includes the construction, operation and financing for a concession period of 30 years. After the expiration of the contract the tunnel will be transferred to the public sector.

Bouygues Travaux Public became general contractor of the special purpose company and was responsible for the approval planning, the final design, the construction and turnkey delivery of the tunnel project. As concessioning authority the city of Rostock offered the state grant and was responsible for the construction inspection.

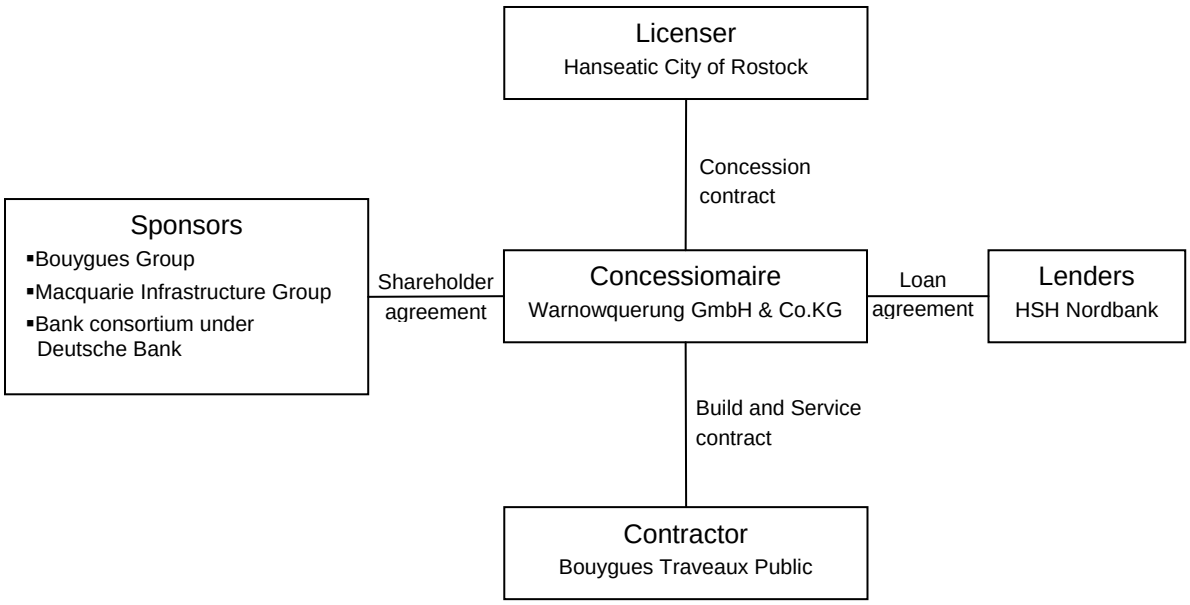

Figure 2 – Project structure of tunnel Warnowquerung, following [5]

4.3.2 Sources of Finance

After the procurement phase and the preferred bidder selection, the project process stagnated until the request for the official approval in June 1999. The approval was achieved in October 1999 and the financial close took place in December 1999.
The shareholders Bouygues Travaux Publics (F), Macquarie Infrastructure (AUS) in cooperation with a financing consortium of NordLB, KfW banking group and European Investment Bank (EIB) under the auspice of the Deutsche Bank and HSH Nordbank as creditor provided the financing of the total investment of about 220 Mio € (about 290m US $). In addition, the European Union (EU) offered an eight percent subsidy within the framework of the Trans-European-Network (TEN) to ensure respectively improvement of the financial viability [3].

4.3.3 Risk Allocation

For the success of every PPP project it is crucial that risks are identified and allocated to the appropriate stakeholder who is best able to manage the risk. This is the basic rule to achieve best possible efficiency [9]. With view on the risk allocation among the project partners new grounds were broken as yet there have been no experiences with BOT models in Germany's road sector.
As the tender took place by means of an idea competition the project company had to bear high risks of approval since unforeseeable obligations could have turned up in combination with cost increase.

In addition to the right to charge toll the project company insisted on a guarantee by the concessioning authority. In case of discontinuance in tolling based on legal reasons or force majeure an extension of the concession contract could be taken into consideration. The maximum toll amount was stipulated for the first three years on the basis of a traffic forecast provided with the tendering documents.
The risk for traffic volume and therefore for a short-fall was transferred to the project company. This allocation should be considered critically as the legal framework, the act of 1994, intends a shared allocation between the public and the private party. In case that force majeure should occur the city of Rostock will take a share of the costs of up to 50% respectively of a maximum of 10 Mio. €. Possible remaining costs are to be borne by the SPC. Nevertheless, it has to be clarified beforehand if a reasonable solution for the concessionaire, such as higher toll rates or extension of the concession, is possible [5].

4.3.4 Traffic Forecast

Traffic analyses of different institutions in the forefront of project realisation assumed daily traffic volume of about 40,000 vehicles that would pass the tunnel under the assumption that passage would be free of charge. The forecasts predicted a reduced number of 25,000 to 30,000 vehicles. Expectations were still high in April 2003 a few months before completion. However, the amount of traffic assumed was reduced a second time to approximately 22,000 users per day [4].
The analyses conducted by the project company in the years 1992, 1996, 1999 formed the basis for the traffic forecasts used in the project. The city of Rostock did not order other analysis but relied of the ones available. Almost disillusioning the first traffic censuses a few months after opening turned out to be that on average hardly half of the volume predicted by the project company had been achieved. The project company had counted on 12,000 users per day for the first year and 20,000 to 25,000 vehicles for the second year. These figures would be necessary to achieve the rate of return expected by the sponsors [10]. At least the traffic volume increased and in peak hours up to 13,000 users passed through the tunnel. A positive trend was visible but it remained doubtfully at what average it could be stabilised in the long run.
The figure illustrates the monthly average of traffic volume from opening until July 2005.

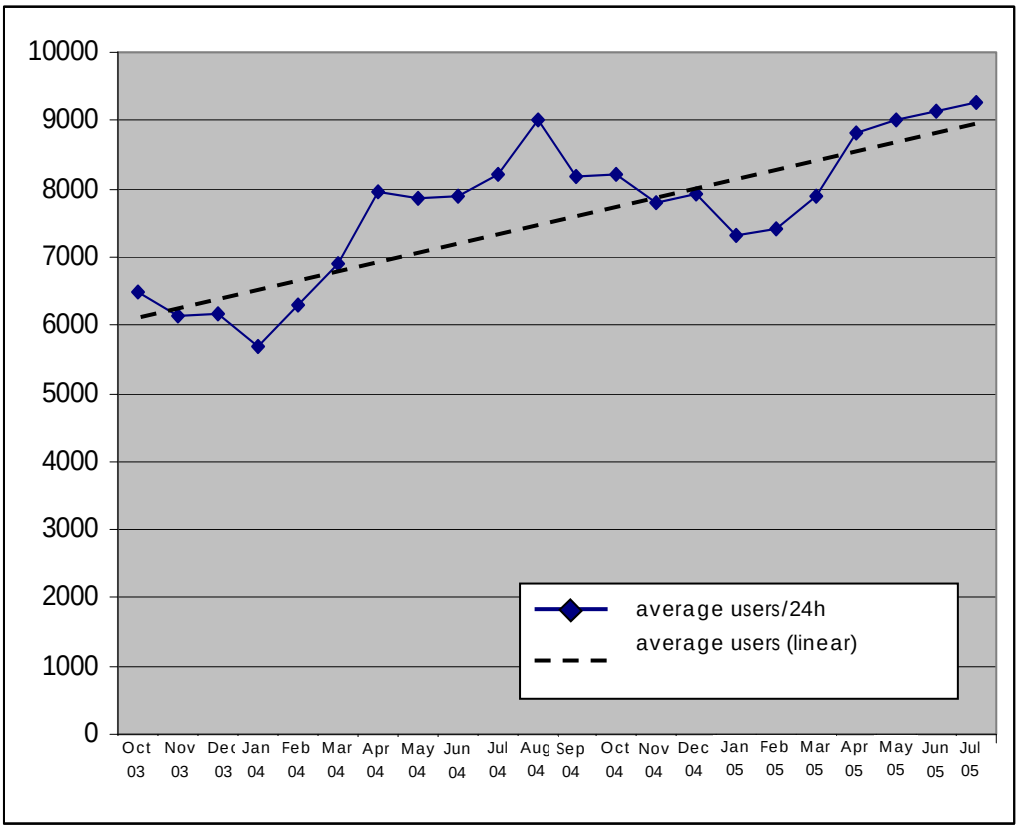

Figure 3 – Traffic analysis of Warnowquerung [11]

4.4 Current Developments

Since commencement of the operation phase the tunnel Warnowquerung incurs a loss in two-digit millions due to an enormous gap between planned and existing traffic volume. In an expert opinion the menacing over-indebtedness was analysed on the basis of 30 years of concession. It came to the conclusion that by an extension of the concession of 20 years to at least 50 years the profit value of the enterprise, under consideration of substantially lower traffic volume, could be increased to avoid insolvency.

Nevertheless, incipient negotiations with the city of Rostock could not be concluded up to the end of this year. However, at the same time the banks and the shareholders accepted the finance of the project under reserve of the extension of the concession.

These developments led to substantial discussion among lobbyists of different positions. They discuss if the extension approved by the citizen council of Rostock was consistent with German law and therefore legal. The project company persist on the viewpoint that the extension applies to the contract with the city of Rostock only and that the Federal Government is not involved in this decision.

In the meantime, the concession contract has been extended to 50 years. This leaves political parties and lobbyists in the opinion that the decision for the extension has been premature and not deliberate and the citizens of Rostock in the certainty that they will have to pay toll fees for 20 more years.

4.5 Lessons Learned

Germany is a latecomer with respect to realising Public Private Partnerships even though there is much demand for private solutions on German Highways. Due to budget constraints the roads are literality left to wear and tear. Private commitment could help to improve the situation. Still there is a lack of experience to be found with all stakeholders. This lack leaves room for wrong decisions and inappropriate measures and counts for the reasons why the first projects under the so called German F-Model could not be realized successfully. When the first PPP projects in the road sector were launched the legal framework conditions were insufficient and inappropriate and partly bound by European law. The existing legislation on PPP in the road sector is still undergoing changes. In 2005 the PPP Acceleration Act changed the Act of 1994. Another change on the legal bases for private participation is expected at the end of 2007 when the PPP Simplification Bill has passed. From international experience, however, an upfront well defined legal framework only can provide conditions for successful private solutions. Both partners need to rely on the legal basis and on calculable risk allocation. Moreover, it is of high importance that the contractual relationship is understood as partnership even though every participant has its own interests in the project.

Particular attention should be given to traffic forecasting and therefore revenues to be expected. Traditionally, the German road sector has been budget financed. Therefore, road users in Germany are not used to be confronted with costs that arise through usage. Most of them prefer to make a detour instead of being charged. In the traffic forecasts this phenomenon was not considered to a realistic amount. As the tunnel Warnowquerung represents a new route which had not existed before the amount of users choosing the tolled way were overestimated to an amount that now endangers the projects success seriously. As for future projects the concessionaire should make every effort to provide realistic traffic forecasts. The viability of the whole project depends on reliable figure.

The intention of realizing the project Warnowquerung was to release the city of Rostock from heavy traffic congestion, to unburden the public budget and

to represent as a pioneer in the infrastructure project under the F-Model. The city of Rostock as concessioning authority finds itself in a difficult situation: The euphoria of having realized the first German PPP project in the road sector has vanished for a long time. On the one hand the extension of the concession contract was necessary since due the high level of debt the city could not afford to take over the project from an insolvent project company. On the other hand by approving the extension it was clear that the citizens of Rostock would have to pay for 20 more years.

However, beside the inappropriate legal framework and the psychological aspect of avoiding tolled roads other aspects that had not been taken into considerations turned out to be problematic. Currently, Rostock has to face a dramatic migration wave. The number of population is declining. A recent study shows that the population development for Mecklenburg-Western Pomerania expects the population of Rostock to reduce by up to 15% until 2020. Reasons for the population drift can be found in a high unemployment rate. This development endangers the whole economic situation of Rostock and will also effect the tunnel project under the river Warnow to an extent that is yet unknown.

Such socioeconomic data and requirements have a strong influence and play an important role for traffic forecasts and a project's economic viability. It is doubtful if this development had been considered at all in the feasibility studies respectively if the situation has been assessed to the full extend. A strong deficit existed on both sides, the public as well as the private, with regard to inadequate experience with respect to producing applicable traffic forecasts. It is still to be evaluated which methods were used for the prediction and which problems aroused in information interfaces between public and private partner.

A new tariff structure has been submitted by the project company to the Ministry and is currently being scrutinised. The tariff should come into force at the beginning of the year 2007. In addition, the concession time of 30 years was extended to 50 years. It is intended to increase the volume of busses and heavy vehicle traffic where acceptance had been very low so far. It is planned to reduce toll rates for these types of vehicles up to 40 %. However, the base rate for passenger car of two Euros will be kept. During holiday season the tariffs will become more expensive as this time of year clearly represents the high season for the project company as well. While this increase of toll represents a vital chance for the economic success of the project the financial burden for the users will increase.

Whether the new tariffs in combination with improved legal framework conditions will influence the traffic volume positively and the measures for eco-

nomic adaptation can help to increase the project's economic performance will be the targets of future studies. They are urgently needed in order to achieve more success and acceptance of the German F-Model.

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5 CASE STUDY IV – LAIBIN B POWER PROJECT – THE FIRST STATE-APPROVED BOT PROJECT IN CHINA

by Prof. Dr. ShouQing Wang and Yongjian Ke,
Dept of Construction Management, Tsinghua University

5.1 Project Background

The tremendous economic growth in China had resulted in an immense demand for basic infrastructure like roads, ports and power generation facilities in 1990s. The World Bank estimated that investment in infrastructure in China would rank top among all East Asian countries and account for US$750 billion over the period of 1995 to 2004 (Lianhe Zaobao, 1996). Road and power projects commanded top priority. To meet the development needs, the Chinese government had been enthusiastic in granting favorable concessions to attract foreign investment. Some regulations for foreign investment were promulgated one after the other. Meanwhile, several state-approved pilot build-operate-transfer (BOT) projects have been awarded since late 1996 in order to introduce BOT on a larger scale, such as the Laibin B power project, Dachang water project and Changsha power project.

In fact, several power plants and roads have already been built on a BOT basis in China before Laibin B (Tiong 1990; Tam 1995). They were not however recognized by the central government as official BOT projects though many companies outside China have regarded them as model projects. In addition, although there are three major modes of investments, i.e. sole proprietorship, joint venture, and construction cooperation, which can be practiced in China, most of the BOT projects implemented in China before Laibin B were based on joint venture path (Shen et al. 1996).

5.2 Project Description

As the first state-approved BOT project, Laibin B is the second phase project for Laibin Power Plant. It involves the investment, financing, design, construction, procurement, operation and maintenance and transfer of a 2x360 MW coal-fired power plant with an estimated cost of US$600 million to be located at Laibin County in the Guangxi Zhuang Autonomous Region, a Chinese backwater southern province where most foreign investors might not venture

willingly (Figure 1). The concession terms require a very tight completion schedule (See the section of "Development Process" for detailed information) and appear to offer a relatively low rate of return. But the prospect of joining the first consortium to test the new BOT framework was incentive enough for a number of developers to submit tenders. The Electricite de France (EDF) and GEC Alstom consortium, which tendered under the name of the Consortium, finally won the concession from five other short listed competitive tenderers with a very aggressive tender and the backing of France's export-credit agency, COFACE.

Figure 1 – Location of Laibin B Power Plant Project

5.3 Project Partners

A map of the relationships between the entities that participated in the project in the form of an organizational chart along with the contractual agreements is presented in Figure 2.

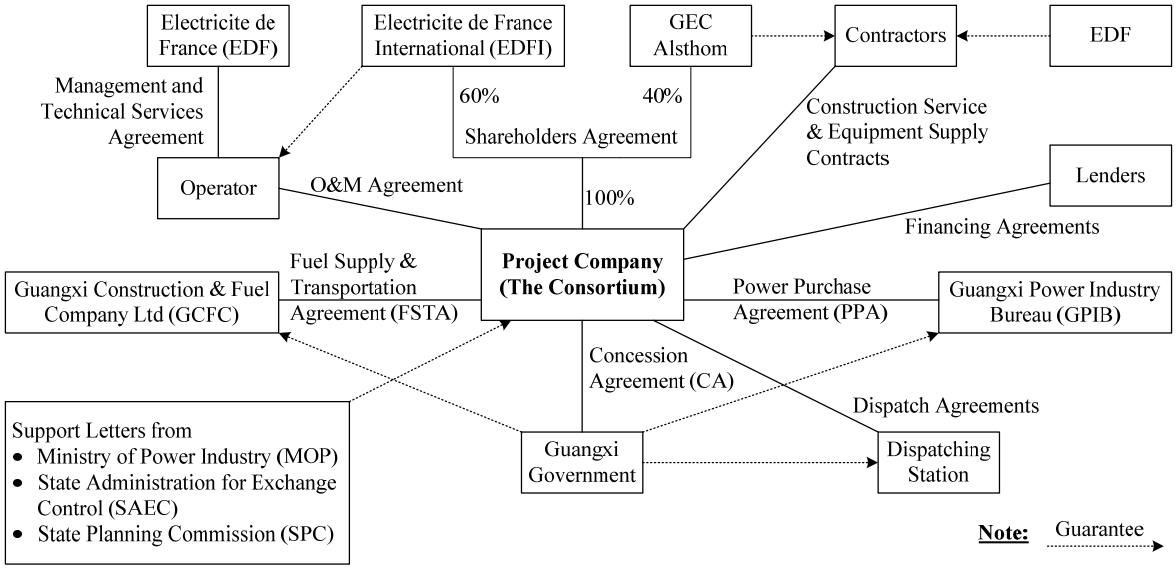


Figure 2 – Contractual Structure of Laibin B Power Plant Project

5.3.1 Central Government

The central government has provided its strong support to Laibin B given its status as the first official pilot BOT project which will set the benchmark, not least in terms of risk allocations, for other future BOT infrastructure projects. The project has been approved at the State Council level, and State Planning Commission (SPC) and Ministry of Power Industry (MOP) have directly participated throughout the project development, tendering, bid evaluation and award process. They together with State Administration for Exchange Control (SAEC) have each issued a support letter in relation to the project. The three support letters effectively support and underpin Guangxi Government's ability to perform and demonstrate the central government's commitment to ensure the success of the project. More detail of the central government's support will be illustrated in the "Government Initiatives" section.

5.3.2 Provincial Government

For Laibin B, many of the uncertainties were thus cleared because Guangxi Government made some guarantees and incentives. Laibin B is underpinned by three main contracts namely, the Concession Agreement (CA), Power Purchase Agreement (PPA) and Fuel Supply & Transportation Agreement (FSTA) with CA as the overriding contract which summarizes all the major rights and obligations of the project company (the Consortium) and Guangxi Government in relation to the concession given for the investment, financing, design, construction, procurement, operation and maintenance of the project. The Guangxi Government is the counterparty to the Consortium under the CA, and provides some guarantees of PPA, FSTA and Dispatch Agreements.

5.3.3 Sponsor

In Laibin B project, Electricite de France International (EDFI) and GEC Alstom are the sponsors. EDFI is a wholly owned subsidiary of EDF which is 100% owned by the French government and much experienced in international investment and power plant operation. GEC Alstom is a wholly owned subsidiary of GEC Alstom N.V. which is jointly owned by The General Electric Company, PLC of the United Kingdom and Alcatel Alstom of France.

5.3.4 Project Company

French Investment Guangxi Power Company LTD., the project company of Laibin B, under the shareholder agreement of 60% held by EDFI while the other 40% owned by GEC Alstom, is a wholly foreign-owned enterprise incorporated in China. As the project company, it was responsible for the financing, design, construction, operation and maintenance over the concession period; at the end of concession, the power plant returns to Guangxi Government without charge.

5.3.5 Lender

The debt/equity ratio of Laibin B is about 3, and the project company has limited-recourse debt of US$0.462 billion and shareholder's equity of US$0.154 billion. The bank consortium headed by Credit Agricole Indosuez (French), HSBC Investment Bank (UK) and Barclays Capital (UK) is the lender of the project. In addition, France's export-credit agency COFACE provides export credit insurance for about US$0.312 billion of the debt.

5.3.6 Customer

In accordance with the PPA Guangxi Government's subsidiary department Guangxi Power Industry Bureau (GPIB) is required to purchase the minimum net electrical output of 3,500 million kWh (approximately 63% of plant load factor) each operating year from Laibin B.

5.3.7 Supplier

The government's subsidiary Guangxi Construction and Fuel Corp. Ltd. (GCFC) is liable to supply the fuel (coal and/or oil) required and paid for by the Consortium. The Consortium has the right to reject fuel that is not in conformity with the fuel specifications described in the FSTA.

5.3.8 Contractor

The Construction Services Contractor is a special purpose joint venture comprising Alstom Export and Compagnie Financiere de Valorisation pour L'Ingenierie (COFIVA). The Equipment Supplier/ Contractor is a consortium

comprising GEC Alstom Centrales Energetiques SA and EDF, acting through its division CNET.

5.3.9 Operator

Guangxi Laibin Synergie Operating Maintenance for Generation Co. Ltd. is a joint venture, which is owned by EDFI with 85% of share, GPIB and Guangxi Development and Investment Co. Ltd. (GIDC) for another 7.5% of share each.

5.4 Development Process

5.4.1 Initial Planning

- In February 1995, the Guangxi Government officially entrusted Bridge of Trust with the task of inviting foreign investors to implement Laibin B on a BOT basis.
- From February to March 1995, after preparing the preliminary feasibility study for Laibin B in accordance with international practice and in compliance with the actual requirements in China, Bridge of Trust submitted an executive proposal and financial feasibility study report for constructing Laibin B on a BOT basis. It then assisted the Guangxi Government in seeking approval from the central government.
- On May 10th, 1995, the SPC officially approved Laibin B as the pilot BOT project in China

5.4.2 Prequalification

- In August 1995, Bridge of Trust completed the prequalification documents for Laibin B in China and issued an invitation for prequalification in the People's Daily and China Daily, publicly inviting potential investors from abroad to participate in the prequalification for China's pilot BOT project.
- By September 30, 1995, a total of 31 applicants had submitted their applications for prequalification; 23 were individual companies, while eight others were consortia, including some of the best-known power utilities in the world.
- By early October 1995, Bridge of Trust and its advisors had reviewed the prequalification proposals submitted by each tenderer. The Evaluation

Committee then reached a unanimous agreement to list the applicants into two groups: A and B. Group A, with 12 applicants, was made up of companies that were allowed to tender either individually or as a member of a consortium as they were considered to be candidates with strong experience in developing power projects. They were also seen as those with adequate financial strength and other relevant experiences. Meanwhile, another 19 applicants, listed as group B, were allowed to tender only in a consortium jointly with one or several of the group A applicants. On October 28, 1995, Bridge of Trust issued the invitation to tender on behalf of Guangxi Government.

5.4.3 Tendering

On December 8th, 1995, Bridge of Trust completed the tender documents and formally released them to the prequalified applicants. All 12 of the applicants in group A purchased the tender documents at a cost of US$12,000 per set.

From December 1995 to January 1996, Bridge of Trust organized on-site inspections of the Laibin B site for each potential tenderer.

On January 28th, 1996, Bridge of Trust conducted the pre-tender meeting for Laibin B, during which concerns related to legal and financial issues were clarified. On February 12, 1996, Bridge of Trust issued the Memorandum for Pre-Tender Meeting for Guangxi Laibin B.

By 4:00 p.m. on May 7th, 1996, a total of six tenderers had submitted their proposals. They were:

a) China Energy Investment Co. Ltd. - Siemens consortium
b) International Generating (HK) Co. Ltd.
c) Tomen Corporation - Singapore Power International (Pte) Ltd. - Union Energy Co. Ltd. - Toshiba Corporation consortium
d) The Consortium, comprising the Electricite de France and GEC Alstom
e) National Power PLC (UK) - Mitsui & Co., Ltd. consortium
f) New World Infrastructure Limited (UK) - AEP Resources International - ABB Energy Ventures consortium

- On May 8th, 1996, Bridge of Trust conducted the tender opening for Laibin B.

5.4.4 Tender Evaluation

- From May to July 1996, the Evaluation Committee clarified and analyzed the tender proposals from legal, financial, and technical angles. Bridge of Trust assisted the Evaluation Committee in evaluating the tenders.
- By June 18th, 1996, the Evaluation Committee had ranked the tenderers and selected the three most competitive tenderers in accordance with the evaluation criteria in the tender documents. They were:

a) The Consortium
b) New World Infrastructure Limited (UK) - AEP Resources International - ABB Energy Ventures consortium
c) International Generating (HK) Co. Ltd.

- From July 8th, 1996 to early November 1996, Bridge of Trust held negotiations on the three main contracts with the Consortium.
- On November 11, 1996, the Guangxi Government and the Consortium signed the concession agreement in Beijing.

5.4.5 Evaluation Criteria

The following evaluation criteria were used by the evaluation committee:

- Electricity tariff (60% weight in evaluation). The most significant criterion is the unsubsidized tariff rate, which represents a sharp break from past practices. The Evaluation Committee compared the tenders on a levelized tariff basis to evaluate the annual electricity tariff proposed for the entire concession period. It considered the annual changes of such tariff, the proportions of foreign exchange and the local currency, RMB, in such tariff; and the tariff of additional net electricity output.
- Financing proposal, technical proposal and operation, maintenance, and transferal (OMT) proposal (40% weight in evaluation). The Guangxi Government considered the feasibility of the tenderer's financing proposal, including financing schedule, financing cost, ability to finance, and extent of equity committed by the tenderer; the reliability and quality of the technical proposal; and the feasibility and viability of OMT, including administration, personnel training, and power plant transferal plan in respect to the interests of the Guangxi Government.

Of the 40% total weight in evaluation, the financing proposal accounts for 60%, while the technical proposal and OMT proposal account for only 20% each. The Guangxi Government adopted a lower weighting for the technical proposal is because (1) The tender document already specified that international technical specifications and standards will be used for Laibin B; and (2) lenders are surely more concerned with the technical feasibility of Laibin B and will certainly examine more carefully the tenderer's technical proposal. Hence, the financing proposal is more important than the technical proposal and OMT proposal.

5.4.6 Critical Success Factors

In light of the above, critical success factors in the development of Laibin B project could be concluded and presented in Table 1. As mentioned before, 12 ones among 31 applicants submitted their applications for prequalification were qualified to bid either individually or jointly. Finally, the France Consortium won the concession.

Table 1- Influence of the CSFs in Tendering Laibin B Project

Development Phases of Laibin B	Critical Success Factors	Influence
Preliminary qualification evaluation phase	Appropriate project identification	+
	Stable political and economic situation	+
	Favorable legislation and regulations	-
	Capability of project promoter	-
	Experience with BOT project by promoter	-
	Lack of funds for infrastructure projects	-
Tendering phase	Competitive tendering system	+
	Attractive financial package	+
	Acceptable tariff levels	+
	Technical solution advantage	-
	Select suitable project agencies	-
Concession award phase	Concrete and precise concession agreement	+
	Reasonable risk allocation	+
	Special guarantees by the government	+
	Multilateral investment guarantee agency insurance	NA

Note: "+" means the CSF had strong influence on the project;
"-" means the CSF had little influence on the project;
"NA" means not available

As mentioned above, one of the most important reasons why the Consortium won the concession is that it provided the lowest electricity tariff (much lower than the second competitor, less than US$0.05/kWh), which is close to or equivalent to the current tariff in large Chinese cities. This offer would yield a return of 17.5% estimated by the Consortium, lower than the company's average of 18%. The key advantage was the acquisition of turbines from the Chinese manufacturer, which was welcomed by the Chinese government and kept the project cost down so that it could provide the lowest electricity tariff while maintaining reasonable profitability.

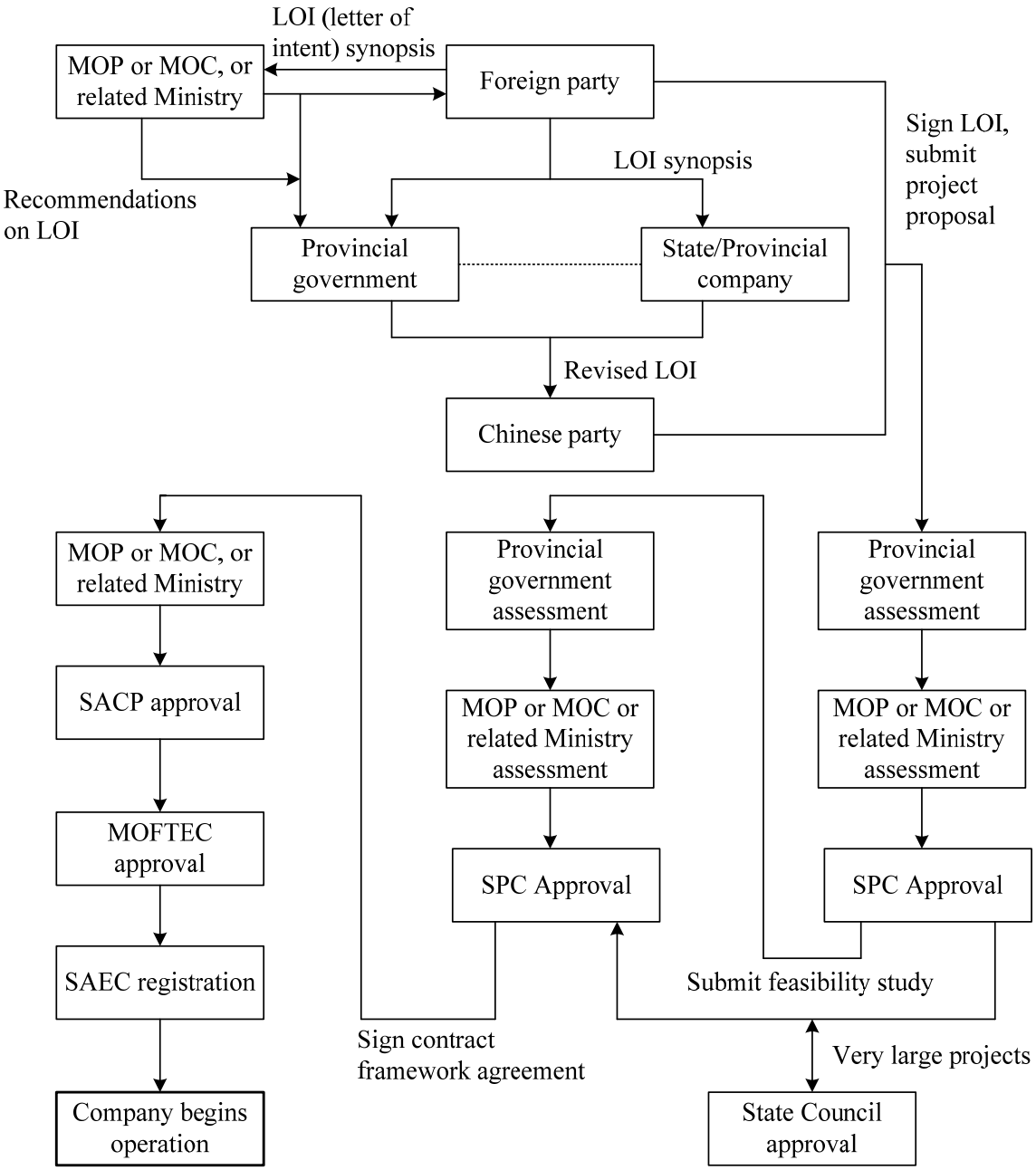
5.5 Legislation Driving the Project

In March 1994, the MOP promulgated *Interim Regulations for the Use of Foreign Investment for Power Project Construction* (the "MOP Guidelines"), which set out guidelines applicable to all types of foreign investment by foreign organizations and individuals in electric power projects in China. Foreign investors may invest directly in the form of equity or cooperative joint venture with a Chinese partner. They may invest in construction and operation of new power plants, in expansion and technical upgrading of existing power plants

or purchase equity in existing power plants, where the foreign equity interest should not exceed 30% usually. The foreign investors may now apply to the SPC for approval to establish wholly foreign-owned and operated power plants. In addition, the MOP Guidelines stated that the term of cooperation shall be limited to 20 years for thermal power plants and 30 years for hydroelectric power plants, excluding the construction period, although the national joint venture legislation set no limit on the term of joint venture establishment. For key power projects involving unit capacity of over 300 MW and total capacity of over 600 MW, the Chinese parties should maintain a controlling stake. All these indicated that China intended to retain control over its power industry, while foreign investment was encouraged in the construction and modernization of plants ((B&M) 1996).

Since late 1996, China has been preparing for the introduction of BOT on a larger scale. The central government selected a batch of road, bridge, water and power projects for the implementation of BOT on a trial basis to bring more foreign capital into infrastructure projects. In its effort to encourage China's move to BOT schemes, the Asian Development Bank gave a US$2.6 million grant to the MOP to accelerate the implementation of BOO and BOT projects (PFI 1996). China began its experimental scheme with Laibin B, the pilot BOT project approved by the SPC to test full foreign ownership and peg tariffs to the market place. The developer will only be awarded the concession after a competitive tendering process, and the successful tenderer will have to finance its project from a revenue stream based on a letter of comfort from the provincial government supporting off-take agreements instead of the guaranteed returns that have characterized many projects in China. The Chinese government is moving towards adopting international contractual and practices and works out a risk-sharing scheme under which it will bear some risks, while the concessionaire bears the rest.

These innovations are also the main principles of the later promulgated *Regulations for Foreign Investment Concession Project* by the SPC (He 1996). As for the governmental evaluation and approval of foreign investment projects, China has also regulated and simplified the procedure, presented in Figure 3. A full introduction to governmental evaluation and approval procedure would not be appropriate here and the reader is referred to Wang et al. (1998) for clear, simple understanding to the procedure described.



Note:
MOP: Ministry of Power
MOC: Ministry of Communication
MOFTEC: Ministry of Foreign Trade and Economic Cooperation
SPC: State Planning Commission
SACP: State Administration of Commodity Prices
SAEC: State Administration for Exchange Control

Figure 3 – Approval Procedure for Foreign-Invested Project in China

5.6 Basic Deal Structure

5.6.1 Concession Agreement (CA)

An international survey to evaluate the adequacy of key contract clauses in Laibin B's CA was conducted from December 1997 to March 1998. More research findings have been reported in the authors' other papers (Wang et al. 1999a; Wang et al. 2000a; Wang et al. 2000b; Wang et al. 2000c). Based on the survey, all except one of the related contract clauses used for the Financial Closing risk are regarded as adequate for the mean scores of respondents' rating for the adequacy of the clauses are all close to the score 3 (adequate) and the overall rating is 2.99 as shown in Table 2. The exception is the clauses for Financial Closing risk which is regarded as only fairly adequate as its rating is only 2.12.

Table 2 – Adequacy of Related Contract Clauses of Laibin B's CA

Contract Clause For Risk	Adequacy of Contract Clause		Criticality of Risk
	Mean Score	Ranking	Ranking
Tariff Adjustment	3.31	1	1
Expropriation	3.31	1	9
Exchange Rate & Convertibility	3.26	3	5
Force Majeure	3.21	4	6
Delay in Approval	3.01	5	8
Corruption	2.97	6	10
Dispatch Constraint	2.92	7	3
Change in Law	2.77	8	4
Financial Closing	2.12	9	7
Chinese Entities' Reliability	Not available		2
Overall	041	-	-

Among them, the contract clauses for Tariff Adjustment, Expropriation and Exchange Rate & Convertibility risks are the three most adequate while for Financial Closing, Change in Law and Dispatch Constraint risks are the three least adequate. The mean score of the adequacy of the contract clauses for Financial Closing risk is especially low at 2.12, i.e. fairly adequate. Therefore, there are possible improvements to these contract clauses. In addition, by comparing the contract clauses' adequacy rankings in column 4 with the risks' criticality rankings which are also shown in column 5, the general impression of which clauses need more improvements could also be gauged.

The general comments of some respondents who gave low ratings on the adequacy are that although the contract clauses are all drafted according

to international customs and practices they are still not very suitable in the context of China. A more exact non-legal wording should be used, detached from a particular legal system. To the extent practically possible, terms like "material", "substantially adversely" etc. should be quantified and more details would have to be introduced to make the clauses more specific. For details of possible improvement to each clause, please refer to the author's other papers (Wang et al. 1999a; Wang et al. 2000a).

5.6.2 Power Purchase Agreement (PPA)

According to the PPA, GPIB guarantees to purchase the minimum net electrical output of 3,500 million kWh each operating year from Laibin B. The details of the payment scheme cover the project from testing to commencement of commercial operations of the 2 units of generators:

- During testing and commissioning of Unit 1 and Unit 2, Guangxi Government through GPIB shall pay to the project company the fuel charge for all net electrical output generated and delivered to the delivery points;
- For each month or part thereof after the commissioning of Unit 1 and before the commencement of commercial operations, Guangxi Government or GPIB shall pay: (1) the operating charge calculated on the basis of the part of the operating tariff for the minimum net electrical output for that month denominated in RMB; plus (2) the fuel charge for all net electrical output actually delivered in accordance with the dispatch instructions for such month; plus (3) any supplemental tariff;
- For each month or part thereof after the commencement of commercial operations and until the end of the concession period, Guangxi Government through GPIB shall pay: (1) the operating charge for the minimum net electrical output for that month, plus (2) the fuel charge for all net electrical output actually transmitted according to the dispatch instruction for that month; plus (3) any supplemental tariff;
- After the commencement of commercial operations, at the end of each operating year, Guangxi Government or GPIB shall pay: (1) the operating charges for the additional net electrical output calculated on the basis of operating tariff for the additional net electrical output; plus (2) any additional charge.

The operating charge in the tariff structure is designed to cover all costs, excluding fuel cost, while the actual fuel price is passed through in the form of the fuel charge.

In addition, during the concession period, Guangxi Government permitted the project company to make reasonable adjustments to the electricity tariff according to the following principles: (a) Exceptionally, the electricity tariff may be adjusted upon the occurrence of any uninsurable Force Majeure event including any change in laws or any other exceptional events recognized by Guangxi Government as being of such gravity or importance, which cause difficulties in the repayment of the principal and interest to the lenders by the project company; (b) The US$ portion of the operating tariff shall be adjusted from time to time to take account of variations in the US$ - RMB exchange rate beyond a certain threshold (5%) as provided under the PPA; (c) The fuel tariff will be adjusted as and when the base fuel price under the FSTA is adjusted.

Guangxi Government would also pay the electricity purchase charge to the project company on each calendar month during the concession period and payments shall be made in RMB only. This off-take guarantee greatly mitigates the market and revenue risks of the project company.

The Government also guaranteed to supply the fuel (coal and/or oil) required and paid for by the project company in accordance with the FSTA signed by both sides. More about FSTA is presented in "Government Initiatives" section.

5.7 Financial Analysis

Total investment in the project amounted to US$0.616 billion, 25% of which was directly invested by shareholders of the project company (60% by EDFI, and 40% by GEC Alstom); The remaining 75% came from the bank consortium including 19 commercial banks headed by Credit Agricole Indosuez (French), HSBC Investment Bank (UK) and Barclays Capital (UK). In addition, France's export-credit agency COFACE provides export credit insurance for about $0.312 billion of the debt. Figure 4 summarizes the investment of Laibin B project.

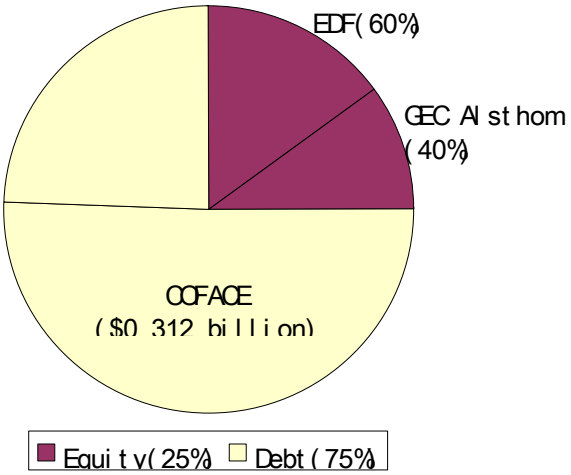


Figure 4– Laibin B Power Project Investment Structure

Under the financial investment structure shown in Figure 4, the concession period is 18 years, an estimated construction period of 33 month and 15 years operating period. The electricity tariff that the Consortium provided is less than US$0.05 per KWh (before tax), and according to the PPA, GPIB is liable to purchase the minimum net electrical output of 3,500 million kWh each operating year from Laibin B. As estimated by the Consortium, the project would yield a return of 17.5%.

Before Laibin B project's implement, there were three versions of feasibility study reports. In these reports, the electricity tariffs are about US$0.077, 0.077 and 0.080 per KWh respectively, and the IRRs are 19.01%, 19.63% and 18.88% (Fang and Luo, 1999). Compared with these financial models, it seems unbelievable and attractive that the project would still yield a return of 17.5% with the tariff less than US$0.05. Since the detailed financial statements of the project company are unavailable, the reason might be the acquisition of turbines from the Chinese manufacturer, which reduces the cost a lot.

5.8 Government Initiatives

With the prospect of joining the first consortium to test the new BOT framework, the central government and Guangxi Government have provided their strong support to Laibin B giving to the project company some guarantees and incentives. The following part discusses briefly the government's major guarantees and incentives. More information in detail can be acquired in (Wang and Tiong 2000).

5.8.1 Exclusive Concession Granted

The Consortium was granted the exclusive right to design, construct, test, operate and maintain Laibin B, to use the land provided by Guangxi Government, to sell the net electrical output and the generating capacity of Laibin B to Guangxi Government during the concession period. The concession period started on the date Guangxi Government and the Consortium signing the project documents on the financial close date, i.e. Sept. 3, 1997. It would last for 18 years including the construction period unless otherwise modified in accordance with the CA. The operating period is approximately 15 years following the commissioning of the plant based on an estimated construction period of 33 month. At the end of the concession period, the Consortium will transfer the project to Guangxi Government in good order, at no cost and free of any borrowings.

In addition, during the concession period the Consortium is given the right to own and operate all assets, equipment and facilities constituting Laibin B. At the same time, the Consortium is allowed to mortgage or transfer the right to operate, all assets, facilities and equipment of the project for purpose of financing provided that such mortgage or transfer shall be agreed in writing by Guangxi Government and have no adverse effect on the rights or interests of Guangxi Government.

5.8.2 Power Purchase Guarantee

In accordance with the PPA signed by the Consortium and GPIB, Guangxi Government guarantees to purchase, through its subsidiary department GPIB, the minimum net electrical output of 3,500 million kWh each operating year from Laibin B. The GPIB has primary responsibility for carrying out its obligations to the Consortium under the PPA while Guangxi Government gave the assurance on proper and timely fulfilment of the obligation of GPIB under the PPA. So long as the Consortium is not in default of its obligations under the CA, and subject to the provisions pertaining to any such default or the occurrence of an event of Force Majeure during the concession period, Guangxi Government through GPIB agreed to pay the electricity purchase charge for the net electrical output transmitted to the delivery points in accordance with the PPA.

5.8.3 Fuel Supply Guarantee

The Government guarantees to supply, through its subsidiary GCFC, the fuel (coal and/or oil) required and paid for by the Consortium in accordance with the FSTA signed by both sides. The Consortium has the right to reject fuel that is not in conformity with the fuel specifications described in the FSTA. The Government would ensure the proper and timely fulfilment of the obligations of GCFC under the FSTA and shall support all financial consequences resulting from any breach of GCFC under the FSTA.

5.8.4 Force Majeure Guarantee

Under this guarantee, either party shall be entitled to suspend performance of its obligations under the CA to the extent that such performance is impeded by Force Majeure, i.e. circumstances beyond its control such as natural disasters, war, hostilities, embargo, import or export restrictions and change in law.

In the event of a termination of the CA following Force Majeure arising out of the circumstances, Guangxi Government shall pay the Consortium the compensation amount. Upon payment of such compensation amount, the Consortium shall transfer Laibin B to Guangxi Government.

Should changes in Chinese laws, regulations and decrees or in any material conditions associated with any of the approvals applicable to the project take place after the date of the CA which substantially adversely affect the rights or obligations of the Consortium, the Consortium may request adjustment to the terms of the CA so as to place the Consortium in substantially the same economic position it was in prior to such changes.

Should changes in Chinese Laws, regulations and decrees take place after the date of the CA which financially substantially benefit the Consortium, Guangxi Government may by written notice request adjustments to the terms of the CA so that the Consortium would remain in substantially the same economic position as it was prior to such change.

5.8.5 Foreign Exchange Guarantee

The foreign exchange and convertibility are also guaranteed as Guangxi Government promises to assist with the conversion and remittance of RMB-denominated profits.

For the debt service requirements of the Consortium, Guangxi Government agreed to pay to the Consortium, on each calendar month during the concession period, taking into account the US$ element of the electricity tariff, an amount in RMB which shall take into account variations in the US$ - RMB exchange rate as published by the People's Bank of China. In addition, Guangxi Government would ensure that the Consortium, the Construction Contractor and the Operation and Maintenance (O&M) Contractor receive consent, if required, for the opening and operation of, and retention of earnings in, US$ bank accounts inside China. The Government also ensured that the Consortium shall have permission to transfer the funds from its accounts in China to its accounts outside China that are necessary to implement and carry out the project in accordance with the CA. The Consortium was also given the right to convert income from the project from RMB to US$ in order to pay for the project expenses, debt service, and, return on equity during the concession period. The Government would ensure that US$ are available from time to time for such conversion.

5.8.6 Compensation under Government's Default and Political Risks

If completion of the construction work is delayed or the cost of construction or financing is increased due to an act or omission of Guangxi Government in contravention of its obligations, Guangxi Government might, at its sole discretion, either agree to extend the concession period appropriately or shall compensate the Consortium by adjusting the electricity tariff so that all additional costs of construction and/or any additional amount that may become payable under the financing documents after the completion date of the power plant, as a result of such delay shall be reimbursed to the Consortium in equal amounts in the monthly payments of Electricity purchase charge paid.

In the event the Consortium terminates the CA as a result of Guangxi Government event of default, the Consortium shall transfer Laibin B to Guangxi Government or its designee and, upon such transfer, Guangxi Government or its designee shall pay the Consortium the compensation amount set forth.

5.8.7 Tax Incentives

Guangxi Government also promised to use its best efforts to ensure that the Consortium would be entitled to enjoy tax incentives according to the laws and regulations of China.

The detailed tax incentives for the Consortium include: (a) The Consortium is exempt from 3% of the local income tax; (b) Starting from the first profit making year, the Consortium will benefit from a two year complete exemption from national income tax. Thereafter, after this two year period, from the third year to the fifth year, the Consortium will benefit from a 50% exemption from national income tax (and will consequently be liable for income tax at a rate of 15%). From the sixth year, the Consortium will pay the income tax in accordance with the full tax rate of 30%; (c) In addition, the foreign investors will be exempted from withholding tax on dividend distributed by the Consortium.

5.8.8 Guarantee of Lenders' Right

From and after financial closing and for so long as the financing documents remain in effect, Guangxi Government agreed not to terminate the CA without first providing the lenders with an opportunity to cure the event of default of the Consortium and affording the lenders the other rights provided in the CA. The lenders or lender's nominee may make any payment or perform any act required to be made or performed by the Consortium with the same effect as if made or performed by the Consortium.

5.8.9 Land and Utilities and Other Support Measures

For acquisition of the site and access to it and performing preliminary contract works, Guangxi Government gave its support and would maintain the site free from all liens and encumbrances, so that the Consortium has the right to the free and exclusive use thereof for the concession period.

The Government also gave the assurance that all utilities necessary for the construction, O&M of Laibin B are made available to the Consortium in a timely manner and at fair rates on terms no less favourable to the Consortium than those generally available to commercial customers receiving service substantially equivalent to that being provided to the Consortium.

During the construction period, Guangxi Government would be responsible for: (a) the delivery of the site and completion of the preliminary contract works and the access road; (b) coordinating and facilitating all dealings with the appropriate Government Authorities during the construction period; (c)

obtaining, in a timely manner, and thereafter maintaining, the approvals required for construction which can only be obtained by Guangxi Government; (d) providing the Consortium with the transmission line and providing start-up electricity and steam and all fuel for testing.

The Consortium, the Construction Contractor and the O&M Contractor are also given the assurance that they may import into China all items and equipment required for the construction, O&M of Laibin B.

During construction, archaeological, geological and historical objects could be found. In such cases, all costs arising from the protective measures for these objects shall be borne by Guangxi Government. Any delaying effects on the project Schedule caused by such measures shall be compensated by an appropriate extension of the construction period or the concession period or both.

5.9 Risk Management

5.9.1 Tariff Adjustment

The requirement in China that all tariff increases must be approved by the pricing bureau annually has created an element of uncertainty with regard to the adjustment of tariff and hence the project economics. This has been addressed as follows: (a) The PPA (and the tariff structure within it) has been approved by the SPC and the SPC's support letter clearly states that the principles of the tariff structure, payment mechanism and tariff adjustment have been approved by the SPC (who controls the central price bureau) and that Guangxi Government (who controls the provincial price bureau) will comply with the principles set forth in the CA and PPA. (b) Specific provisions have been incorporated in the CA stating that the pricing bureau will simply verify the correct application of the pricing formula contained within the PPA. (c) Additional comfort is provided by stipulating that the obligation to pay the tariff is a commercial obligation of GPIB. By these measures, the tariff adjustment risk is minimized.

5.9.2 Chinese Parties' Reliability & Creditworthiness

Laibin B aims to alleviate the significant power shortage in Guangxi Province which is an impediment to sustained economic growth. As such, Guangxi Government is committed to see the project succeed. In addition, the strong support from the SPC and the MOP underpins the obligations of Guangxi Government under the project. The SPC's support letter also states that the CA, PPA and FSTA comply with all current laws and regulations and that Guangxi Government has the capacity to commit itself and to sign the CA. It is such support that has enabled COFACE to provide strong cover for the COFACE Loan. Finally, if termination results from a Guangxi Government event of default, The Lenders will be repaid and Sponsors will be compensated for equity invested and loss of profit.

5.9.3 Dispatch Constraint

According to Laibin B's PPA which sets new standard in China, with the exception of the occurrence of Force Majeure events which are specific and clearly defined, GPIB will be obliged to take-or-pay for a minimum net electricity output (MNEO) of 3.5 billion kWh (approximately 63% of plant load factor) per operating year from the Project Company. The electricity tariff has been set in a manner that, if GPIB only takes the MNEO from the power plant, the Project Company will be able to cover all of its costs and provide the Sponsors with a commercial return on their investment over the life of Laibin B. In addition, GPIB undertakes not to discriminate against the power plant and to apply the principles of economic dispatch to the purchase of any additional output, i.e. over and above MNEO.

5.9.4 Change in Law

The risk of change in law in Laibin B is well covered in the CA as follows: (a) if a significant change in law prevents the Project Company from fulfilling its obligations, the Project Company is entitled to received MNEO payments irrespective of its inability to supply electricity; (b) the CA also includes provisions requiring the Project Company to be restored to the same economics position if change in law results in additional costs to the Project Company over and above an agreed threshold; (c) the change in law provision applies to any change in law after Bid Submission Date (May 7, 1996) and includes any changes in tax regulations; (d) change in law provisions address also potential

increased costs needed to cover any tightening of environmental standards in the future.

In addition, the BOT legislation is being drafted by the SPC and is expected to be largely based on the experience of Laibin B. As such, the new legislation is not expected to contradict the provisions and framework established for the project.

5.9.5 Exchange Rate & Convertibility

The exchange rate fluctuation risk is largely mitigated by the Project Company's right to adjust the floating portion of the tariff (indexed to US$ but payable in RMB) on a monthly basis to reflect RMB/US dollar exchange rate changes. There is a one-off exposure with regard to the first 5% movement from the base exchange rate under the PPA. The risk of significant exchange rate depreciation thus lies with GPIB and Guangxi Government.

As for the convertibility risk, SAEC's approval means that the project's foreign exchange requirements have already been incorporated into the National Foreign Exchange Balancing Plan of China. The SAEC support letter also confirms that the project's right to foreign exchange conversion and remittance of foreign exchange offshore will not be adversely affected by any future changes in laws and regulations. The Project Company also enters into a Conversion Agreement with a China bank which will undertake to use its best efforts to convert the Project Company's RMB receipt into US$. While the undertaking is not a guarantee of US$ availability, it does provide additional moral comfort to the Lenders and Sponsors.

5.9.6 Force Majeure

In Laibin B, comfort is derived from the comprehensive and well structured Force Majeure provisions in the project contract (CA, PPA and FSTA) and the appropriate insurance programme which, collectively, ensure that Sponsors/Lenders are protected. In the project contracts, Force Majeure is divided into insurable, uninsurable and political Force Majeure and is accorded different treatment and compensation. Upon the occurrence of an event of Force Majeure, the Project Company's obligations under the project contracts will be suspended and it will receive day for day extension to Milestone Dates including the Target Completion Date and the Concession Period. There is appropriate risk sharing with the off-taker with regard to political and uninsurable events of Force Majeure.

If termination results from Force Majeure, Lenders will be repaid and Sponsors will receive compensation corresponding to their equity investment. If termination results from a Company event of default, the Sponsors are not entitled to any compensation. However, the Lenders have extensive step-in rights and cure periods which afford the Lenders the opportunity to cure the Company event of default, including proposing a substitute company to replace the Project Company.

5.9.7 Financial Closing

In Laibin B's CA, the original schedule for financial closing is sixty days. That is apparently too tight because financial closing depends on many other factors which are out of developer's control. Financial closing usually needs at least 3 months and subjects also to the adequacy of the CA. This is why the respondents rated this clause as the lowest adequate one with mean score of only 2.12.

In fact, the financing close period was extended to 180 days in the final CA of Laibin B after the Consortium's negotiation with Guangxi Government. Nevertheless, the financing of Laibin B was actually closed 270 days after the concession was awarded, a delay of three months from the official schedule. This is a risk the Consortium bears.

5.9.8 Delay in Approval

In Laibin B, the "sponsorship" of the SPC as well as the explicit approval of MOP and SAEC confirmed in the letters of support offered helped to ensure that the other necessary approvals are forthcoming. The approval of Ministry of Foreign Trade and Economic Cooperation for the terms of the JV for Laibin is also significant. Although the Project Company is responsible for obtaining the necessary approvals, according to the CA, arbitrary denial or withdrawal of an approval is however treated as political Force Majeure. The risk of failure to obtain key approvals is therefore minimized.

5.9.9 Expropriation

According to Laibin B's CA, this risk is treated as political Force Majeure; hence it is mitigated.

5.9.10 Corruption

This risk is already addressed in the CA in the form of warranties by the Government (and also the Project Company). However, as corruption never takes place out in the open and is a fact of life so it is difficult to preclude it by using contract language. In addition, even if the clauses are useful, the enforcement of the clauses is the issue and that cannot be legislated. Therefore, there is still corruption risk that the Project Company should bear.

5.9.11 Risk Allocation

The end result achieves a fair allocation of risk for all parties as shown in Table 3. The political and legal risks are mainly borne by Guangxi Government, the construction, operating, technical and finance risks are mainly borne by the Consortium, while the Force Majeure risks are shared by Guangxi Government and the Consortium. As the first state-approved BOT project, Laibin B has set the benchmark in terms of risk allocation for future project financing in China, and to extend more information, a risk management framework based on Laibin B project is proposed in (Wang et al. 1999b) to guide project promoters planning to invest in future BOT power project in China.

Table 3 – The Risk Allocation of Laibin B Power Plant Project

Risk	Guangxi Government	The Consortium (as Sponsor, Contractor and O&M Contractor)	Lender	Insurer	Bond Bank or Insurer
1. Political Risks					
revoke, expropriation, sequestration	X				
exclusivity, i.e. not second facility		X			
changes in law	X				
development approvals	X	X			
adverse Government action or inaction	X	X			
provision of utilities	X	X			
increase in taxes (general)	X	X			
increase in taxes (specific)	X				
political force majeure events	X				
termination of concession by Government	X				
payment failure by Government	X	X			

2. Construction Completion Risks					
land acquisition and compensation	X				
restriction on import equipment/materials	X				
cost overruns		X	X		X
increases in financing costs		X	X		
time and quality risk		X			X
Contractor default		X			X
default by Concession Company	X	X			X
time, cost and scope of identified but related work and variations					
environmental damage - subsisting	X			X	
environmental damage - ongoing		X			
protection of geological & historical object	X				
force majeure	X	X		X	X
3. Operating Risks					
Government Department default	X				
Concession Company default		X			
Operator inability		X			
termination of concession by Concession Company	X	X	X		X
environmental damage - ongoing		X			
force majeure event	X	X		X	
labor risk	X	X			
technology risk		X			
prolonged downtime during operation		X		X	
condition of facility (maintenance)		X		X	
4. Market and Revenue Risks					
insufficient fare income	X	X			
fluctuating demand of power generated	X				
transmission failure	X				
problem in bill collection	X				
insufficient other income		X	X		
power theft	X				
fluctuate of cost & availability of fuel/coal	X	X			
Government restriction on profit & tariff	X	X	X		
5. Finance Risks					
inflation risk	X	X	X		
interest rate		X	X		
foreign currency exchange rate	X	X			
foreign currency convertibility	X				

6. Legal Risks					
title/lease property	X	X			
ownership assets		X			
security structure			X		
insolvency of Concession Company		X	X		
breach of financing documents		X	X		
enforceability of security			X		
documentation/contractual risk (conflict & arbitration, applied laws)	X	X	X		
7. Competition risk (before bid award)		X			

5.10 Summary

Laibin B demonstrates the commitment of the China authorities to the BOT process. The project contracts are of a much higher standard than is usually the case in China. It has become a model for future BOT project in China. As an evidence of this, the second official BOT power plant project at Changsha and the first official BOT water treatment plant project at Chengdu both adopt a very similar contractual structure. So it is meaningful and important to study Laibin B in details and to draw lessons from it, and the experience gained from Laibin B will be used effectively in the following BOT projects in China. In light of the full introduction above, some main experiences are listed in the following.

- International competitive bidding to select investors
  Laibin B is the first project to use international competitive bidding in power sector in China, and the developer will only be awarded the concession after a competitive tendering process. The successful experience of Laibin B indicates that international competitive bidding is efficient, economical and fair. In addition, the efficient and fair bidding process not only promotes foreign investment in Laibin B project, but also makes a favourable impression for Guangxi Government.
- Letters of comfort instead of guaranteed returns
  As known, financial returns of an investor should represent how much risk he bears and how much return and profit the project can generate. If the government guarantee the returns, the project company would

lose the enthusiasm and drive to reduce costs and improve efficiency. Laibin B introduced competition mechanism in the tendering process, and the government did not need to bargain with investors. The successful tenderer would have to finance its project from a revenue stream based on a letter of comfort from the government supporting off-take agreements instead of the guaranteed returns that have characterized many projects in China.

- A wide range of initiatives from government

  Government support is significant in any public infrastructure BOT project, especially in China where there is little history of or legal framework for BOT projects. Under the current regulations for foreign investment in the power sector, the attitude of the government and its support for a BOT project is crucial to the viability and outcome of the project. The central government and Guangxi Government has provided their strong support to Laibin B given its status as the first official pilot BOT project and given the project company some guarantees and incentives, such as power purchase guarantee, fuel supply guarantee, etc. All these show that the Chinese government is moving towards adopting international contractual and practices.

- A reasonable risk-sharing scheme

  The risk-sharing scheme will directly influence the partners' view of the success of the project and is probably the most critical success factor for BOT projects. Generally speaking, risk should be allocated to the partner who is most capable of controlling and influencing it, and meanwhile expected returns should match the risk borne. According to these principles, the construction, operating, technical and finance risks are mainly borne by the Consortium, the political and legal risks are mainly borne by Guangxi Government, while the Force Majeure risks are shared by Guangxi Government and the Consortium as shown in Table 3.

- Much higher standard contracts

  The project contracts are of a much higher standard than is usually the case in China, since it is regarded as a state-approved BOT project. As mentioned before, Laibin B is underpinned by three main contracts, the Concession Agreement, Power Purchase Agreement and Fuel Supply & Transportation Agreement. These documents absorb the experience of BOT contracts from other countries, and take into account the current situation in China at the same time.

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Questions for Readers to Answer

1. Will Laibin B project be more attractive if the central government provides guaranteed return instead of letter of comfort? Why did the government decide to adopt the later?
2. Whether the risk sharing is fair and reasonable based on the risk allocation matrix in Laibin B project?
3. How does the international competitive bidding affect the success and effectiveness of Laibin B project?
4. What is the difference between results of guaranteed return and power purchase guarantee?
5. What lessons can be drawn from the Laibin B project?

6 CASE STUDY VI – THE NATIONAL STADIUM BOT PROJECT FOR BEIJING 2008 OLYMPIC GAMES

by YuWen Liu, GuoFu Zhao and Prof. Dr. ShouQing Wang

6.1 Introduction

In order to meet its obligations in the Host City Contract for the 29th Olympic Games signed with the International Olympic Committee (IOC), Beijing People's Municipal Government (BMG) decided to build the National Stadium (the Project), which will be a landmark building inside Beijing Olympic Green Park as well as the largest multi-functional stadium of international standard in Beijing. The Project will become a legacy of the Olympic Movement and a new bright spot of infrastructure in Beijing.

This paper introduces first the Project's brief, development, partners and site, followed by relevant legislation, structure and financing. At last, three major issues of the Project are discussed, i.e. the disputes arisen, impacts of canceling the retractable roof of the Stadium and key risks involved in the Project.

The Project is developed in the form of Public-Private-Partnership (PPP), or more exactly Build-Operate-Transfer (BOT). The Beijing State-owned Assets Management Corporation authorized by the BMG as one of the shareholders in the Project Company undertakes 58% of the total investment while the remaining 42% is financed by the private sector which is the CITIC Consortium. The public and private sectors set up jointly the Project Company responsible for the financing, building, operating, maintaining and transferring the Project for 30 years.

As the "Green Olympics", "Hi-tech Olympics" and "People's Olympics" are set by the Government as the three main themes of the 2008 Beijing Olympic Games (the Game), the Project should also reflect these themes and concept for sustainable development. Advanced, practicable and world-class cut-edge technologies in the field of ecology and environmental protection as well as advanced, reliable and high-new technologies are adopted in the design and construction as well as the utilization of the National Stadium during and after the Games (Figure 1). The aim is to develop the Project as a model of environment protection and a window through which the hi-tech achievements and the innovative strength of China will be presented, and a brand new image of a prosperous and civilized Beijing and the high spirits of its citizens will be promoted to the world. The National Stadium is to be an

everlasting building capable of meeting various high functional requirements within 50 years.

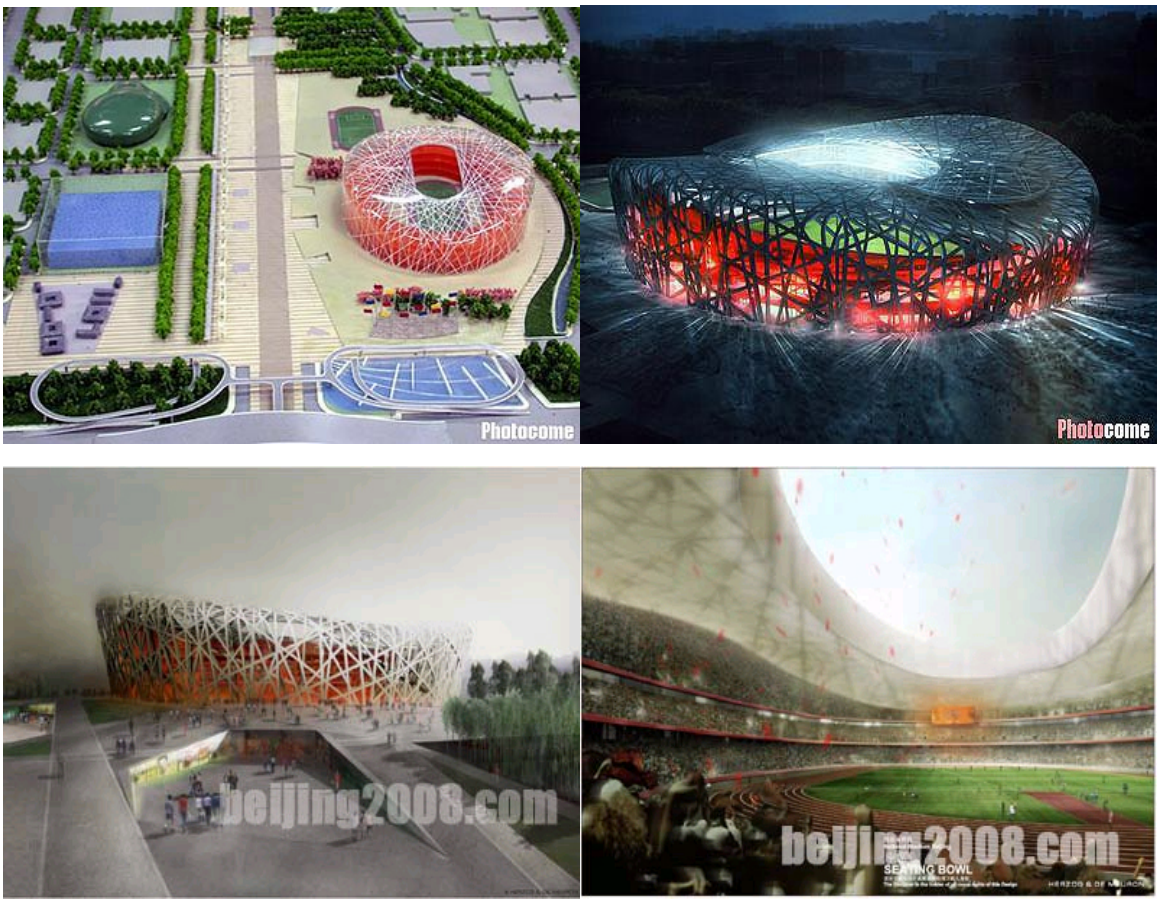

Figure 1 – The National Stadium for 2008 Beijing Olympic Games,
Photo resource: http://www.beijing2008.com/olympic 2006-12-6

6.2 Project Objectives

The objectives of the Project can be described at two levels: the state and project levels.

6.2.1 State Level

The Olympic spirit is to be spread and popularized most extensively with the active participation of the 1.3 billion Chinese people. While drawing on the experience of the host cities of previous Olympic Games, creativity is to be emphasized in organization, management and marketing of the Games so as to maximize the economic and social benefits. The National Stadium is to be developed as a landmark building and milestone project, which is of great

help to promote the modernization of Beijing as well as the rest of the country. It is also hoped that the Project can help maximize the positive impacts of the Olympic Games on national economic development and accelerating the modernization drive of the country and will bring a breakthrough in the capital in terms of economic development, urban construction, social progress and people's living standard.

In the process, high-quality personnel are also expected to be trained and employed and advanced management concepts and expertise from other countries learned. As for the government, it is expected to help adhere to the principles of openness, fairness, efficiency and honesty. In the preparation for and operation of the Games, it is hoped that it will be more practical and effective in an endeavor to set a good example of being innovative in system, mechanism and management. It is therefore to be of help to create a new image of Beijing and China.

6.2.2 Project Level

The objective at project level is to obtain maximum profit in addition to meeting all demands of holding the Games. The design, financing, construction, operation, maintenance and transfer of the Project must be carried out in accordance to this objective. The National Stadium should meet all technical requirements and standards for the Games and be developed with state-of-art technology. Competitions will be well organized and excellent services will be provided to all athletes participating in the Games. During the Olympic Games period, the National Stadium will be capable of seating 100,000 spectators, including 20,000 temporary seats (to be dismantled after the Games), and will be used for the opening/closing ceremonies, track and field events and the football final of the Games.

After the Games, the National Stadium will be able to seat 80,000 spectators for special competition events (such as the World Track and Field Championships, World Cup Football Games etc), various regular sports competitions (such as the Asian Games, Asian Track and Field Championship, Intercontinental Integrated Competitions, National Games, National Football League Matches etc) as well as non-competitive events (such as art performances, group activities and commercial exhibitions etc).

As a BOT project, the Project Company has to bear on its own the loss and profit of the Project. The BOT arrangement, as well known, has great impact on the design, financing, construction and operation of the Project. The design and construction of the Stadium has to consider their potential impacts on the operation, and during the construction stage, the Project Company

has to negotiate with potential enterprises interested in the operation of the National Stadium after the Games. For example, it is said that after Games the National Stadium will be the arena of Beijing GuoAn Football Club. If this is true, it will be a great guarantee for the Project Company's cash-in flow.

6.3 Development Process

The Beijing Development Planning Commission (BDPC), entrusted by the BMG, requested in Oct 2002 all interested parties to apply for pre-qualification of financing, design, construction and operation of the Project. The key steps of the tendering process are summarized in Table 1.

Table 1 – Tendering Process of the National Stadium for 2008 Beijing Olympic Games

Step	Date	Participators	Activities	Remarks
Invitation to bidders	October 28 2002	BDPC	Inviting bidders to apply for pre-qualification and submit bids	7 apply for pre-qualification, of which 5 are qualified
Field inspection and pre-bid meeting	April 30, 2003	BDPC and potential bidders	Q&A after bidders have finished field inspection and review on the Bidding Documents	
Bidding	Deadline on June 30, 2003	The CITIC, CSCEC and BCEG Consortia	Submitting response to the Bidding Documents and competitive bids	1 bidder quits due to failure of responding to the Bidding Documents substantially
Bid opening	June 30, 2003	Supervisory personnel of BOCOG, representatives of bidders, Tendering Agent	Opening bids and Announcing the successful bidder	Top two successful bidders, i.e. the BCEG Consortium and the CITIC Consortium
Initialing of Concession Agreement and National Stadium Agreement	Before July 5 2003	BDPC and the BCEG Consortium, the CITIC Consortium	The bid being given to the CITIC Consortium	The BCEG Consortium being dropped out due to failure of reaching Consortium Agreement
Signing of the Concession Agreement and the National Stadium Agreement	August 9 2003	The CITIC Consortium with BMG and BOCOG	Signing agreements and preparing for the registration of the Project Company	In accordance with Chinese Laws, the CITIC Consortium has to form the Project Company with BSAMC
Establishment of the Project Company	September 2003	The CITIC Consortium, BSAMC, GSHGC and BUCGC	Registration of Project Company	Site acquisition before the Registration

Note: BDPC—Beijing Development Planning Commission
CITIC— China International Trust and Investment Corporation
BUCGC—Beijing Urban Construction Group Corporation

GSHGC— Golden State Holding Group Corporation
BSAMC—Beijing State-owned Assets Management Corporation
BOCOG—Beijing Organizing Committee for the Games of XXIX Olympiad
BCEG—Beijing Construction Engineering Group
CSCEC—China State Construction Engineering Corporation

6.4 Project Partners

The Tendering Administrative Authority for the Project is the BMG which entrusts Beijing Development and Planning Commission (the BDPC) to be responsible for the tendering process of the Project's Concession. The Guoxin Tendering Corporation is appointed as the Tendering Agent for preparing the Invitation to Bidders (ITB) and has been entrusted by the Tendering Administrative Authority to implement ITB activities.
The Project Company set up for the Project comprises mainly of two parties: the public partner and the private partners.

6.4.1 The Public Partner

The Beijing State-owned Assets Management Corporation (BSAMC) is nominated as the representative of the public (mainly the BMG), contributing 58% of the total investment, forming one partner of the Project Company with the private partners. The BSAMC, a very unique company with its management and staff having a deep understanding of China and the city of Beijing as well as rich experience in public and private finance, asset management and capital operations, was founded in April 2001 with registered assets of Renminbi (RMB)[1] 1.5 billion.

6.4.2 The Private Partner

The private partner is a consortium composed by three companies with rich experiences in financing and construction of large construction projects, i.e. China International Trust and Investment Corporation (CITIC), Beijing Urban Construction Group Corporation (BUCEC) and the Golden State Holding Group Cooperation (GSHGC), with equity proportion in the Consortium of 65%, 30% and 5% respectively.

[1] *The exchange rate of RMB vs US$ was 1 US$=8.2765 RMB (before August, 2005) and 1 US$=7.6965 RMB (after August, 2005 when Chinese Government depreciated RMB).*

6.4.2.1 China International Trust and Investment Corporation

CITIC, with the initiation and approval by Mr. Deng Xiaoping, chief architect of China's reform and opening-up, was established on Oct. 4, 1979 by Mr. Rong Yiren, former Vice President of the People's Republic of China. As a window of China's opening to the outside world, CITIC has grown into a large trans-national conglomerate. It now owns 44 subsidiaries (banks) including those in Hong Kong, the United States, Canada, Australia, and New Zealand. The company has also set up representative office in Tokyo, New York and Frankfurt. CITIC's core business ranges from financial industry, industrial investment to service industries. CITIC, elected by the private partners as the leader and representative of the CITIC Consortium, is in charge of coordination of the bid preparation, and submit jointly the bidding document and material with the other two private partners. In the meantime of being the representative of the consortium and representative for negotiation with BSAMC, CITIC also undertakes the role of legal person of the Consortium of the Project.

6.4.2.2 Beijing Urban Construction Group Corporation

Beijing Urban Construction Group Corporation (BUCGC) is a large comprehensive group which carries out construction of industrial and civil buildings, municipal works, metros, expressways and airports as its main business and it also undertakes real estate development and urban infrastructure projects. BUCGC is the largest construction group in Beijing and has the necessary local know-how and expertise that will be helpful to the Consortium.
Selected by the State Council of China as one of the "120 Companies of State-owned Large Enterprises for Pilot Reform", BUCGC also ranks 70 in the "Top 500 Enterprises of China". As the largest construction enterprise in Beijing, BUCGC has strong technology strength and liable management team with full of youthful spirit. It equips with the most modernized equipments that can work above and/or under the earth automatically. It also accumulates many experiences in steel structure construction over 40 years. Its construction scope covers airports, sports stadiums, bridges, civil buildings and so on.

6.4.2.3 Golden State Holding Group Cooperation

The Golden State Holding Group Corporation is an international group company specialized in municipal infrastructure construction, environmental protection and renewable energy development, etc. with its offices and subsidiaries in the United States, France, Spain, Canada and China.

6.4.3 Project Management Advisors

There are two project management advisors to the Project Company: Vinci Construction Grands Projects (VCGP) and Bouygues Batiment (BYB). VCGP is part of the French Vinci Group, the largest group for construction and associated services in the world, active in civil and building construction and related services (toll roads, airports, car parks, bridges and stadiums) while BYB is part of the Bouygues Group, a major French conglomerate with activities in construction, services, telecomm and media.
Vinci Group and Bouygues Group are also the shareholders of the Consortium Stade de France (CSDF), first of its kind, Public-Private Partnership for a sport facility. The expertise and know-how of VCGP and BYB in the design, financing, construction of a sport and cultural venue and that of CSDF for management and operation of such facility brings value and competitiveness to the Project Company.

6.4.4 Project Structure

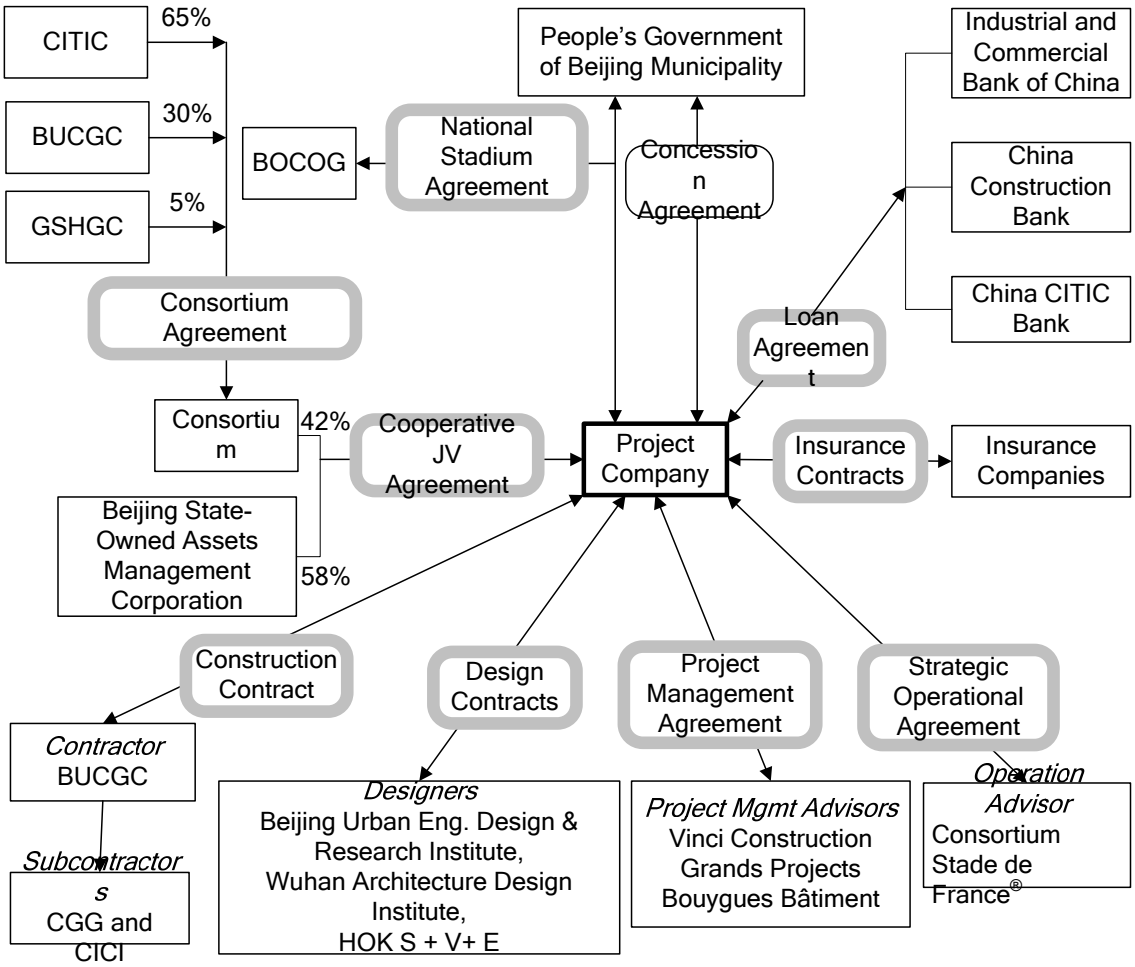

Fig. 2- Project Structure of the National Stadium

BDPC–Beijing Development Planning Commission
CITIC– China International Trust and Investment Corporation
BUCGC–Beijing Urban Construction Group Corporation
GSHGC– Golden State Holding Group Corporation
BOCOG–Beijing Organizing Committee for the Games of XXIX Olympiad
CICI–CITIC International Contracting Inc.
CGG–CITIC Guoan Group

6.5 Project Scope and Location

6.5.1 Project Scope

As mentioned in the Project Objectives section, during the Olympic Games, the National Stadium will be capable of seating 100,000 spectators, including 20,000 temporary seats, and will be used for holding the opening and closing ceremonies, track and field competition events and football final. After the Games, the National Stadium will be able to seat 80,000 spectators for special competition events such as World Track, various regular sports competitions such as the Asian Games, as well as non-competitive events such as art performances. The detailed information of the project scope is given Table 2.

Table 2 – Some Indicators of the National Stadium's Scope

Planning Control Indicators			**Conditions and Requirements**
Planning of underground space			United with the planning of the public parking area on the west side, enable convenient communication, and include ground greening and local planting in the thickness of mantle rock
Surroundings	East side		Dragon-shaped water system, Kaidike Hotel, and land use for development of commercial facilities
	West side		Central Axis Square, National Swimming Center
	South side		Green space, North Fourth Ring Road
	North side		Green space
External traffic requirement	Subway		On the northwest side, about 500 m from Olympic Green Subway Station
	Bus		About 600 m from the bus stop on the west side About 300 m from the bus station on the southeast side
	Round urban roads		Close to a urban branch road on the west side (35 m) and a trunk road on the north side (56 m)
Internal traffic requirement	Main entry of vehicle	ground	East side
		Under-ground	North side
	Main entry of people		West, east and north sides
	Entry of underground garage		Arrange underground garage exits/entries, as planned, in addition to the underground vehicle exit/entry on the north side

Landscape requirement	Trend of style	Consist the sports architecture style and pattern with squares and water elements
	External space requirement	Pay attention to the leading role of the architecture pattern, and develop the Stadium into the land
	Linkage	Emphasize the integrity of different pats and the harmony of landscapes
Public utility	Heat station	3 stations with a total surface area of 210 m^2, on basement 1
	Communications facility	One interface, 350 m^2, on baseline 1
	CATV facility	One terminal machine room, 50 m^2, no baseline 1
	transformer	One substation, 500 m^2, on baseline 1
	Sanitary facility	Solid waste management 200 m^2, on baseline 1
	Fire & security	Fire parking apron
	Gas facility	2 underground pressure regulating boxes arranged outdoors at a clear distance of 6 m from any important public building

6.5.2 Location

The Stadium is located in Area B of Beijing Olympic Green, approximately 20.29 hectares with the exact area dependent on the land redline map. The detailed information on land use and a map are given in Table 3 and Figure 1 respectively.

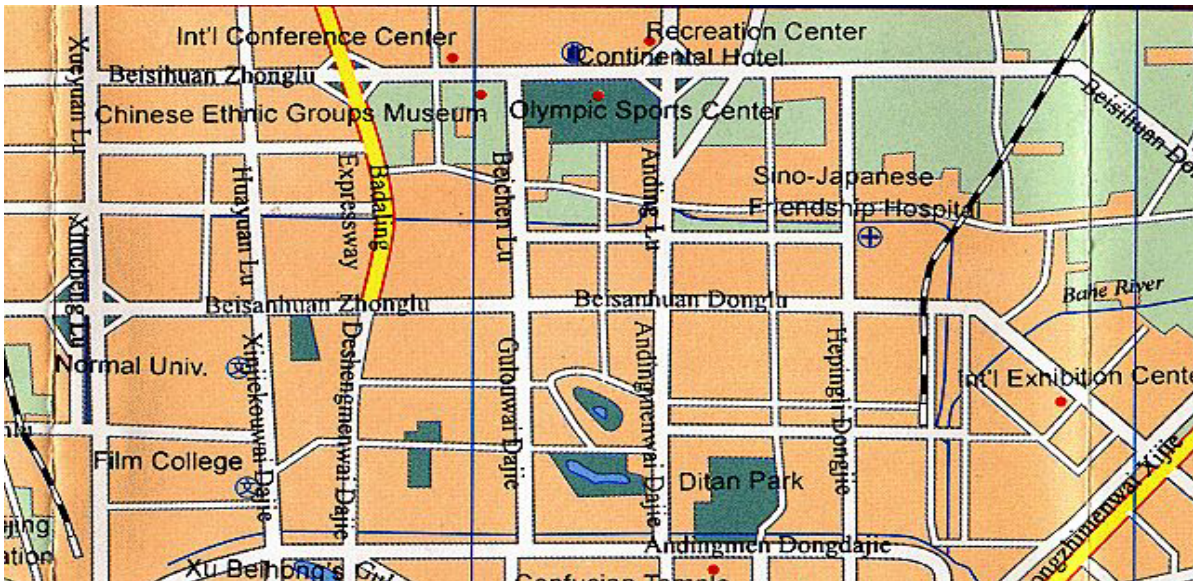

Figure 1 – Location of the National Stadium

Table 3 – Land Use Indexes for the National Stadium

Mandatory Index			Control Index
Series number of plot area			12
Nature of land use			Sports
Plot area(ha)			20.29
Project scale			80,000 permanent seats
Setback of the building line (m)	East side	North of Chengfu road	20
		South of Chengfu road	60
	West side		5
	South side		10
	North side		10
	Underpass section of Chengfu road	South side	5
		North side	5
Green coverage ratio			30% (including field of playground)
Minimum parking area required			1000 cars
Parking area available	Ground		Temporarily arranged
	Underground		1000 cars
	Total		1000 cars

6.6 Government's Supports and Incentives

Pursuant to the Host City Contract, the IOC granted to the City of Beijing the right to host the Games. BOCOG has been appointed as the official organizing committee for the Games. In order to fulfill its obligations to the IOC to plan, organize and stage the Games in accordance with the Olympic Charter and the Host City Contract, BMG will deliver the major Olympic facilities including the Stadium at Beijing Olympic Green Area B.

As there is no BOT/PPP law in China, a series of government polices are enacted by Chinese central government and the BMG so as to meet its obligations for or provide incentives to the National Stadium. For example, the Ministry of Finance, the State Administration of Taxation and the General Administration of Customs jointly issued on Jan 23, 2003 the "Notices on Taxation

relevant to the 29th Olympic Games" in which a lot of tax incentives are provided including that all imported equipment for the Stadium are free of custom and value added tax, and most of sales relevant to the Stadium are waived, etc. Besides, the BMG also enacts some other policies and requires coordination of its departments for the project. For example, the "Tendering Regulations for Concession of Urban Infrastructure Projects in Beijing" and the "Concession Regulations for Urban Infrastructure Projects in Beijing" implemented by BMG on Sept 1, 2006 and March 1, 2006 (trail version on Oct 1, 2003) respectively; the "Some Suggestions (36 clauses) on Developing Private Economy" issued by the State Council on Feb 24, 2005 encouraging private investment in infrastructure using project finance.

BMG granted the Project Company the rights to invest in, finance, design, construct, operate, maintain and repair the Stadium on the terms and conditions of the Concession Agreement. The Concession Agreement provides that the Project Company, BMG and BOCOG shall enter into the Stadium Agreement pursuant to which the Stadium will be made available to BOCOG during the Games Period for the holding of the Test Competitions and Test Events, the Olympic Games and Paralympics Games. Accordingly, the Project Company, BMG and BOCOG have entered into this Agreement in order to specify each party's rights and obligations in connection with the use of the Stadium by BOCOG and the provision of certain services to BOCOG by the Project Company.

According to the Agreement, CITIC partners (bidder) should obey relevant rules of IOC and BOCOG during the bidding process and the investment, construction (design and construction), operation and transfer of the Project. These rules include but are not limited to the rules contained in the following document in the next paragraph. If there is any discrepancy in the requirements for the relevant matters between the International Federations and the Organizing Committee for the Olympic Games with regard to relevant matters, IOC will be requested to make the final decision: relevant rules shall not restrict the Organizing Committees for the Olympic Games from proposing supplementary clauses or imposing higher requirements.

The followings are some important relevant regulations and contracts/agreements: the Olympic Charter, Host City Contract for the 29th Olympic Games, Rules on Protection of the Olympic Marks, the Market Development Agreement for the 29th Olympic Games, Guidelines for design of the National Stadium Olympic Project, Cooperative Joint Venture Contract and the Concession, Cooperative Joint Venture Contract, the National Stadium Agreement and Concession Agreement. According to these documents,

some government supports and incentives have been provided to facilitate the implementation of the Stadium in BOT mode, as briefed below:

- BMG provides land at very low cost (1040 RMB per square meter for gross land development). This is really a quite low price compared to the 10,000 RMB per squire meter for other land nearby.
- BMG contributes 1.8154 billion RMB, 58% of total investment (3.13 billion RMB) but will not get any dividend.
- BMG provides necessary infrastructure (water, electric and road etc) connection to the site and all other help and convenience for the construction and operation of the Stadium. For example, for easy shipping on road large steel structure components for the Stadium, the BMG has issued a special passport to the Project Company.
- During the Test Competitions/Events and the Olympic Games, BOCOG will pay fees to the Project Company. BMG will also undertake all expense of special equipments used for the opening and closing ceremonies as these equipments cannot be used for daily operation after the Game.
- During the concession period, BMG will not permit to develop new competitive stadium or to expand any existing competitive stadium in northern area of Beijing.

6.7 Basic Deal Structure

The Concession Agreement is signed between the BMG and the Project Company.

6.7.1 The BMG's Obligations

BMG grants the Project Company the rights to invest, finance, design and construct the Stadium and thereafter, to operate, maintain and repair it during the concession period on the terms and conditions set in the Concession Agreement.

The Land Administrative Authority of BMG gratuitously offers the Project Company the allocated land use rights of the Project Facilities Site (collectively, the "Land Use Rights"), for which the Project Company is not required to pay the land premium or supporting infrastructure construction fee, provided that

the Project Company shall bear the first level land development expenses (RMB 1,040 per square meter) of the Project Facilities Site.

6.7.2 The Project Company's Obligations

The Project Company will invest, finance, design and construct the Stadium and thereafter, to operate, maintain and repair it in the term. And the Project Company will make available the Stadium to BOCOG for the holding of Test Competitions and Test Events and the Olympic Games. During the period, the BOCOG have to pay for the Project Company. The amount is determined as follows: the actual operation fee minus the daily operation fee. The daily operation fee is the project's operation fee when it doesn't hold any games. At the expiration of the concession period, the Project Company will transfer the Stadium at no cost to BMG or its nominated transferee. The concession period is commencing from the Completion Date, December 31, 2006, and, subject to earlier termination, ending on December 31, 2038.

6.7.3 The Project Company's Revenues

The Project Company can get all revenues from the Project in the ways below:

- Revenue from television, radio and other media;
- Sponsorship;
- Advertisement (main);
- Franchise;
- Commercial space rent e.g. offices, boxes, parking lots, restaurants, supermarkets and hotels etc (main);
- Gate and ticket sale;
- Sport and performance etc events; and
- Selling the naming right (brand) after the Olympic Games (main).

The Project Company will get all revenues during the concession period except the Olympic Games Period. During the Olympic Games Period the Project Company will only get rent fee paid by the BOCOG.
Because the project is still under construction, a detailed revenues structure is not available at the moment. But the Project Company is starting to make some plans. For example, there are about 80,000 square meters of building area for commercial use and 1000 parking lots, 110 corporate boxes, 4 restaurants (2 Chinese and 2 western), a membership hotel on the 4th and 5th floor

(about 70 rooms) and 40000 square meters for supermarket (the Project Company is negotiating now with the Wal-Mart company).

6.7.4 The Competitive Stadiums

As mentioned in Section 6, the Project Company will just compete with the existing stadium. As many of the existing stadiums are obsolete and not as big as the National Stadium, there will be only little competition from other large stadiums during the concession period. If a new stadium is very necessary to be built, the BMG will negotiate with the Project Company, and in accordance with the concession agreement, the Project Company will get enough compensation.

6.8 Sources of Finance

6.8.1 The Shareholders of the Project

The BMG authorizes Beijing Development Planning Commission, a functional authority of BMG, duly established and existing in accordance with Law, to sign the Agreement on BMG's behalf. And the Consortium is formed by three parties, the CITIC, BUCGC, GSHGC (collectively the "Bidders"). After the Consortium won the tender, they set up a Project Company (the "Project Company") jointly with Beijing State Owned Assets Management Corporation (BSAMC) that is the representative of the BMG.
The original and current proportions of the shareholder's equity are compared in Table 4.

Table 4 – Comparison of Original and Current Proportions of Equity

	Original			**Now**		
Shareholders	Proportion in Consortium	Proportion in Project Company	Equity Amount (RMB 10^3)	Proportion in Consortium	Proportion in Project Company	Equity Amount (RMB 10^3)
BSAMC		65.980%	762,100		58%	605,133
CITIC	65%	22.113%	255,410	65%	27.3%	284,830
BUCGC	30%	10.206%	117,880	30%	12.6%	131,460
GSHGC	5%	1.701%	19,650	5%	2.1%	21,910
Total	100%	100%	1,155,040	100%	100%	1,043,333

6.8.2 The Financial Arrangements of the Project

The non-equity financing of the Project is mainly loan from banks. The Project Company thinks domestic commercial banks that have also shown strong interest in the Project have good financing capacity in both domestic and foreign currencies. The Project Company therefore is confident in raising the required RMB 785.89 million from domestic commercial banks.

Table 5 is a comparison of the original and current proportions of various kinds of fund. During the biding period, the CITIC Consortium used the original proportions of Fund. The government thought the proportion for government is too high and therefore chose the BCEG Consortium. But after the BCEG Consortium was dropped out due to failure of reaching Consortium Agreement among shareholders, the government could only negotiate with the CITIC Consortium. Finally, they agreed on the current proportions of Fund.

Table 5 – Comparison of Original and Current Sources of Fund

	Original		**Current**	
Source of Fund	Proportion in total investment	Amount (RMB million)	Proportion in total investment	Amount (RMB million)
Government Contribution	65.98%	2,286.29	58%	1, 815.40
Equity Capital from Consortium	11.34%	392.94	12.6%	394.38
Bank Loan	22.68%	785.89	29.4%	920.22
Total	100%	3, 1300.00	100%	3, 130.00

The bank loan is senior debt with tenor of 16 years (including 6 years of grace period). The details of the loan are as shown in Table 6.

Table 6 – Details of Bank Loan

Borrower	The Project Company
Lenders	Domestic Commercial Banks
Class of Debt	Senior Debt
Facility Amount	RMB 920.22 million
Tenor	16 years (including 6 years of grace period)
Currency	RMB
Interest	5.184% (10% discount on the base rate issued by the People's Bank of China)
Drawdown Period	4 years
Grace Period	6 years (including drawdown period)
Repayment	Principal will be repaid in equal installments on quarterly basis from 2010, and interest will be paid on quarterly basis from first drawdown
Prepayment	Prepayment is allowed

The Project Company has got the letter of commitment from three banks before the tendering, i.e. The Industrial and Commercial Bank of China, China Construction Bank, China CITIC Bank (The original name was CITIC Industrial Bank when it gave the letter of commitment.). But all banks are doubted about the Project's financial viability. After they heard that the Project may be cost overrun and the retractable roof is cancelled, they are more doubted the Project's financial viability. And therefore, the banks and the BMG now ask the shareholders (CITIC, BUCGC and GSHGC) of the Consortium to replace the Project Company to be the borrower of the money. The Consortium is reluctant to be the borrower, so it's still negotiating with the BMG now.

6.9 Insights into Major Issues

Three major issues of this project are discussed below. They are the disputes in the project, the canceling of the retractable roof and the risks involved in the project.

6.9.1 The Disputes in the Project

6.9.1.1 Disputes among the Project Company's Partners

There are some disputes arisen among the Project Company's partners. First, all partners want to get the profit of construction and the construction work of the project is divided into three parts to the CITIC, the BUCGC and the GSHGC as the proportion of the three companies' equity in the Project Company, resulting that the Project Company has not good control on construction. Second, due to the Project's structural characteristics and the detail design not ready, the contractor could only sign a Unit Price Contract with the Project Company. The BUCGC, as the general contractor, considers more its own profit, time and safety than the overall ones. This leads to construction cost overrun and the most conflict thing - the BUCGC asks for technical measures fee to accelerated construction schedule delayed mainly by the design changes due to cancellation of the retractable roof.

6.9.1.2 Disputes between the Project Company and The BMG

First, the original design of parking sparking spaces is 2000. But the BMG asks the Project Company to cut 1000 parking spaces because the BMG want to construct a large parking lot for the whole Olympic area. So the parking spaces for the Stadium will not be enough. Many people will have to park their car in the BMG's parking lot and walk to the Stadium. Second, the BMG asks the Project Company to cut more commercial area in the Stadium. Third, the BMG asks the Project Company to cancel the retractable roof. All these reduce the Project Company's sources of revenue. Fourth, the BMG set a tight deadline requiring the Completion Date to be before December 31, 2006 while changing the design. There's not enough time for an economic construction. Considering the requirement of the tight deadline, the Financial Closing Date was set on December 15, 2003. But the actual date delayed for about 2 months, and just after the concession agreement was signed, BUCGC have to go into the site to commence construction.

6.9.1.3 Dispute between the Project Company and the Design Consortium

With regard to the design, there is a big problem for the Project Company. The BMG has not got the copyright of the National Stadium's design, but asked the Project Company to follow the design. This leads to the Project Company's weak status when negotiating with the design consortium resulting that the design may not be good enough for proper commercial use. Usually, a project company is the owner of a facility and the design consortium should satisfy the Project Company's requirement. In addition, as the Stadium is used for 2008 Olympic Games, the BMG has played a more important role in deciding the blue print. This constrains the Project Company in maximizing the commercial and efficient use of the Stadium.

6.9.2 The Impacts of Cancelling the Retractable Roof

The BMG thinks the cancellation of the retractable roof can save much money and make a symbol of "Host the Olympic Games Frugally". In addition, the cancellation will also improve the safety condition during its construction and operation as it reduces weight of the roof and complexity of its installation and operation. But actually, there are pros and cons for this decision.

6.9.2.1 Pros of Cancelling the Retractable Roof

- Reduce the Material (mainly Steel) Used
  The cancellation of the retractable roof reduces the load of the steel structure and therefore saves at least 2000 tons of steel material used for the supporting structure and about 1700 tons of steel used for the retractable roof. In addition, after the re-design, many other parts can be saved. In a word, the cancellation of the retractable roof can save many materials which are worth of 200,000,000 RMB. Considering other saving in cost such as the easier installation of steel structure, it was estimated that the cancellation of the roof could save roughly 400,000,000 RMB in total but, although there is not detailed information released, it seems this estimation is a little optimistic according to actual progress.
- Reduce the Difficulty of Installing the Steel Structure
  The steel structure is very complex, and as one feature of the Stadium project, the unique wide span retractable roof is very hard to install. The retractable roof with its steel space truss rigid unit composed of two parts (about 80x80m, 8m high), spans the entire open space of the Stadium structure. It moves along the fixed rail on the permanent roof to get opened and closed. The fixed slide rail is underpinned by the rigid member at the front edge of the permanent roof, which is the steel edge beam of the permanent roof. The sliding distance is about 85m. The contractor has searched many ways to install it, but all will cost too much and are not very safe. After canceling the retractable roof, the contractor will make the installation of steel structure more easily.
- Reduce the Safety Risk
  The Stadium is the most fashionable design of the fourth era architecture of the world. But no actual Stadium of this kind has been built till now. The retractable roof is as big as a football ground, and weights 1700 ton. The structure to support the retractable roof also weighs 1700

ton. Because of the large weight and size, there may be some malfunctions when opening and closing the roof. So, the canceling of the retractable roof reduces the risks of the Stadium's safety.

6.9.2.2 Cons of Cancelling the Retractable Roof

- Incur Design Consortium's Claim

  Because the cancellation of the retractable roof is a great change to the design, many parts need to be redesigned, especially the steel structure and the film system. Almost all steel structure design needs to be renewed. So the design consortium claimed 40,000,000 RMB for redesign the project. That's almost one third of the primary design fee (120,000,000 RMB).
- Delay the Schedule and Cause the Cost Overrun

  Because there are many disputes about the cancellation of the retractable roof, the BMG invited many experts to discuss and evaluation it. After the discussion and the negotiation with the Project Company, the design consortium began to redesign it. But the redesign of the architecture and the structure need time, so at last, the contractor sometimes have to stop construction and waits for new construction drawings. In all, this change delayed the construction schedule for about half a year.

  As the Stadium must be completed in time for the 2008 Olympic Games to be hold in August 2008, the contractor has to work quickly to complete the first part of the project (the main structure) by December 31, 2006, and adopts many technical measures to speed construction. This leads to a huge cost overrun and the main contractor BUCGC therefore claims compensation fees for these additional technical measures. But the Project Company thinks this is caused by the BMG and the BMG should bear these additional costs. The disputes are still under negotiation now.
- Influence the Operation

  The influence of canceling the retractable roof on the operation of the project after 2008 Olympic Games includes three aspects.

  First, it reduces the operation fee. Opening and closing the retractable roof need operation fee. After canceling the retractable roof, this part of operation fee will be zero. But the Project Company thinks this part is not very big because there will be no more than 10 times of opening and closing the retractable roof in a year. Maintaining the

retractable roof also need money. After canceling it, this part of maintenance fee is also saved.

Second, it reduces the revenue of holding large performances and other events. In the original operation plan, the Project Company wants to develop five markets: the sports market, the sports exhibition market, the sports activities market, the cultural performances market and the tourism market. But the canceling of the retractable roof makes the Stadium from an all-weather stadium to an open air stadium. The weather will influence many activities held in the Stadium. So the Project Company will lose many contracts of renting the Stadium. The loss can't be predicated now.

Third, it reduces the Stadium's brand value. The Stadium was considered to be the only large stadium with a retractable roof in China. So the Project Company thinks it will be the most famous stadium in China and will attract many big companies to buy the name right of this project. After canceling the retractable, the Stadium will have no obvious unique characteristic to other large stadiums. The Project Company now is worrying about the brand value of the project.

6.9.3 Risks in the Project

The Institute of International Engineering Project Management of Tsinghua University has carried a study on risk assessment of sport venues for 2008 Olympic Games and has identified key risks associated with the Stadium project especially the four main mostly critical ones.

- Irrational Construction Schedule

  The construction must be finished on December 31, 2006 as requested by the BMG while the signing of the Concession Agreement was on August 9, 2003, there were only about 3 years left for construction. However, as the Stadium's technology standard is very high and the function is very complex, it took the contractor a lot of time in construction planning. What's more, the canceling of the retractable roof caused construction delay for about half a year as the design drawings can't be provided in time. The remaining construction schedule is very pressing.

- Cost Overrun

  The 3D steel frame system of the Stadium is very complex and there is no similar project in China especially that many parts must be incised and weld for two or three times. The inflated ETFE cushions installed to the proposed scale is quite innovative as building materials with few past experiences. Together with the nest-like steel structure, these caused potential fabrication, installation and maintenance problems. All these lead to a huge cost overrun which deteriorated the project balance sheet. And the risk can't be solved now.
- Small Market

  The concepts and themes for the National Stadium's design and construction will make it the most pre-eminent large-scale sport and performance facility in China. As such, it has integrated the most world-advanced high technology features as well as environment friendly operation processes. However, the biggest competitor of the National Stadium, i.e. the Workers' Stadium, will continue to enjoy certain advantages including lower operation costs and charges due to its investment having already been amortized. The National Stadium must create its own image and brand identity to capture the interest of future costumers and establish customer loyalty. To this end, it must create its own cultural and humane atmosphere and attract the best domestic and international sports events and performing arts agencies. Excellent services and advanced management techniques will be essential in attracting those agencies and the public.

  Nevertheless, the National Stadium's market is still small scale. Only non-commercial government-run large-scale events and private enterprises large-scale events will take place in the National Stadium. In order to build the image of the National Stadium nationwide and worldwide, these events must be widely broadcasted. There will be only 16 big events per year as forecast. So, if the market is smaller than forecast, there will be a large budget deficits for the Project Company.
- Lack of Operation Experience

  The performances held in the National Stadium will make the venue a new window of China to the rest of the world. The performances will include large-scale shows displaying Chinese culture as well as solo and group concerts by performers both from home and abroad. As to its future clients, the Project Company will establish relationships with sports federations, whether national, regional or international. Specific attention will also be given to establishing relationships with relevant government agencies such as the State Sports Administration, the Ministry of

Culture, and broadcasting agencies under the authority of the Ministry of Communication and foreign news agencies. The economic viability of large sport venues is also very much dependent upon the patronage of corporate clients. To this end the Project Company will develop relationships with all major domestic and foreign enterprises so as to ensure that National Stadium services and products meet the requirements of those organizations.

However the Project Company has never operated a Stadium, so they don't know how to operate it. They have signed a strategic operational agreement with Stade de France® seeking for consultation for the efficient operation of the National Stadium and a smooth transfer of know-how from Stade de France® to the Project Company. But the agreement may be terminated because of the high consultation fee. The Project Company is preparing to solve these problems all by themselves now. For example, the park outside the Stadium is so hard to manage for the Project Company, so it may be sublet to an advertisement company. The latter can have advertisements in the park at a proper location, and generate revenue from it.

6.10 Summary

As the National Stadium will be the main stadium for the 29th Olympic Games where the opening and closing ceremonies, the track and field competitions and the football final game will be held during the Games, it is therefore a must to have the project finished in time. But as known, most stadiums in the world can't get enough revenue from their own operation. To make the National Stadium viable for BOT application, the BMG has provided a lot of supports and incentives including contributing 58% of the total investment but asking no return. The public and private sectors, as authorized by the BMG, then set up jointly a Project Company, responsible for the financing, construction, operation, maintenance of the Stadium and will transfer it back to the BMG after 30 years of concession period. However, there are some disputes appeared up to now and these disputes especially the cancellation of the retractable roof have resulted or will result in problems which require both the Public and Public to solve clearly as no single party wants or can bear the negative impact alone. As both the CITIC and the BUCGC are state-controlled or owned large enterprises in China, they have to carry out the project in time by all means and re-negotiation between the Public and the

Public and among the partners may be one of the good ways in finding solutions.

From the project, the following lessons could be learnt:

- Government's supports & commitments is important especially for projects of this kind;
- Project scope should be well defined before signing agreements/contracts and a project company's shareholder agreement and design/construction contracts should be well formulated so as to avoid disputes in future;
- All parties should have common project objectives pursuing overall efficiency and cost reduction etc during the whole project life cycle;
- Proper risk management is critical, especially that it should align the Private's interests with the Public, have clear/strong contractual arrangements and enforcement;
- When disputes appeared, sometimes re-negotiation among partners especially with government is more efficient and effective than mediation/arbitration/lawsuit.

References

1. Beijing Development and Planning Commission (2002), Beijing Olympic Green (Area B) National Stadium Ownership Tender Volume Two Contracts and Agreements

Questions for Readers to Answer

1. Is the National Stadium suitable for adopting PPP given its unique and special characteristics?
2. How to ensure a state-owned enterprise in the Project Company to act as an independent legal entity?
3. Is the decision of cancellation of the retractable roof right or not?
4. What adjustments to the concession agreement should be made in response to the cancellation of the retractable roof of the National Stadium?
5. How to solve the disputes arisen in the National Stadium project?
6. How to improve the risk management of the National Stadium project?
7. According to your prediction, what will be the future of the Project Company and its partners?