PUBLIC – PRIVATE PARTICIPATION IN WATER INFRASTRUCTURE IN MEXICO

By

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Abstract

This thesis is structured in three parts such as review of literature, data collection and the generation of a method for delivering infrastructure projects to Mexico. The first part reviews the private participation in infrastructure projects including public finance, privatisation and concession contracts; it also outlines the Private Finance Initiative and the Public Private Partnerships. The literature review of this research investigation examines the role of governments in developing countries in concession contracts including governmental aspects such as legal, political and bureaucratic support, risks, guarantees, transfer of the facility and outlines some roles that the Mexican government has undertaken in concession contracts. It also outlines the project finance approach, the sources of international and domestic finance through the global financial markets. Furthermore, it examines the financial instruments and financial risks. The last component of the literature review consists in selecting the research method in order to carry out this research investigation. The second part which is data collection was carried out in order to develop a case study which is a waste water treatment plant located in Puerto Vallarta, Jalisco, Mexico. This case study contains a brief history of Mexico and the project, the concession contract and organisational structure including contracts and agreements; it also contains the financial package including financial instruments, payment mechanism, and assignment of revenues stream and assignment of risks. This data collected was at the same time verified by the executives that performed this project. The third part consist in the development of a hypothetical concession project which is a solution for delivering infrastructure projects applicable to Mexico, this is presented in this thesis as the novel method which is validated by several experts in the field of project finance in developing countries and Mexico. Finally, conclusions are drawn in the last chapter along with recommendations for further work.

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To my family for being always with me.

To my friends and colleagues;

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CHAPTER ONE

INTRODUCTION

1.1 INTRODUCTION

This chapter begins with the overall purpose of this research investigation, discussing some of the reasons for the need for methods of financing infrastructure projects in developing countries through concession contracts. It subsequently presents the aim and the objectives to be investigated throughout this thesis. Furthermore, it outlines the methodology to be employed in order to conduct this investigation and also summarises the limitations and scope of this research investigation. Finally, it summarises each of the chapters that contains this thesis.

1.2 JUSTIFICATION OF THIS RESEARCH INVESTIGATION

Developing countries are widely recognised for their problems, mainly for their enormous poverty and great necessity of infrastructure services. In this context, a developing country is going to be defined as any country in which a significant proportion of the population is yet to be served by adequate infrastructure services.

In the case of Mexico, the level of public finance derived from the low collection of general taxation makes it to borrow from multilateral and bilateral development agencies to finance its infrastructure development. Most developing countries now have a great debt burden and are spending a large proportion of their meagre finances in meeting debt payments.

Conventional methods of public financing and management of infrastructure services have also contributed to the existing debt burden in most developing countries. Those traditional methods have failed to keep pace with the rising demand for infrastructure services and adequate maintenance. Whereas these countries used to borrow in order to invest in development of infrastructure, a large proportion of the funds borrowed is now used to service debts with little funding available for infrastructure development projects and a little less to maintain the existing facilities.

Governments in developing countries are caught in a situation that calls for new ways of dealing with the multiple problems of deteriorating infrastructure and rising demand for quality infrastructure brought about by rising population and worldwide competition in trade, decreasing aid from conventional donors, high debt burden and poverty that has reduced public financing previously used to finance infrastructure projects.

Nowadays these countries are trying to develop policy and regulatory frameworks to ready their fledgling or new facilities to support economic reforms. One way forward is to seek active private sector participation in the financing and management of infrastructure projects.

The recent surge in private investment in infrastructure projects has many causes. Among the most important are the inefficiencies of public provision of services, the lack of maintenance, the need for economic pricing and cost recovery, technological advances enabling greater private participation, advances in regulatory frameworks, the need for private resources, the transfer of different risks and the potential investment gap developing countries face.

The decline in the level of public financing infrastructure projects from conventional sources and the debt burden facing many developing countries suggest a need for alternative methods of financing and managing projects. Therefore, there is a need for active private sector participation in the financing and management of infrastructure projects in developing countries. And this is possible for projects with potential revenues generation or with a combination of public and private participation.

1.3 AIM AND OBJECTIVES

1.3.1 Aim

The aim of this thesis is to develop a method with the public and private sector participation in the provision of infrastructure projects to Mexico.

1.3.2 Objectives

The strategy to achieve the above aim is going to be throughout the following five objectives:

1. To review existing practices and problems of financing infrastructure projects with concession contracts in Mexico.

2. To examine in detail the United Kingdom and international private sector financial methods using the Public – Private Partnership (PPP) scheme.

3. To outline the key role of the government in developing countries with the concession contract approach.

4. To develop a method through the Public – Private Partnership scheme applicable to Mexico.

5. To verify and validate the new developed method applicable to Mexico.

1.4 METHODOLOGY

The methodology to be employed in conducting this research investigation involves an extensive review of literature; the collection of data including the analysis of the data collected in order to develop a case study; and the design of a hypothetical case study including its verification and validation.

The review of literature covers the private participation in infrastructure projects through concession contracts containing existing practices of financing concession contract in Mexico. Additionally, it covers the role of the Mexican government in concession contracts, project finance

to concession contracts in developing countries including the Public Private Partnerships and the research methodology to be employed in this research investigation.

The collection of data including the analysis of the data collected with the purpose to develop a case study contains the case study approach which consists in solving current problems through an examination of what has happened and thus save a lot of time not making the same mistakes and therefore improving the attractiveness of the project. Further analysis of existing theory provides data that is analysed. The term "case study" implies in a fairly intensive examination of what has happened in a single bounded context. It involves the measurement and examination or study of what is there and how it got there. They can help to explore, unravel and understand problems, issues and relationships in a particular situation.

The design of a hypothetical case study including its verification and validation consist in the implementation and development of a hypothetical concession project with principles of project finance, the Public Private Partnerships and concession contracts that fits in the Mexican business arena. This hypothetical concession project also includes existing practices of financing concession contract in Mexico. Additionally, it considers the sources of finance in order to develop a financial strategy. The verification is supported with relevant sources of theoretical documents as evidence and the validation is achieved by different sources of evidence who are experts in deigning concession strategies for infrastructure projects for many countries with industrialised and developing economies.

1.5 LIMITATIONS AND SCOPE

This research investigation will be focused in infrastructure utilities projects in Mexico. In this research some considerations in limitations are made, the developing world was firstly selected because of its palpable necessity, later Latin America because of the social impact from one region to another region changes, then Mexico is finally selected as the area to be under investigation for the development of this method.

It is impossible in one thesis to consider all the fields of infrastructure in detail and it is necessary to focus in one sector. The sector of infrastructure utilities was selected for consideration in this study because is more feasible to get a case study regarding this sector. For the purpose of this thesis, the infrastructure project belongs to the water sector consisting in a waste water treatment plant in Mexico.

Project finance plays a crucial role in the implementation and development of infrastructure projects in any country. Therefore, some different strategies for financing infrastructure projects are discussed with the intention to select the most suitable for the participation of the private sector providing domestic or international capital resources and also with the intention to not commit to the local government to rely in more debt to deliver the new facility. For that reason, the concession strategy was selected and suitable instead of the public provision or privatisation of infrastructure projects.

The present work is concentrated in the investigation, revision of literature, application of a methodology, collection of data, analysis of the data collected, design a hypothetical case study and the verification and validation of the feasibility to develop a new method with the participation of the private sector in infrastructure projects in Mexico using principles and past experiences of concession projects utilising project finance approaches in use in the United Kingdom within the governmental Public - Private Partnerships (PPP) scheme.

1.6 THESIS OUTLINE

Chapter two outlines the private participation in infrastructure projects. It reviews different ways that the private sector participates in infrastructure projects including public financing, privatisation and concession contracts. It examines concession contracts in detail, containing reviews with definitions, background, organisational and contractual structure and describing the concession agreement and contractual agreements. It also reviews projects suitable for concession for developing countries. It finishes outlining the Private Finance Initiative and the Public – Private Partnerships.

Chapter three reviews the role of the Mexican government in the implementation of concession contracts. This chapter describes some preferable conditions that the Mexican government may have with the intention to attract the implementation of concession projects through domestic and international capital. These conditions are legal and political provision and some macroeconomic indicators. Furthermore, it reviews the different types of governmental support; legal, political and bureaucratic support. It examines different kind of risks and guarantees; governmental interests and finishes with the transfer from promoter to the principal which is the government.

Chapter four examines project finance to concession contracts in developing countries especially in Mexico. There are many ways in which project finance can be obtained; therefore, this chapter reviews project finance, sources of finance containing domestic and international markets.

Moreover, it presents an extensive revision of financial instruments containing debt, equity and mezzanine. It outlines important features in project finance and identification of financeable projects. It also outlines aspects of financial risks. Finally, it outlines United Kingdom programmes or schemes to deliver infrastructure projects such as the Private Finance Initiative (PFI) and the Public – Private Partnerships (PPP).

Chapter five outlines the research methodology. It introduces definitions of research, investigates the research approach. It explains different research methods such as experiments, surveys and case studies. Furthermore, it outlines the selection of the research methodology. Afterwards, it outlines the strategies of data collection and which strategy is going to be used to carry out this research. Finally, it reviews the different methods of doing data analysis containing some reviews of prejudices in research.

Chapter six contain a case study related to a concession project which is a wastewater treatment plant delivered in Puerto Vallarta, Mexico. This case study includes the recent country profile of Mexico and the project history. It also contains the concession contract and organisational structure containing the concession agreements and contracts. The case study also contains the financial package describing the financial instruments utilised in this concession project such as equity and debt. Additionally, it explains the payment mechanism and assignment of revenues stream. Furthermore, it gives details of the assignments of the risks involved in this concession project.

Chapter seven designs a hypothetical concession project. It contains the strategy to be utilised to build it dividing the public and the private sector. It illustrates the concession contract and its organisational structure. It describes the governmental and political support; legal and regulatory support and it explains the macroeconomic indicators. Furthermore, it explains the concession agreements and contracts. The concession agreement considers concession period, consumers, project supervision, refinancing, taxation, principal's financial assistance, default, additional connections, early recovery investments, dispute resolution, transfer of the facility, quality assurance, risk allocation, and guarantees. It contains more agreements and contracts such as supply contract, loan agreement, shareholders agreement, offtake contract, operation contract and construction contract. Moreover, it considers the financial package which contains a very well detailed and structured financial strategy; it also contains the payment mechanism and the allocation of revenues stream. Additionally, it describes the allocation of risks including political, construction, operation and maintenance, financial and market risks. Finally, it gives a description of the financial engineering of several cash flows modelled and explains and compares the cash flows results.

Chapter eight presents the verification and validation of the hypothetical concession project. It presents some terms of verification and validation. It reviews some verification and validation approaches for case study research. It outlines construct validity, internal validity and external validity and reliability. Furthermore, it discusses the verification and validation methodology. Moreover, it constructs validity achieving verification and validation of the hypothetical concession project.

Chapter nine reviews the aim and objectives with the purpose to conclude this research investigation. Therefore, the conclusions are presented, along with the recommendations for further work.

CHAPTER TWO

PRIVATE PARTICIPATION IN INFRASTRUCTURE PROJECTS

2.1 INTRODUCTION

This chapter discusses the different ways of financing infrastructure projects in developing countries. It comments the provision of infrastructure projects through public financing. It describes some recent literature regarding privatisation of infrastructure projects. It begins with some different definitions and illustrates with background the privatisation of infrastructure projects. Later, explains Concessions of infrastructure projects with definitions and its own background. It points out the organisational and contractual structure appointing the concession agreement and the concession period. It also discusses issues concerning to the projects suitable for concessions and concession for developing countries. Finally, there is an outline about the Project Finance Initiative which ends up with the Public – Private Partnership.

2.2 FUNDING FOR INFRASTRUCTURE PROJECTS

The provision of infrastructure projects has traditionally been delivered by the public sector. Merna and Njiru (2002) discusses that funds for the development of infrastructure projects are traditionally obtained from general taxation or borrowed from multilateral or bilateral agencies. Due to low level of public finance derived from general taxation, most developing countries rely on borrowing from multilateral and bilateral development agencies to finance infrastructure development. Most of the developing countries now have a great debt burden and are spending a large proportion of their insufficient finances in meeting debt finances. Whereas these countries used to borrow in order to invest in their infrastructure, a large proportion of the funds borrowed are used to service debts, with little going to finance infrastructure development projects. The

level of finance available for borrowing from the traditional sources has reduced in the recent past.

Traditional methods of public financing and management of infrastructure projects have failed to keep face to the rising demand for infrastructure services in most developing countries. The private sector has, traditionally, only passively participated in the provision of infrastructure as consultants and contractors during the implementation phase of infrastructure development projects that are financed and managed by the public sector. In recent years, many countries have seen the need to look for alternative methods for financing and managing infrastructure projects. The private sector has often been called upon to participate actively in the financing and management of infrastructure projects. Such participation in possible and sustainable only if the objectives of both the public and the private sector are met, while providing users with quality infrastructure services at a competitive price.

For the purpose of this research investigation, three main forms of providing infrastructure projects are examined, described and outlined such as public finance, privatisation and concession of infrastructure projects. Furthermore, the private participation form is outlined in more detail in this chapter along with two main political initiatives carried out in the United Kingdom such as Project Finance Initiative, PFI, and Public – Private Partnerships, PPP.

2.3 PUBLIC FINANCE FOR INFRASTRUCTURE PROJECTS

Public finance for infrastructure projects, according to Merna and Njiru (2002), is the traditional source of funds for investment in infrastructure projects in both developed and developing countries. Governments traditionally own, build, operate and finance nearly all infrastructure, primarily because its production characteristics and the public interest involved were thought to require monopoly and hence government provision. Funds raised from taxation have provided all or part of the public finance required for infrastructure projects. Public finance is also used to subsidise existing infrastructure projects.

The provision of infrastructure projects has traditionally been delivered by the public sector from general taxation or borrowings from multilateral or bilateral agencies. Due to low level of public finance derived from general taxation, most developing countries rely on borrowing from multilateral and bilateral development agencies to finance infrastructure development. Most of the developing countries now have a great debt burden and are spending a large proportion of their insufficient finances in meeting debt finances. Whereas these countries used to borrow in order to

invest in their infrastructure, a large proportion of the funds borrowed are used to service debts, with little going to finance infrastructure development projects.

According to Yescombe (2002), governments used to provide infrastructure projects through different contracts with short term financing throughout periodic payments per week or per month, or by facility; such as contracting out, subcontracting, permits, EPC which means Engineering, Procurement and Construction, and through other methods.

In the same manner, the governmental agency or principal seeks that the construction firm or promoter raises finance with the intention of obtaining the total funding of the costs of the new facility and after the commissioning phase the principal or governmental agency pays back to the construction firm or promoter, these are contracts called lump sum or turn key.

Additionally, in the event that the principal seeks monthly or periodic payments of finished work, the construction firm needs to raise finance for that month or period and when the period is finished; the government agency or principal pays back the total cost of the new facility to the promoter. These types of contracts are normally called EPC. Some of these are by period, by facility, target or objective, among others.

Nowadays governments have failed to keep face to the rising demand for infrastructure services in most developing countries. Therefore, governments have turned to the private sector with the purpose of participating in delivering and funding infrastructure projects. The private sector has, traditionally, only passively participated in the provision of infrastructure as consultants and contractors during the implementation phase of infrastructure development projects that are financed and managed by the public sector. In recent years, many countries have seen the need to look for alternative methods for financing and managing infrastructure projects. The private sector has often been called upon to participate actively in the financing and management of infrastructure projects. Therefore, private sector participation in infrastructure projects with finance provision may be delivered through privatisation and concession. Both methods to finance infrastructure projects are examined and discussed subsequently.

2.4 PRIVATISATION OF INFRASTRUCTURE PROJECTS

2.4.1 Definitions

Ramanadham (1989) conceptualises that privatisation is a term that is employed to convey a variety of ideas. In the UK, the idea that is most prominently suggests is "denationalisation" in the sense of transferring the ownership of a public enterprise to private hands. The concept of privatisation is, in fact, far wider. It is to be understood, not merely in the structural sense of who owns the enterprise, but in the substantive sense of how far the operations of an enterprise are brought within the discipline of market forces.

Cook and Kirkpatrick (1988) consider that privatisation could be understood as a range of different policy initiatives designed to alter the balance between the public and private sectors. It is possible to distinguish three main approaches to privatisation. The first and the most common use of the term is referred to a change in the ownership of an enterprise from the public to the private sector. The second mode involves the liberalisation, or deregulation, of entry into activities previously restricted to public sector enterprises. The third use of this term is where the provision of a good or service is transfer from public to private sector, while government remains ultimate responsibility for supplying the service.

A definition related to privatisation focused in infrastructure services is provided by Gómez-Ibáñez and Meyer (1993); where they suggest that privatisation can assume many different forms, and three are the most common: firstly, the sale of an existing state-owned enterprise; secondly, the use of private financing and management rather than public for new infrastructure development; and thirdly, the outsourcing, which is contracting out to private vendors, of public services previously provided by government employees. A wide variety of competitive, regulatory and subsidy polices has accompanied these forms of privatisation.

The second form of privatisation, private rather than traditional public sector infrastructure development, according to Gómez-Ibáñez and Meyer (1993), has become quite popular, at least in an experimental sense, almost everywhere. Even though, different authors have catalogued this second form of privatisation as concession such as Smith and Merna (1996). In the United States, several private proposals where made during the 1980's to build highways, urban rail transit, sewage and water treatment plants, solid waste incinerators, and landfills. The private provision of infrastructure was popular elsewhere, though, well before its revival in the United States. Private toll roads, for example, accounted for a large percentage of a large percentage of

total high-performance highways built in France and Spain since the late 1960's. In recent years, moreover, other European countries, after long relying on tax financing of highways-performance roads, have begun to explore private toll roads, for example Britain and Scandinavia. A better illustration of the use of private means to finance and develop a major infrastructure facility is provided by the channel tunnel linking northern France with south-eastern England. Very high-cost facilities, such as tunnels and bridges, have long been financed by tolls, even if not always privatised, in much of the world. In the same fashion, high performance highways in developing countries have commonly been financed by tolls, and increasingly by private companies rather than public authorities.

The three basic types of privatisation usually arise from three somewhat different motives. For the sale of state-owned enterprises and contracting out, a primary motivation has been a widespread belief that the private sector is inherently more efficient than the public sector. A privately managed enterprise or a private contractor, motivated by the possibility of profit, may have stronger incentives to be more cost conscious, efficient, and customer oriented than a public enterprise.

Infrastructure privatisation is often motivated by a desire to tap new sources of funds to supplement the constrained resources of the public sector. Efficiency may still be claimed as an important advantage as the private sector is often thought to build infrastructure cheaper or faster than public counterparts. Usually the primary concern is that the public sector simply does not have the financial resources to build the infrastructure needed. Unlike many other government services; moreover, infrastructure can often be supported by charges levied on users. Privatisation offers the potential for financing infrastructure without overt increases in taxes. Privatisation has particular appeal when the public sector faces considerable taxpayer resistance and is unable to expeditiously finance badly needed facilities or activities that the private sector might undertake for a profit.

2.4.2 Background

According to Smith (1999), adequate levels of infrastructural provision are essential to support and encourage economic development, and it therefore follows that, for economic growth to be sustained, the level of infrastructural provision must keep pace with economic development. The lesson is demonstrated by history; in the early seventeenth century, most bulk cargo was carried by river, sea and pack horse, but by the end of the seventeenth century, trade and commerce had begun to demand improved internal communication and transportation systems. In Britain this

impetus gave rise first to the development of tolled "turnpike" roads, and was followed in turn by the widespread development of canals and railways, all largely driven by the needs of the industrial revolution. Alongside the need for improved transportation links, and to satisfy not only the demands of industry but also of an increasingly urbanised society where the improvement of living standards was perceived to be essential for public health, came the need for improved water supplies, electricity and gas generation and distribution, and communications systems. Virtually all of this initial infrastructure, not only in Britain but also in many other parts of the world, was developed and constructed by private entrepreneurs using private sector capital. Only later, when the private sector model was perceived by those in authority to be either "inefficient" or socially discriminatory, were these enterprises taken under public sector control.

The infrastructure investment required to meet the needs of twenty-first-century business, particularly in the developing world, will be immense. Although today's business and commerce, the cornerstone of our economic activity, is increasingly carried out through the medium of computer systems and the electronic transfer of information, leading some commentators to predict the more workers will operate from home, we should not lose sight of the fact that manufactured goods and raw materials still need to be moved from factory to customer, that industry's energy needs appear to be constantly increasing despite energy saving initiatives, and that the "information super-highway" itself needs increasingly sophisticated physical communication links. Neither must we forget the need for the improved physical infrastructure required to sustain social development. Even with an increasingly "home-based" work-force, societal development still needs "public" facilities such as schools, universities, hospitals and prisons.

In the developed world much of this necessary physical infrastructure already exists, although much requires periodic substantial repair and renewal, but much of the developing world still lacks even the bare essentials of adequate transport links, energy supplies and clean water let alone adequate "public" facility.

Nevertheless, according to Gómez-Ibáñez et al. (2004), the perception that private provision has delivered less than it was promised is widespread and understandable. Many advocates of privatization in the 1990s made strong claims about its advantages and contributed to unrealistic expectations. And in retrospective it is clear that we severely underestimated the difficulties of privatization. We often failed to appreciate that the challenge of privatization was not primarily technical, but also fundamentally political.

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Gómez-Ibáñez et al. (2004) comment that the debates over alternative privatization and regulatory schemes traditionally have been dominated by economists, lawyers, and investment bankers. While their perspectives are essential, the experience of the last decade suggests that is the political dimension that has been most seriously neglected or underestimated. If the need for private infrastructure is still strong but the public has grown more skeptical, then the problem of building and sustaining political support will be even more critical and more difficult in the future.

2.5 CONCESSION OF INFRASTRUCTURE PROJECTS

2.5.1 Definitions

Kerf, Gray, Irwin, Levesque and Taylor (1998) comment that a concession refers to any arrangements in which a firm obtains from the government the right to provide a particular service under conditions of significant market power. Concessions are arrangements called franchises, operating concessions, management contracts, leases, affermages which is a form of lease used widely in France, build–operate–transfer contracts "BOT" and so on. The names are not always applied consistently, nor are they always helpful. What really matter are the incentives and opportunities created by the contract. One key difference among various concession arrangements is the nature and extent of the risk they transfer from the government to the concessionaire. The intention in this research investigation is not to define these different arrangements, is merely to show that there some other types of concessions, where the legislation of the different countries reinforce private finance like in the European Union, North America and Mexico.

After the above perspective, a closer definition is attached for this research investigation and is given by Smith and Merna (1996), they define a concession contract as "a project based on the granting of a concession by a principal, usually a government, to a promoter, sometimes known as the concessionaire, who is responsible for the construction, financing, operation and maintenance of a facility over the period of the concession before finally transferring the facility, at no cost to the principal, a fully operational facility. During the concession period the promoter owns and operates the facility and collects revenues in order to repay the financing and investment costs, maintain and operate the facility and make a margin of profit".

The concession agreement may be defined as the contract between the principal and the promoter in which the concession is defined and granted and essential risks associated with it are

addressed, described and allocated. The agreement will describe any facility vehicle which the parties have agreed should be put in place to give effect to the concession, setting out its technical and financial requirements and specifying the parties relative obligations in relation with its design, construction, implementation, operation and maintenance over the lifetime of the concession.

2.5.2 Background

The utilisation of private finance in the provision of infrastructure services is not new. According to Smith and Merna (1996) concessions were granted as far back as thirteenth century, usually by the Crown to the church or the nobility. In recent times grants of certain privileges were given by governments to persons about to construct railways, from land companies, commence mining operations, or carry out an undertaking deemed to be in the public interest.

Privatised infrastructure in France can be traced back to the eighteenth century when a concession was granted to provide drinking water to the city of Paris. A concession to mine salt, granted by Louis XIV, provided the credit line for the construction of the Canal Du Midi. In the nineteenth century ambitious projects such as the Suez Canal and Trans Siberian Railway were constructed, financed and owned by private companies under concession contracts.

Smith and Merna (1996) mention that the increasing political risks caused the entrepreneurial style of the Nineteenth century to disappear after the First World War, especially in third world countries as newly independent governments implemented nationalised infrastructure projects. Similarly after 1945, governments showed increased involvement in the reconstruction of war damaged infrastructure and in the development of new nationalised industries. Although many of these early projects were expropriated by governments, investors were again considering overseas market opportunities in politically stable locations to generate greater profits than those achievable in domestic markets.

In France, however, the private sector continued to play a significant role in the development of infrastructure with many of French water distribution companies being privately owned. Since 1970 concession contracts have been undertaken for the construction and operation of motorways as is discussed in the following paragraph.

Smith and Merna (1996) discusses that in the late 1970's and early the 1980's a number of major international contracting companies and developing countries began to explore the possibilities of

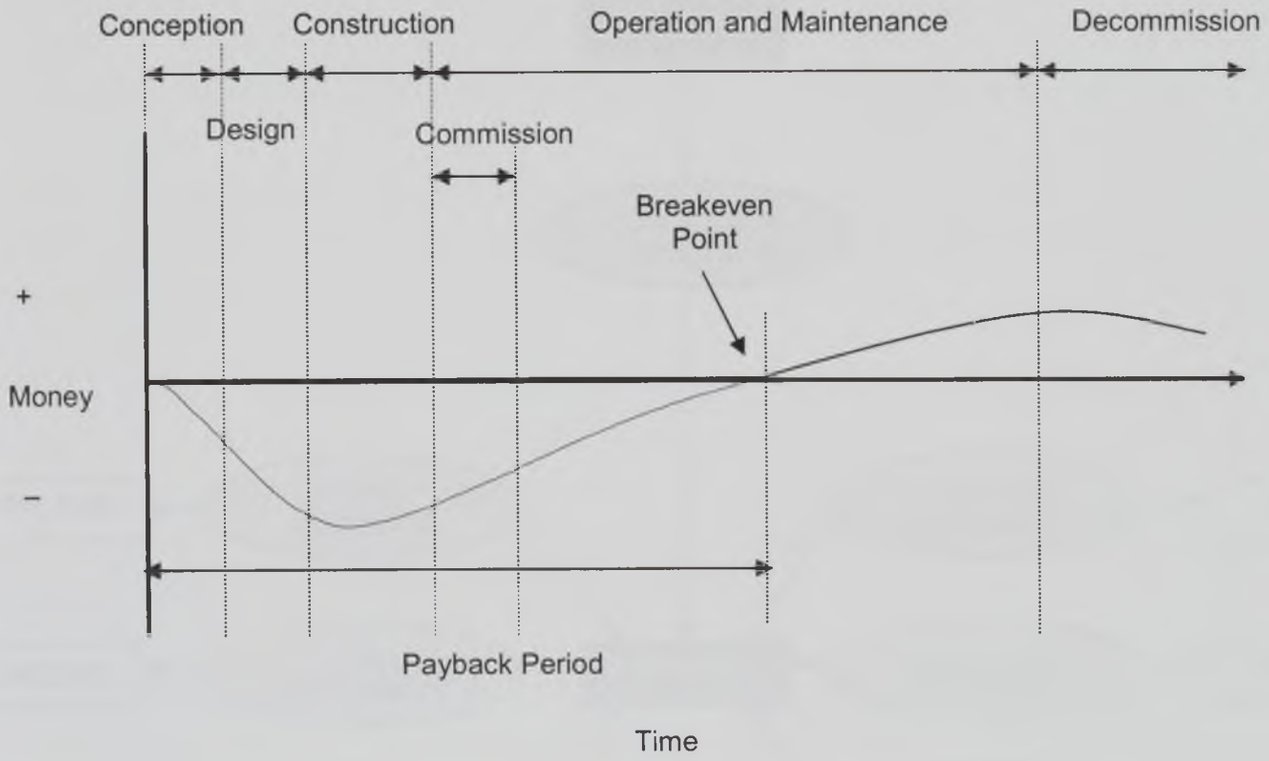
promoting privately owned and operated infrastructure projects financed on a non-resource basis under concession contracts. The term BOT was introduced in the early 1980's by the Turkish Prime Minister Turgat Ozal to designate a "build, own and transfer" or a "build, operate and transfer" project. This term is often referred to as the Ozal Formula. Other acronyms used to describe types of concession contract include:

FBOOT	- finance, build, own, operate, transfer;
BOO	- build, own, operate;
BOL	- build, operate, lease;
DBOM	- design, build, operate, maintain;
DBOT	- design, build, operate, transfer;
BOD	- build, operate, deliver;
BOOST	- build, own, operate, subsidies, transfer;
BRT	- build, rent, transfer;
BTO	- build, transfer, operate; and
BOT	- build, operate, transfer.

In Build–Own–Operate, (BOO), projects the promoter raises the finance and owns and operate the facility. These contracts require the promoter to finance, design, construct and operate facilities over a given period but without the requirement to transfer the facility to the principal, In a BOO project, ownership of the facility is retained by the promoter for as long as is desired and therefore is more consistent with the concept privatisation than the BOOT project.

Many of the acronyms are alternative names for BOOT projects, but some denote projects which differ in one or more particular aspect, although they all adopt the main functions of a concession strategy. The descriptions Build–Operate–Transfer and Build–Own–Transfer are often used interchangeably.

The basic difference between public and private ownership of a facility is that the private organisation is motivated by the expectation of profit in capital investment. Private organisations will often consider returns and benefits to cover costs and profit as monetary revenues in contrast to public agencies that will consider the social benefits when evaluating a project. Figure 2.1 shows a representative cash flow curve throughout the concession period.



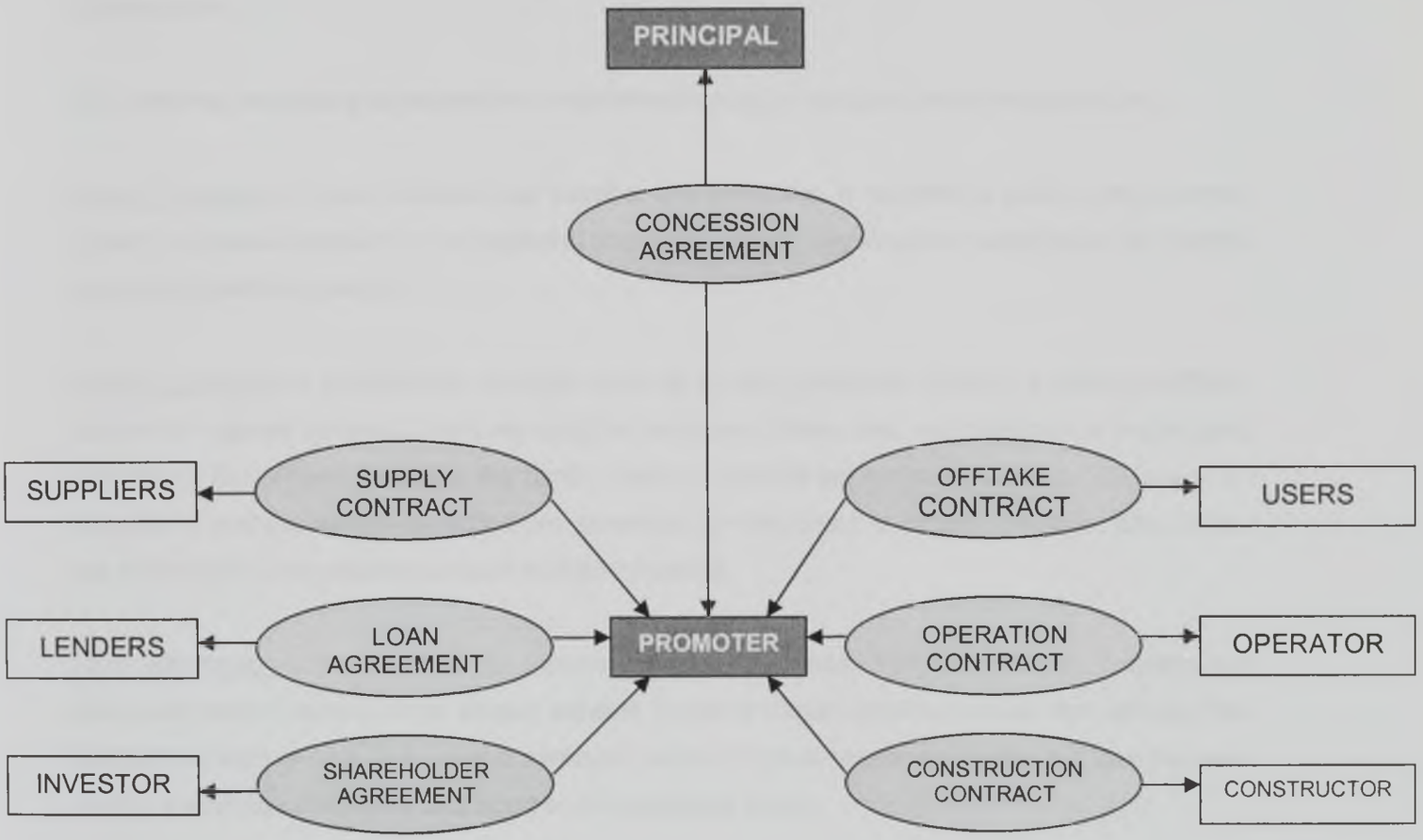
Project Account Balance or Cash Flow Curve

Figure 2.1 Typical investment curve (Source: Smith and Merna, 1996)

The "Own" element in a BOOT strategy is consider beneficial by the principal because the promoters' investment in an equity stake often guarantees their commitment to the success of the project. However, the ownership of a BOOT project's assets or patented licenses is often questioned since there may be difficulties regarding the leasing, operation or transfer of assets and licenses under a concession.

2.5.3 Organisational and Contractual Structure

Smith and Merna (1996) identified a typical structure indicating the number of organisations and contractual arrangements that may be required to realise a particular project and this is shown in figure 2.2.



Key Organisations and Contracts

Figure 2.2 Typical BOOT Corporate Structure (Source: Smith and Merna, 1996)

Smith and Merna (1996) that the key organisations and contracts include:

Principal: is responsible for granting a concession and the ultimate owner of the facility after transfer. Principals are often governments, government agencies or regulated monopolies.

Concession Agreement: is the document which identifies and allocates the rights, responsibilities and risks associated with the project. The preparation and evaluation of a BOOT project bid is based in the structure of the terms and projects conditions contained within the agreement.

Promoter: is the organisation which is granted the concession to build, own, operate and transfer the facility. Promoter organisations are often construction companies or operators or joint venture

organisations incorporating constructors, operators, suppliers, vendors, lenders and shareholders.

The following secondary organisations and contracts may be included within the structure.

Supply Contract: contract between the supplier and promoter. A supplier is often a state owned agency, a private company or a regulated monopoly which supplies row materials to the facility during the operation period.

Offtake Contract: in contract-led projects such as power generation plants, a sales or offtake contract is agreed between the user and the promoter. Users are organisations or individuals purchasing the offtake or using the facility itself. In market-led projects, such as toll roads or estuarial crossings, where revenues are generated on the basis of directly payable tolls for the use of the facility, an offtake contract is often infeasible.

Loan Agreement: is the basis of the contract between the lender and the promoter. Lenders are often commercial banks, niche banks, pension funds or export credit agencies that provide the loans in the form of debt to finance a particular facility. In most cases one lender will take the lead role for a lending consortium or a number of syndicated loans.

Operations Contract: contract between the operator and the promoter. Operators are often specialist operating companies or companies created specifically for the operation and maintenance of the particular facility.

Shareholder Agreement: contract between investors and the promoter. Investors purchase equity or provide goods in kind and form part of the corporate structure. They may include suppliers, vendors, constructors and operators and major financial institutions as well as private individual shareholders. Investors provide equity to finance the facility, the amount often determined by the debt/equity ratio required by lenders or by a provision in the concession agreement.

Construction Contract: contract between the constructor and the promoter. Constructors may be individual construction companies or a joint venture of specialist construction companies. On occasions constructors have taken role of promoters on projects in UK and overseas.

2.5.4 Description of a Concession Agreement of Infrastructure Projects

Delmon (2000) describes that under the concession agreement the principal grants a concession to the promoter for a predetermined period; the concession period. The concession agreement may also set out the legal and tax regime applicable to the project, including the environmental obligations of the promoter. The terms of the concession will need to satisfy the requirements of the entire organisation involved in the concession project.

The most important part of a project is the concession agreement. The concession agreement allows the principal to allocate project risk to the promoter. The principal will identify those risks which it is prepared to bear and allocate the remaining risks to the promoter. The principal may also wish to define to some extent the sharing of risk among the participants of the concession project through the concession agreement.

The concession agreement provisions in certain projects may be part of the offtake contract or the grant of the concession may be made by way of license or legislation. In many projects, the offtake provision will be an element of the concession agreement. For example, in hospitals, it is likely that the principal will be the purchaser of the use of the project; therefore the concession agreement will include the offtake purchase.

Delmon (2000) discuses that care should be taken to the legal regime in the host country which will apply to concessions for infrastructure projects. Many countries are modifying their legal system in order to allow greater freedom for governments agencies to let concessions for the development of such projects; however, the extent, effect and application of such legislation should be review carefully.

Smith and Merna (1996) discuss that the concession is the right or privilege the principal grants to the promoter to carry out certain works of construction, together with an obligation to operate those works for a specified period of time, known as the concession period.

Smith (1995) comments that the concession periods are sometimes referred to a form of lease from government. The concession period normally includes the construction period as well as the operation and maintenance period before transfer to the principal. A provision for an extension of the concession period may be included in the concession agreement to protect the promoter against the principal defaulting on its contractual obligations, which may result in projected returns not being met. Typical concession periods range from 10 to 55 years when granted by

government under the BOOT initiative. The concession period should be sufficient to allow the promoter to recover its investment and make sufficient profit within that period to make the project worthwhile; but not allow the promoter to overcharge users when in a monopolistic position having already recovered its investments and made sufficient profit.

Smith and Merna (1996) point out that the concession is documented in a concession agreement in which both the principal's and the promoter's respective rights and obligations may be set out and in which the risks to be assumed each party may be allocated.

The concession agreement should form the basis for all the contractual arrangements for a project. It can be viewed, as the agreement between the principal and promoter; as the most important and fundamental agreement.

As such the concession agreement should relate to both the terms of the concession and to the packages into which a project may be divided. The following definition can therefore be used, according to Smith and Merna (1996), as an agreement which form the contract between the principal and the promoter and is the document which identifies and allocates the risks associated with the construction, operation and maintenance, finance and revenue packages and the terms of the concession relating to a facility aver the lifetime of the concession before transfer of the facility to the principal.

The provision of the concession agreement will vary depending on, for example, the purpose of the concession, parameters set by the principal and the type of facility to be constructed. The concession agreement should be structured to accommodate all those provisions relating to the terms of the concession (general, specific and common), together with specific project conditions which relate to the construction, operation and maintenance, finance and revenue packages.

The concession agreement identifies and describes the terms under which the facility will be constructed and operated, determines the basic financing structure for the project and outlines the risk-reward sharing scheme. The key to any concession agreement is the concession itself.

Delmon (2000) indicates that during the concession, the primary interest of the principal will generally be as follows:

Completion date. The principal's need for the infrastructure in question is generally immediate (often as much for political as practical reasons). Further, the principal may be procuring other infrastructure or other investments closely related to the completion of the project. Therefore, the

success and revenue generation of several projects may be at risk where completion is not achieved by the identified completion date.

Performance of the project. Since the principal needs to receive sufficient output from the project for the duration on the concession to meet its needs as well as to ensure a project which performs in accordance with its requirements at the end of the concession period, the principal will want to establish performance standards and requirements. The principal's requirements will cover issues such as output, consumption, efficiency of operation, maintenance needs and costs, life cycle, quality of the output generated and cost of operation. Performance will apply to any project, although projects involving primarily civil works will have a different approach to performance. For example, a tunnelling project will be involved performance requirements related to life cycle issues, drainage, ventilation, lighting and emergency access.

Maintenance regime. The concession period is often when the project will have depreciated both in value and in operating capacity by the time for transfer back to the principal (where applicable). The incentive for the promoter to invest funds in maintenance during the final phase of concession period may be diminished, as proper maintenance will no longer result in greater revenue for the promoter owing to the imminent transfer of the project to the principal.

Construction and operation. The concession may be of a public nature, for example, the service rendered by the promoter may be one identified as being traditionally provided by the state. Therefore, the residents of the area surrounding the project or those affected by operation of the project may assume that its operation is somehow directly under the responsibility of the state. For this reason, the promoter's acts and omission directly imputed to the principal by the public.

Moreover, some governments require promoters to demonstrate technical and financial capability that they are able to finish the construction phase.

According to Delmon (2000), the following lines of the concession agreement sets out general project obligations, which will need to be passed through the participants of the concession project.

Duration: The duration of the concession period will need to meet the requirements of the financial model for the whole of the project. Where one of the principal's risks has occurred and the promoter requires some compensation the principal may prefer the concession period to be extended. By lengthening the concession period the principal provides the promoter with greater income without having to invest its own funds in the project. The financing agreement may need

to provide for a modification of debt servicing requirements where the concession period is extended owing to principal default. Such an extension would indicate some deficiency in the revenue stream and the promoter's subsequent ability to satisfy debt servicing on an as-modelled basis.

Termination: The lenders will wish to review opportunities for termination of the concession period and they will want to limit the principal's opportunity to terminate the concession. The lenders may also require cure rights as well as the right to step in to the concession agreement in order to cure any default before the principal has the right to terminate the concession. In addition, the lenders will want termination to result in sufficient compensation to repay them, regardless of the cause for termination. The principal will want to restrict termination compensation, possibly to actual value added, in particular where the project is terminated for promoter default.

Principal: The lenders will want to review the identity of the principal to ensure that the proper party is issuing the concession with the legal rights over the public sector service and site. It may be necessary to have multiple principals to assemble the necessary property and other rights and legal authority. The lenders will also want to know that the project will not suffer if the principal becomes insolvent or is privatised.

Exclusivity: Where the project involves an offtake contract that guarantees a price for output, the lenders will be protected against market risk for sale of project offtake. However, where the promoter is to take usage risk, the lenders will want to ensure that the concession agreement provides some level of exclusivity for the promoter, providing a captive market for offtake. Where no offtake contract is envisaged, the lenders will also want to ensure that the project payment stream is secure to a minimum debt service ratio, possibly through a flexible approach to the area to be served by the project (and therefore the number of end users) or by the principal ensuring a minimum level of return for the project. This may be achieved by granting additional works involved in the project.

Change in Law / Regulations: Promoter will probably be required to operate the project in compliance with applicable laws and regulation as the normal cost of doing business in the site country. The lenders will want the principal to bear any added costs due to changes in law and regulations, in particular where those changes are discriminatory against the project.

Licences and permits: Where further licences and permits must be obtained, the lenders will want to ensure that they are obtained before financial close and that fees charged or the requirements

imposed for renewal will not be discriminatory increased. The lenders may be satisfied with an undertaking from the principal to assist in applying for and procuring such licences and permits.

Assignment and security: The lenders will require that the promoter is able to assign its rights to the lenders, and that the lenders will able to take security over projects assets.

Regarding problem resolution, Turner (1995) comments that these mechanisms should be defined. Escalation of level is the control and resolution mechanism with dealing with problems, including conflict. This means that personnel must be encouraged to solve problems at their level within a time limit, or they are escalated to the next management level before they impact in the project and consequently the relationship. It is not possible to resolve disputes internally; hence it is necessary to have in place a process promoting the expeditious settlement of controversies.

According to Scriven et al. (1999) suggest that the means for resolving a dispute is a matter for agreement between the parties including a project supervision team. At the time of making their contract they may have agreed something specific involving one or more of the procedures, in which case they are likely to be obligated to follow them unless they agree not to. If there is no contractual obligation to pursue informal methods, parties are reluctant, after a dispute has arisen, to agree on whether, and if so how, to pursue informal methods and cases therefore wind up before the courts by default. Parties may select a group of specialists that may supervise the project in order to resolve controversies regarding technical and economic problems.

Parties may wish to specify different dispute resolution processes for different type of dispute. For example, a simple valuation dispute may be best suited to expert determination. In stipulating different processes for different disputes the parties should be aware that this may create jurisdictional disputes. They may be arguments as whether a particular dispute falls within the particular contractual definition. Jurisdictional disputes can be expensive and can be used to delay consideration of the substantive issues. Clarity of drafting is therefore necessary when specifying different dispute resolution processes for different disputes.

Another important issue, especially in an international context, is the variety of different legal systems potentially applicable to the contract and the dispute resolution process. This may include the governing law of the contract, which governs the parties' contractual rights and obligations as to the performance of the contract; the law of the place of the dispute resolution, which governs the procedural rules; and the law of the arbitration agreement, which governs the viability of the arbitration agreement which, if part of the contract, may be the same of the governing law of the contract.

Therefore, the governing law of the contract should be stipulated in the contract. In the context of international projects, it is important to bear in mind that litigation is a national dispute resolution process, tied to a particular national system of courts which may be modified for the specific project and parties involved.

On the subject of taxes, Cannon (1996) comments that taxation of profits are acceptable only when measured against the low level of equity or the low level of risks. Awareness of all potential tax implication throughout the life of the project is essential. Because tax laws are subject to change, it is very common for BOOT contracts to have economic stability clauses. These clauses adjust returns, cash flows, and/or revenues to account for unanticipated changes in any of the host country taxes that may affect the project.

The taxation of in-country operations by the host country can be minimised through the use of available tax holidays and accelerated depreciation methods. Developing countries often offer tax holidays during the early years of a project. As tax holiday may begin from either the first year or the first profitable year, it may be advantageous to maximise rather than minimise income of the project in the first few years. Delaying deductions and the lengthening depreciation may be options to maximise the benefits of the tax holidays.

Yescombe (2002) comments that project finance lenders do not want to have waited to take action until the project company has run out of funds to service the debt; therefore they create a defined set of "triggers" that gives them the right to take action against the project company. These are "event of default" – once and event of default has occurred, the project company is no longer able to manage the project without lender involvement. Some of these events (such as failure to pay, insolvency, etc.) would apply to any corporate financing, but others (such as failure to complete the project) are peculiar to project finance.

Yescombe (2002) outlines a number of typical events of default; nevertheless, two are the most important for concession projects such as:

- The project company, any project contract counterpart or any sponsor or other guarantor, specifically the principal, fails to pay any of its debt when due, or is subject to a court judgement for more than the minimum amount, or to insolvency proceedings that are not discharged within a specific time, and
- Insufficient funding remains to complete construction of the project.

Failure in the event that the project company through the principal fails to pay any of its financial commitments when due, this default should be mitigated by a guarantee provided by the principal. For the principal, the event of default may be mitigated with an offtake contract. In the same manner, failure in the event that the project company has insufficient funding remaining to complete the construction of the concession project, this default should be mitigated by the project company providing a guarantee. This guarantee may be provided by the promoter with a performance bond or a surety bond.

2.5.5 Projects Suitable for Concessions

In many countries concession contracts are often the only means of meeting the needs, generated by population growth, for housing, water sanitation and transportation; industrial growth such as power, infrastructure and fixed investments; tourism and recreation such as airports, hotels and resorts and environmental concerns such as waste incineration and pollution control. Provided sufficient demand exists for these projects, revenue streams can be identified and the commercial viability determined by Promoters and lenders.

Smith and Merna (1996) discuss that there are two fundamental constraints on project development such as economics and finance. In a BOOT projects the Promoter must cover operating expenses, interest and amortisation of loans, and returns of equity from project revenues.

Any public service facility which has the capacity to generate revenues through charging a tariff on throughput may be considered suitable for a BOOT strategy provided that suitable financing can be achieved. The most successful BOOT projects will be likely to be those in the small to medium range, for example up to 300m, as private sector equity requirements for such projects are usually obtainable.

Tolled highways, bridges and tunnels, water, gas or pipelines and hydroelectric facilities are considered suitable projects since a private economic equilibrium is obtainable. However subsidies may be necessary for high speed train networks, light rail trains and hectometric transport. The prices paid by users of these facilities are often low and governments may prefer to control these prices.

The characteristics of BOOT projects are particularly appropriate for infrastructure development projects such as toll roads, mass transit railways and power generation. A political dimension

exists in promoting the public good which does not occur in other private financed projects. However the BOOT project is not applicable to all projects, in both developed and developing countries, and each project could be assessed individually to determine viability.

A number of BOOT projects were considered by the Turkish government for nuclear and coal fired power stations. Although these projects had the necessary technical, operational and project revenue elements they failed to mature since no sovereign guarantees on loans to finance the project were given by the Turkish government.

Many of the projects realised on a BOOT strategy have tended to be large and expensive and have required the involvement of major construction and lending organisation. It is widely accepted belief that a number of these prestigious projects would not have been realised under traditional contract strategies.

2.5.6 Concessions for Developing Countries

The BOOT strategy, according to Smith and Merna (1996), offers both direct and indirect advantages for developing countries including:

- Promotion of private investment,
- Completion of projects on time without cost overruns,
- Good management and efficient operation,
- Transfer of new and advanced technology,
- Utilisation of foreign companies resources,
- New foreign capital injections into the economy,
- Additional financial source for priority projects,
- No inroads on public debt,
- No burden on public budget for infrastructure development,
- Positive effect on the credibility of the host country,
- Government can budget more accurately.

Therefore, it is clear that developing countries may introduce and include private participation and promoting private investments through concession strategies into their legislation to enhance their infrastructure needs taking advantage of the private efficiency and also with the intention of allocating their public finances in other areas with more priority.

Policies and lessons from recent policy experiments utilising private finance in infrastructure projects has been utilised in many countries such as the United Kingdom which started to utilise private participation in large sections of infrastructure services involving the Public – Private Partnerships (PPP) scheme. Thus, as an alternative, the next step is to investigate the increased utilisation of previous experiences through some methods including private finance.

2.6 PRIVATE FINANCE INITIATIVE, (PFI)

Mustafa (1999) discusses that the provision and financing of infrastructure is of primary concern to governments due to the role that efficient infrastructure play in economic growth and social activity. In the U.K., infrastructure provision largely has been the responsibility of the public sector since the Second World War. Traditionally, infrastructure procurement was viewed as asset procurement; decisions related to provision, production, and financing of assets as well as the operation and maintenance of the services were undertaken by the public sector. Assets were procured from private sector contractors whose responsibilities were limited to the construction of the asset, and the risk associated with operation of the facility remained with the public sector. Recently, responsibility for financing, producing, and operating infrastructure facilities has shifted from the public sector to the private sector. This has come about in the U.K. within a wider ideological setting in the 1980's that was manifested in various forms such as privatisation, contracting out and Build–Operate–Transfer "BOT" arrangements.

In recent years, according to Hall (1998), governments world-wide have sought to increase the involvement of the private sector in the delivery of new services. These initiatives have taken many forms, which are commented previously. Within the UK, interest in introducing private capital expertise in to the provision of public infrastructure appeared.

Smith (2000) comments that many options were considered in the UK and started to privatise large sections of state owned enterprises like British Airport Authority, British Petroleum, British Telecom and many others. The next step in the UK was to promote the increased utilisation of private finance through the launch of the Ryrie Rules. These regulated the role of private sector and placed some restrictions on risk transfer and value for money. Many projects were discussed but few reached the development stage. The Dartford Crossing M25, the Second Severn Crossing and the Channel Tunnel were all crossing projects with exclusivity clauses to prevent any competing facility and all pure private finance each requiring parliament approval.

Smith (1999) discusses that the UK government's Private Finance initiative (PFI) was introduced by the Chancellor of the Exchequer, Norman Lamont, in his autumn budget statement in November 1992 under the conservatives. And according to Smith (2000) was introduced to supersede the Ryrie Rules and to promote the use of private finance for projects which were suitable for pure private finance, where the risks were relatively low and the non–recourse financing revenue streams were robust.

Nicholson (1996) points out that it followed as the third leg of the government's move to involve the private sector in the provision of public services. The two of the previous initiatives were the privatisation programme, where whole business areas were transferred to the private investors and the market – testing and out – sourcing initiatives where services previously delivered "in – house" were competitively tendered to ensure that best value for money was achieved. Together the three initiatives reflect the government's view of the changing role of the public sector – from being a provider of services to an enabler and purchaser of the services. The private sector is to improve efficiency by introducing private sector disciplines to cost management.

Mustafa (1999) suggests that the policy aims at allocating risk to the party that is best suited to manage it and demonstrating value for money for any expenditure by the public sector.

PFI covers a wide range of infrastructure services such as prisons, roads, light rail system, health, defence, higher and further education, and the Government's national insurance recording system. The general principles of the policy apply to all sectors alike; however, the implementation varies depending on each sector's characteristics and each client's requirements.

The PFI has become one of the government's main instruments for delivering public services. In 1997 the government commissioned a policy review, commonly known as the Bates' review to make recommendations at how to improve the PFI.

Warner (1998) reports that the Labour government which came to power in May 1997, has put the PFI into the framework of its "Public-Private Partnerships" strategy.

2.7 PUBLIC – PRIVATE PARTNERSHIP, (PPP)

During most of the last hundred years, Smith (1999) comments that physical infrastructure has most often been seen economically as a "public good"; something to be provided and maintained

by the state for the general use of the population at large. This situation has always arisen in response to the perceived problems posed by private sector monopolies, either actual or feared.

But physical infrastructure increasingly more expensive, and even in the developed world many governments can no longer afford to mobilise the necessary resources to allow them to provide sufficient infrastructure of the quality demanded for their economies to continue to develop and flourish. In addition, in recent years, public sector utilities have been perceived by their users to be under-funded and inefficient, and chronically lacking in the management drive and initiative which is so important for survival in a competitive private sector market place. A common government response to these issues has been to look to form partnerships with the private sector such that private sector capital and management expertise can be use to provide high quality cost effective infrastructure services. A further consideration is that such partnerships allow a significant proportion of the risk burden attached to constructing and operating these facilities to be passed to the private sector. It is this consideration which is at the heart of the United Kingdom Private Finance Initiative.

The idea of a partnership was not however universally welcomed, and many saw the need for government interference to be severely constrained. The United Kingdom has gone furthest of all towards the limit of the privatisation model through the Private Finance Initiative (PFI), which attempts to move public sector assets and towards the purchase of private sector services.

But complete private sector control of facilities which are often considered basic both to the needs of the ordinary citizen and which lie at the heart of every modern economy (adequate transport links, adequate supplies of electric power and clean water, communications systems, waste and sewage disposal, etc.) is not the answer either, argues Smith (1999). These services are as important to the well-being of the society as a whole that all governments, whatever their political hue, and ultimately must carry the overall responsibility to the public to their adequacy. There is clearly therefore a need for a partnership between the government and the private sector in order to ensure that the services are provided in such a way that the providers can make a reasonable level of profit but at the same time to ensure that the prices charged and levels of services provided are acceptable and fair for consumers.

Any collaboration between public bodies, such as local authorities or central government, and private companies tends to be referred to a Public – Private Partnership (PPP). The Public – Private Partnerships scheme refers to a model to deliver infrastructure projects needed by the public sector. When the public sector has not have the sufficient funds to finance the infrastructure project and when is not sufficiently robust to be financed by the private sector.

In general terms, a PPP is an agreement between the public sector and the private sector for the purpose of having the private sector deliver a project or a service traditionally provided by the public sector, (i.e. water treatment, road construction, and waste management). The purpose of a PPP is to provide such projects or services in the most economically efficient manner by developing agreements whereby both sectors combine their respective skills and efforts and allocate the risks of a specific project or service to the sector, which, by its very nature, is best suited to assume such risk. The result of that combination should increase value in projects or services for public benefit, by means of technical innovation and efficiency that results in value for money.

PPP's scope goes beyond the traditional agreements where a private sector contractor becomes the upfront project builder for the public sector; under a PPP scheme, the private entity becomes the long-term provider of services by combining the responsibilities of designing, building, and in some cases, operating and further financing the project, in order to deliver better public services.

Thus, the private sector contributes significantly in the financial structure and the public sector makes a minimum contribution sufficient to reduce the investment risk to levels acceptable to the private sector.

2.7 SUMMARY

Public finance has been insufficient to provide all the infrastructure services in developing and developed countries. For developing countries, private sector involvement in the financing of new infrastructure is growing. Some lessons of these experiences are that governments may start with simpler projects and gain experience; investors' returns may be linked to project performance, and any government guarantees need to be carefully documented and planned. Whereas the privatisation of state owned enterprises is not welcome in developing countries, the private sector may participate with different strategies.

The concession approach offers principals a mechanism for financing infrastructure without incurring massive public sector or international debt. This form of contract strategy has been implemented on large projects all around the world. This strategy is now been adopted in developing countries. Principal's interests and a structured concession agreement primary addresses the legal and political issues in respect to a concession and the general and specific terms and obligations of the contract between the principal and the promoter.

Private sector in developed countries like in the United Kingdom through the Private Finance Initiative is a procurement delivery system purely with the involvement of the private sector financing; nevertheless, the Bates review recommended some modifications to the PFI with the involvement of the public sector participation to create the Public-Private Partnership normally called PPP.

Hence the following chapter contains issues regarding to the involvement and support that the host government, acting as principal in the concession project, grant to the promoter with the purpose to participate in the provision of the new infrastructure facilities through the concession approach.

CHAPTER THREE

THE ROLE OF GOVERNMENTS IN DEVELOPING COUNTRIES IN CONCESSION CONTRACTS

3.1 INTRODUCTION

This chapter describes the conditions that governments in developing countries may have in order to attract the private sector to provide infrastructure projects; these conditions may be legal and political provision, and the stability of macroeconomic indicators. It also describes the governmental support, including some financial issues that are important ingredients for the development and implementation of concession projects. This chapter highlights the areas in which such support may be required and raises some of the issues which governments in developing countries may be asked by sponsors and lenders to help resolve. Some of the supports are legal, political and bureaucratic; in addition, it outlines risks and guarantees. This chapter also discusses the governmental interests and the procedures of transfer from the promoter to the principal at the conclusion of the concession agreement. In the same manner it discusses additionally the transfer of technology.

3.2 CONDITIONS TO DELIVER CONCESSION PROJECTS TO DEVELOPING COUNTRIES

3.2.1 Legal and political provision

Augenblick and Custer (1990) discuss that governments in developing countries can provide powerful bureaucratic support to the participating organisations in the concession project to be able to resolve various regulatory and other issues as they arise. Normally a single person or department within the executive branch of the host country government must be prepared to act

as an adviser for the project. This adviser must have sufficient political clout and bureaucratic ability to maintain continuing support over the life of the project and to override bureaucratic opposition. Such opposition often comes from the established public sector entity which would otherwise build and operate the project (for example, the government utility, public works administration, highway authority, etc.).

Another layer of complexity is added if new legislation is required from the host country's national parliament in order to implement the project in question. In such case, the chances for success will be greatest if the host government can obtain broad legislative authority and a delegation of powers to someone in the executive branch who can then carry through the development and implementation of the project. If project sponsors are required to lobby their own bill through a national parliament, the chances of ultimate success will be considerably diminished.

The host government must assign sufficiently trained and experienced personnel to understand the complexities of a concession scheme and to be able to negotiate its terms. The government negotiators must be of sufficiently high rank and have sufficient authority to commit their governments or government agencies to the terms of the transaction in a timely manner. Otherwise, the negotiations are likely to drag on so long that the project may be abandoned. Even if it is eventually implemented, the delay will have imposed substantial lost opportunity costs.

Augenblick and Custer (1990) comment that there is a wide range of legislative, regulatory, fiscal and similar support which a host government should be prepared to provide a concession project. The government may have to provide basic legislative and regulatory authority for the project to be built and operate in the private sector, since often government monopolies will be involved. Special legislation may be required to authorise the private ownership and operation of power plants, toll roads, telecommunications facilities, airports, water works, and so on. The authority to acquire land for the project by eminent domain may need to be specially provided. These various authorisations may be provided by general legislation or by a single purpose law and decree providing all of the necessary powers and authorisations for the concession project in question. As indicated above, the chances for success will be greatest if the general legislative authority can be obtained early in the process, with power being delegated for implementation to a responsible official who is prepared to act as the host government's adviser for the project.

To attract foreign investment and non-recourse debt financing, foreign investors have to be satisfied that the host country has an overall legal and regulatory system which is conductive to foreign investment. This normally presupposes an ascertainable and stable system of law, supported by a court system in which private party litigants can seek redress. For example,

labour laws are required which allow private sector employers to hire and fire employees and workers on a reasonable basis at reasonable cost.

Dailami and Klein (1997) state that government support compensates private investors for the risks they are unwilling to bear given the prices they receive. Investors may be attracted to infrastructure projects without guarantees if the expected returns are high enough, that is, when rates charged to consumers are high enough. In that sense the search for guarantees or other forms of government support is a search for suckers who can be made to pay what others are not willing to pay. Guarantees themselves do not appear to affect the cost of capital, which is determined by the risk of the project, not to the finance structure.

Delmon (2000) states that the host country generally has the right to nationalise any commercial entity in its territory and expropriate any property in its territory, provided some just and timely compensation is provided. The lenders will want to review the protections provided to the promoter in the case of such expropriation or nationalisation.

Similarly, the host government may be going through or planning a series of privatisation. Where the host government intends to privatise the public entity who happens to be the user or the supplier, then the lenders may wish to consider the potential impact of such events on the project.

3.2.2 Macroeconomic indicators

Augenblick and Custer (1990) argue that both lenders and investors will normally insist on some mechanism to protect themselves against inflation risk. This protection may be provided by price escalation clauses in the offtake contract (for example, in the case of power projects) or by provisions in the concession agreement allowing the promoter to increase tolls (for example, in a toll road project). Such price escalation clauses would attempt to take account of increased costs of the project due to inflation. They may also be drafted with the intent of maintaining the purchasing power of the project's net income and equity generally. Normally such protection in not complete. Price adjustments are allowed only periodically, lagging behind actual inflation, and may only be partial. The negotiation of the precise terms of the price escalation formulas in concession projects will probably be time consuming and extremely detailed.

According to Delmon (2000) the currency used in the project may experience some change in availability, convertibility, or transferability. The lenders will need to ensure that these risks are

either allocated to a party other than the promoter or mitigated by some other means, such as hedging. Certain currency issues will be specific to the project structure.

Augenblick and Custer (1990) consider that typically a concession of infrastructure project, which will be selling its outputs into the local economy, will receive its earnings in local currency. Both lenders and investors who have invested in different currency from their own country will want firm assurances that they will be able to recoup their original investment, together with interest or dividends, in the same or a comparable currency they invested, and that they will be able to do so at a reasonable exchange rate. The host government, therefore, must be prepared to provide some mechanisms to assure the foreign investors (and their government insurance agencies) that they will be authorised to convert local currency earnings into foreign currency, that they will be enough foreign currency available when the time comes for the host country or its banking system o make the conversion and that the rate will not be unduly unfavourable.

These issues have been resolved in different ways in recent BOT projects. Carnevale (1988) reports that in Turkey, for the Gazi project, the host government proposed that its power authority would makes its periodical payments under the off-take contract in a basket of currencies, consisting in Japanese yen, German marks and U.S. dollars, designed to match the payments required to be made to different foreign lenders and investors. The government intends to rely principally upon an exchange risk insurance scheme operated by the central bank, with the premium (for example, 3% per annum in the case of U.S. dollars) being an additional cost of financing and thus an additional cost to be covered in the power tariff. In return for the annual premium, the central bank guarantees that it will be covert local currency earned by the investor into dollars at the exchange rate fixed on the date the insurance contract is entered into. If for any reason such insurance is not available, it appears that the government of this country has considered having the power tariff adjusted for exchange rate movements (actually for the greater of inflation or exchange rate loss).

The ratio of foreign currency to local currency to be invested in a concession project will differ significantly from project to project. A power plant because of the heavy equipment involved which usually must be imported, will normally require a relatively large proportion of foreign currency. In a toll road project, however, much of the investment can be made in local currency, if sources of financing are available. The Bangkok Expressway Company Limited (1988) report that plans for the Bangkok Second Stage Expressway indicate that at most 10 % of the needed investment might come from foreign currency loans. In such a situation, foreign exchange risk becomes more manageable and may not need host government support. In the Bangkok project, for instance, it does not appear that any specific government support of exchange rates was

required. Le Blanc (1988) comments that in the North-South Expressway project in Malaysia, however, in which apparently a substantial amount of foreign currency borrowing is contemplated, the government has provided a 17 year external risk undertaking to cover increased costs from adverse foreign exchange movements and adverse interest rate movements on foreign loans to the project.

3.3 GOVERNMENTAL SUPPORT

3.3.1 Legal, political and bureaucratic support

Augenblick and Custer (1990) argue that the most important participant in any concession project of infrastructure is the host government. To no less degree than in a traditionally financed infrastructure project, the host government or the government agency remains the ultimate client or purchaser of the project.

Concession projects, Delmon (2000) points out, are based on the provision of a concession agreement by a national or local government, a government agency or some regulatory authority, referred to here as the principal. The principal will generally be responsible for the interface between the authorities of the participating organisations and the authorities of the host country. This may include rights of access; protection from nationalisation or expropriation; protection for changes in law, regulations and tax; and foreign exchange and convertibility issues, among others.

Augenblick and Custer (1990) state that the host government will normally have to authorise the project in the first instance, which often will require special legislation and specific governmental approvals. The host government or one of its agencies will normally enter into an elaborate implementation or concession agreement with the project company which will spell out in detail the support to be provided by the host government and the rights and obligations of the project company. The host government may be providing part of the financing, either as debt, equity or on a stand by basis. It or one of its agencies may be purchasing the output of the project or providing financial guarantees as to revenues. Finally, it will undoubtedly be called upon to provide all sorts of other types of support to the project. Thus, where developing countries and infrastructure projects are concerned, the concession approach can not be expected to result in a pure private sector venture which can be realised without substantial exposure or commitment on the part of the host government.

According to Delmon (2000) the host government and the national and/or local government (to the extent they are not party to the concession agreement), may also play an important role in providing guarantees and generally ensuring that the project commences and is completed successfully through its more or less active support. The host government will also play an important role during project operation, in relation to regulatory requirements and taxation/tariffs restrictions.

Where the host government is not a party to, and is therefore not legally bound by, the concession agreement, the participating organisations of the concession will need to ensure continued support from the host government, which generally involves taking into consideration the interest of the host government. For its part, the host government may prefer to limit its involvement in the project and minimise any risk it may have to bear. As far as possible, the participating organisations of the concession should keep the project and any project activities consistent with the host government's interests.

Some governments or government agencies in developing countries get international and well recognised advisers for their infrastructure projects. Augenblick and Custer (1990) state that given the technical, financial and legal complexities of concession projects, host government should retain at the outset component outside technical, financial and legal advisers familiar with the types of private sector arrangements involved. The project sponsors will themselves have always technical expertise and will have experienced international legal counsel and investment bankers on their side of the negotiation table. No matter how experienced or sophisticated the government negotiators may be, by adding or employing such as outside technical advisers, investment bankers and legal counsel of stature to their team from outset, the host government will normally be better able to structure the initial project proposal in the most favourable way for the government. The presence of such advisers will lend considerable credibility to the host government's negotiating position as the proposal evolves and should help to find creative solutions to problems which arise in the course of the negotiations. Although the cost of employing such outside advisers will be considerable, the resulting benefits, in any significant concession project will normally be well worth it.

In most concession projects, the host government will provide some support. For example, the government may provide the land on which the project will be built; connecting infrastructure such as road, rail or port facilities; transmission lines to take power from a power plant; raw materials and utilities under long term supply contracts; or even suppliers of energy (for example, locally mined coal) over the life of the project.

Augenblick and Custer (1990) comment that the host government will often be the sole purchaser of the output of a concession project. For instance, in the case of power plants, the power will normally be sold into the government owned power grid. Since an assured revenue stream is beneficial to persuade both investors and lenders to commit their funds, the host government or its wholly owned utility will normally be required to enter into a bidding long term agreement with the promoter of the concession to purchase power (or to pay for capacity) or a "take of pay" basis sufficient, at a minimum, to pay off the project debt and pay back the utility to investors. Normally, the sponsor will insist that this off-take agreement be backed by the "full faith and credit" of the host government. The formula for pricing the payments will vary depending on the contract and the agreements.

The problem is somewhat different where a concession project will be selling its goods or services directly to the public rather to the than to the host government. In the case of a toll road, for instance, the lenders may be reluctant to take the risk that the volume of toll paying traffic will be too low to pay off the debt. The investors may also be reluctant to take significant risks in this regard, unless they are given a chance to reap significant rewards if traffic meets or exceeds projections. One solution to this problem is for the host government to agree to provide subordinated loans to the promoter whenever toll revenues fall below a certain minimum. The solution will vary depending on the contract and the agreements made among all the parties and the most important may be the guarantees agreed by the host government.

Augenblick and Custer (1990) relate that it is compatible with the concept of a concession project to have the host government fund part of the project costs by direct loans to or an investment from the promoter. Opinion is divided as to whether having the host government as a partner in a concession project is helpful. One view is that concession projects should be completely privately financed and privately run. In this view, having the government as a partner is likely to bring undue government influence and lead to bureaucratic inefficiencies in management and operations. The other view is that having the government as a partner may be quite helpful. It may help to make the promoter independent of any one of his investors and be able to negotiate with its major shareholders for construction contracts and equipment supplies. It should help to convince the host government to transparency of the project's financial structure. It may make easier for the government to allow a reasonable return to the investors, with a reasonable system penalties and rewards based on the degree to which the project meets or exceeds projections, when the government itself will share in such risks and rewards.

Augenblick and Custer (1990) comment that a familiar feature of a number of concession projects has been the contribution by the host government of existing assets capable of producing earnings which can be used to pay capital costs, debt services and operating expenses. To borrow some examples from developed countries, in both the Dartford crossing project in the United Kingdom and the Sydney Harbour tunnel in Australia, existing toll bridges or tunnels were made available to the promoter by the host government so that the tolls could be used to finance the new project. Likewise, in the same case of the North-South Expressway project in Malaysia and the Bangkok Second Expressway project in Thailand, tolls from existing roads will be made available to the promoter.

Augenblick and Custer (1990) point out that the host government may have to provide some assurances as to the competitive environment in which a concession project will operate. In the case of a toll road project, for instance, the project sponsors would normally want assurances as to any parallel toll or non-toll roads which might be built during the concession period. Even in the case of a power plant project, in which the government will be committed under a long term offtake contract to take or pay a certain minimum amount of power, the investors will be normally be counting on making their profits for selling more than these minimum amounts. They will want some commitments; therefore, from the host government as to how many other potentially competing sources of energy will be allowed to function during the concession period.

Delmon (2000) comments that the promoter may want to ensure that the principal has the right and power to grant the concession and has the ability to fulfil its obligations and transfer the rights identified under the concession agreement, in order to prevent later claims that the concession was granted *ultra vires*. *Ultra vires* activities, those acts which are outside the scope of the authority's legal mandate, by a government authority can render the concession void and available legal remedies are not likely to compensate the sponsors satisfactorily. It may be necessary to pass legislation or even a constitutional amendment before the concession as let by the principal can be considered valid. This may be difficult in times of change, for example during the break-up of the URSS where certain government entities changed form and function drastically. It may be not be easy to identify the nature and capacity of a given government entity in such a situation.

The promoter may also want to ensure that the project has received all necessary approvals from the host government and any local authorities, and that the government will not change its regulation of the project's operation in such a way as to inhibit the project development and production plans. This risk is often difficult to manage, in particular in countries with developing or

highly volatile legal and regulatory structures. Legal opinions should be obtained to confirm that the project approval structure is comprehensive and in compliance with legal requirements.

The lenders may want the host government to provide support for the principal, the supplier and/or the users, if they are public utilities or operators and where they are not safe credit risks. This support might be express through written guarantees, direct lender–principal agreements, comfort letters, legislation or to some other contractual or moral obligation. Both the promoter and the investors will want to be covered by any such expression of support.

Principal undertakings can cover a range of issues important to the success of the project and, to some extent, with the sphere of control of the host government. As an example, the following are undertakings received from the Philippine government of power projects in the late 1990's:

- Repatriation of capital;
- Timely and reasonable adjustment of tariffs;
- The fulfilment by the local utility of its obligations under the take or pay agreements;
- Availability of fuel; and
- Buyout of the project by the utility in certain specified situations.

3.3.2 Risks

According to UNIDO (1996), United Nations Industrial Development Organization, all concession project participants are confronted with a wide range of general risks and specific project risks. These risks may be magnified in some countries, depending whether one or more of the following conditions prevail:

- The local currency is convertible at fair rates and foreign exchange is valuable in the country. If not, concession projects, which generate local currency revenues, may not be able to meet their obligations to foreign investors.
- The legal system is developed enough to support private and foreign investment in infrastructure projects, including whether contractual obligations are enforceable on a consistent and predictable basis.
- Data for the preparations of bids, development of projects and forecasting of demand are available and reliable.

- There are domestic contractors or operators that have recognised track records and that can give creditworthy performance guarantees. If not, internationally recognised contractors and operators may need to participate.
- There is an adequate transport infrastructure for construction of the project and for raw material suppliers, who must be able to deliver on a steady and reliable basis.

Usually, the host government will be able to devolve most risks related to the development, construction, management and operation of a concession project to the project company. If the project company defaults in the performance of any of these obligations, these risks become project lender's risks.

The picture is less clear in the case of demand and revenues risks. If the purchaser of offtake contracted services is a creditworthy public utility, which normally is the case in power, water and sewerage treatment projects, the project company normally accepts these risks; that is, the project lenders accept the risks, usually on the basis of covenant by the project company that a reasonable debt to revenue ratio is maintained. If the revenues are paid by the general public, e.g. toll roads, airport charges or electricity charges, the project company takes a much higher risk on revenue generation, and this is borne by the project lenders. The lenders may seek to have part of the risk passed on to the government by means of guarantees for a minimum demand / revenue level or by stand-by loans. The demand and revenue risks could also be mitigated by a government undertaking that no alternative road, airport or energy source will compete with the project for a specific period.

UNIDO (1996) outlines that when a government first embarks on a concession approach it may find it necessary to provide some kind of support to the project company if a minimum level of demand / revenue is not met. In such an instance, that is, where concession structures are untested, the private sector perceives the risk as correspondingly greater. As the precedent for successful concession schemes is established and the concept matures, a government will be in a position to reduce its support and to impose more stringent demands on the private sector.

Political risks such as delays and cost increases caused by the government or governmental authorities, including delays in obtaining required approvals, permits and licences, are normally considered to be borne by the government as it is the government that would ordinarily pay any compensation. Alternatively, in some cases prolongation of the concession period is provided for in the project agreement.

As for allocating the risk of taxes, tariffs or customs duties being increased or imposed as part of a general increase or imposition, there is no general rule. Obviously, no government will give an assurance or guarantee that such taxes or duties will not be increased or imposed. If compensation is not provided for in the project agreement, the risks are borne by the project company.

Governments may bear or share concession risks through performance guarantees, stand-by loan arrangements or compensation provisions, including assurances that:

- Certain minimum purchase will be made, at certain prices, thus assuring certain levels of project revenues.
- Certain minimum supplies of raw material will be available, at certain prices, thus helping to ensure that project costs are predictable.
- Foreign exchange will be available for conversion of project revenues to repay offshore loans and to repatriate the dividends of foreign investors.
- Conversion into foreign exchange will be at certain predetermined exchange rates, thus avoiding exchange risks.

Governments may give such assurances to project sponsors to reduce uncertainty surrounding the repayment of project loans. Loan repayment will depend on the ability of management to operate the concession facilities efficiently enough to generate a sufficient surplus for the repayment of project loans. The level and type of risk borne by the government will be an important indication to the financial community of the government's commitment to the performance of the project.

Yescombe (2002) comments that these risks are mitigated though a concession agreement which is a contract between a public sector entity and the project company, under which a project is constructed to provide a service to the public sector entity. The public sector entity may be a national or regional government, a municipality, a state agency or a state owned agency.

Concession agreements include contracts for construction and operation of facilities from different sector such as transport, energy and water where payments are made by a municipality agreeing a minimum volume of purchase or a purchase of the end users. Such as agreements are on a BOOT/BOT/BTO. These "public–private partnerships" (PPP) are now a major growth area in project finance.

Augenblick and Custer (1990) bring up that most foreign lenders (and their export credit guarantee agencies) have been reluctant to accept any substantial project risk in concession of infrastructure projects in developing countries. The host government, therefore, will normally be asked to protect the lenders against the risk that their debt will not be serviced due to project failure. The solution which seems to be emerging for providing this protection, is for the host government to commit to make subordinated loans available on a stand by basis over a certain period of time to provide for senior debt service when and if the promoter's cash flow is insufficient for such purpose.

Delmon (2000) states that the promoter will ask the principal to bear certain risks. In many cases the intention is not so much for the principal to compensate the promoter for the occurrence of the risk, but to avoid such risks the host government may grant guarantees, being a primary obligor in relation to such risks. The host government may therefore be called on where such risks arise or are likely to arise.

Delmon (2000) raises that force majeure is an event, act or circumstance which arises during the project which affects the projects obligations and is beyond the control of either of the parties. It is often specific to the site country, although it may include events in neighbouring countries, source countries or countries through which materials and equipment must be shipped in order to reach the site. Force Majeure will generally include political, natural and administrative events.

The intent of the force majeure provision is to allocate, partially or entirely, the risk of the occurrence of an event not contemplated by the parties at the time of contracting, outside their power to control or prevent, and which impedes the progress of the project. It is very simple the allocation of certain political and natural risks.

Augenblick and Custer (1990) comment that force majeure risks which cannot reasonably be covered by insurance pose difficulties. Foreign lenders will rarely be willing to take force majeure risks. Investors, unless they offered considerably more upside potential than a 16% to 18% return, are also going to be reluctant to take force majeure risks, and will certainly not guarantee the lenders against force majeure risks except to the limit of their own investment. Thus some form of government support will normally be required to cover force majeure risks.

Walker and Smith (1995) comment that a strong reason for the ongoing involvement of government in the provision of infrastructure services, particularly those requiring major projects, is risk. Many large projects involve uncertain costs and long payback period. They may also involve commercial and competitive uncertainties. Contractors have to contend with major issues of risk when carrying out construction contracts, but operations lasting 20 – 30 years carry with them much longer-term risks, particularly for international companies whose financial base may lie outside a particular country of operation. These risks have often been accepted openly and tacitly by government, but with the advent of privatised operation they have to be assessed and (if transferred to a private operator) take into account in assessing the costs of project finance and operation. The difficulty in concession contract projects is that the risks involved in the long-term operation of infrastructure facilities can be very difficult to assess and control. They include risks such as the long term expropriation of assess under changed governments, long-term changes in currency valuations, and exclusivity or changes in the competitive situation such as the construction of a new road parallel to an existing concession tolled highway.

According to Smith (1999), government's theoretical authority to intervene in the operation of private business stems from its executive function, and in particular from the need to safeguard both the national interests and the interests of the citizens which it represent. Infrastructure services constitute a very special class of business, the efficient operation of which is, in most cases, central to the smooth running society, and they are therefore particularly sensitive to government intervention and regulation. Where regulation is intended to enforce standards rather than merely to inform, government must establish some mechanism for ensuring compliance with the requisite rules and regulations, thus requiring government to adopt the role of government as inspector.

Smith (1999) points out that the role of government as inspector will normally include both the design and construction of new facilities and the operation and maintenance of existing ones. In essence the purpose is to ensure that facilities are constructed, used and maintained in accordance with the appropriate legislation in order to ensure the safety and well being of consumers and workers.

3.3.3 Guarantees

According to UNIDO (1996) the host government provides guarantees to advance the project. To encourage foreign investors and to assist in the structuring of financial packages for concession

projects, host governments may provide guarantees to sponsors and lenders. The different forms of financial support that governments have provided to advance concession projects are consequently described.

Guarantees of revenues by means of long term offtake agreements are common in certain countries and in certain concession project sectors. A government may cover the risk of non payment by a performance guarantee under which it guarantees the public utility's performance of its obligations t the project company if they fall due. The central bank of the country may need to approve the indirect performance guarantee. The government may also mobilise risk guarantee facilities for project finance from development banks to hedge its guarantee to sponsors and lenders covering non-performance of government contractual obligations.

UNIDO (1996) points out that the host government may have to give the project company some protection from competition to assure the expected revenues. It also needs the guarantee of commercial freedom. Although the success of a concession project is significantly affected by the government's willingness to allow the services of the project to be sold at a price sufficient to generate a reasonable return to investors, changes in agreed tariffs that are usually regulated by detailed contract terms subject to governmental agreement.

An alternative to the full commercial freedom to determine tariffs is for the government to provide revenue support to cover the difference between the full commercial price and the actual user charges. A project may be subsidised by revenue support so as to retain the incentive for private sector efficiency. However the need for such subsidy financing may reduce the creditworthiness of a public project sector if the long term sustainability of the subsidy guarantee is politically questionable. Revenue support, moreover, is somewhat difficult to manage in that it requires ongoing monitoring to measure and control project output and administer subsidy payments.

Dailami and Klein (1997) argue that guarantees provide contingent cash flow support to the project and are, in many respects, similar to loan or grants. To be able to compare all forms of assistance, it is useful to calculate the subsidy or amount implicit in each form of support. These subsidy or amount equivalents help determine, for example, whether if is cheaper for the government to provide a guarantee or some other form of support.

Sovereign guarantees can be valued and may be expensive; therefore the promoter and the secondary organisations of the concession project should pay for such guarantees whether obtained from the host government or one of its agencies or from a private company from the same country where the concession is going to be built. The public sector or sovereign

guarantees should be priced, as the chances are the government also has interests in the completion of the project.

Augenblick and Custer (1990) raise that host government will not normally provide sovereign guarantee for the loans made to a concession promoter they may be asked to provide sovereign guarantees, or equivalent assurances, for some aspects of the project. For instance, if a government-owned corporation has contracted with the promoter, as when a government utility enters into a long term offtake contract or undertakes the supply contract to the project, the government itself will often be required to guarantee the utility's performance. Moreover, the basic concession agreement between the principal and the promoter will normally contain numerous obligations undertaken by the principal which will be backed by its full faith and credit.

This aspect of the role of government has assumed increasing importance in securing project finance. As competition for available financial resources intensifies, lenders increasingly look for solid evidence that the public sector partner is wholly committed to the schemes.

Guarantee markets, perhaps as an example of these agreements exist in the electric power sector, where the most popular are power offtake contracts and agreements for the supply of power station fuel. Smith (1999) points out that guarantee market arrangements in the highway and rail sector include traffic volume support arrangements, and no second facility protection. In the case of traffic volume support arrangements a minimum level of revenue is guarantee by government in the event that traffic flows fall bellow some predetermined minimum.

No second facility agreements, where host government agrees that no competing facilities will be allowed to operate for some fixed period of time, could effectively provide the concessionaire with a monopoly, and this technique is therefore used with some caution. If competing facilities are allowed to operate then they may pose a considerable threat to the highway sector operator's projected revenue stream, and in extreme cases perhaps even render the scheme not viable. Founders are not therefore likely to back schemes where there this kind of danger exists.

Similar arrangements apply in other areas. For water treatment and supply facilities for example it is common to have a "two part" tariff, such that the operator is paid a fixed availability charge irrespective of the volume of water treated, and a variable usage charge depending upon the actual volume of treated water supplied. The availability charge is paid whenever the plant is able to provide water to the required specification, and will be sufficient to cover debt service payments and fixed operation costs. The usage charge then covers mainly variable operation costs.

3.3.4 Governmental interests

Lenders and investors will need to be acutely aware of the interests of the host government in relation to the infrastructure project in particular and foreign investment generally. According to Delmon (2000), some of the host government interests may include:

1. Perceived public or national interest;
2. public control of the project during the concession to ensure protection of public interest and improved public perception of the host government;
3. public safety including environmental and social impact;
4. response of the relevant constituency (often related to tariff restrictions and levels of environmental impact and public nuisance);
5. attracting benefits for political personalities or parties in power;
6. minimising the need of injection of public funds, investment, guarantees and assistance;
7. attracting foreign investment;
8. minimising public risk while maximising public control; and
9. smooth and efficient transfer of the project (if applicable) at the end of the concession in good mechanical condition with no need for replacement of major parts or equipment.

The host government will often be involved in the following aspects of the project (Delmon, 2000):

The host government will often be involved in the original promotion of the project, identifying the need of the project and defining its requirements. The host government will also be instrumental in choosing the successful bidders.

Once the host government has decided to go forward with a project it will want to attract the necessary investment. In order attract the best quality at the least direct cost, the host country may provide some incentives to the promoter, such as tax benefits (including tax holidays, the use of tax havens or creative use of tax credits), assistance in procuring land, relaxation of legal requirements (such as licensing and other administrative procedures), grants, debt financing, improved tariffs on utilities and other services of fuel, increased or improved infrastructure, use of project resources for non-project related purposes, or involvement in bids for further projects in the host country.

These issues may be defined in the legal framework provided for concession projects under local law. Any existing framework will define to some extent the principal's approach to the project and

the risks/obligations the principal can undertake. The host government's role will also depend largely on the position of the government in the project and the need for relevant support in order to attract the necessary private investment in infrastructure development.

3.3.5 Transfer from promoter to principal

The principal may require the promoter to provide training of the principal's personnel before transfer at the end of the concession period. The promoter will generally allocate this obligation to the operator. The training will usually be carried out at the end of the concession period, just before transfer of the project to the principal. The principal's personnel will be trained in operation, maintenance and basic repair, where feasible. The training obligation will also permit a greater transfer of known-how to the host country through the education of local staff in the operation and maintenance of the project.

A regime will need to be developed for the timing of training sessions, the selection of the personnel to be trained, the training methods to be used, the extent of the training to be given and the allocation of responsibility for the personnel to be trained. As it is the principal who will select the candidates to training, the operator may be hesitant to take on the responsibility for such personnel during the training period, including, for example, accidents, damage to the works owing to trainee negligence, sickness, worker's compensation and other employment liabilities. However the principal will not want to bear the risk of employing personnel who are under the direction and tutelage of the operator. This issue may be further complicated where training must take place at a location far for the trainees' homes and where lodging, transportation and other necessities must be provided on or to the site. Then, the principal and the operator before the transfer of the facility may agree the training and tutelage of the personnel they wish to keep or hire.

The training obligations may be partially or wholly obviated where the operator merely transfers its own personnel responsible for the project to the principal, at least for an agreed time. This would involve the creation of a direct relationship between the relevant personnel and the principal, and will provide the principal with on-site, experienced assistance for the operation and maintenance of the project.

At the end of the concession period, the project may be transferred back to the principal or to another operator. The regime for such transfer will need to be defined in the operation contract.

The regime will need to include any tests to be performed, the levels of spare parts to be provided, the shifting of responsibility to the principal's personnel and the transfer of risk to the principal. The transfer arrangements will need to be coordinated with similar arrangements in the supply contract and the offtake contract in order to provide a seamless transfer to the principal.

At the end of the concession period, the project may be transferred to the principal. The supplier's role in this transfer will need to be established in the supply contract. It is common for the supplier's role to end on the termination or the expiration of the concession period. However, the supplier may need to ensure a certain level of input in the site storage facility, or may need to ensure delivery of input for a period after transfer in order to assist the principal in continuous operation of the project. Alternatively, according to Delmon (2000), the principal may wish to continue its relationship with the supplier after the end of the concession period.

The operation contract should specify the point at which care of the works will transfer from the constructors to the operator, at completion, and then from the operator to the principal. This transfer risk should be defined by the passage of specified tests of the issue of a certificate, in order to avoid disputes over the exact time of transfer.

Closely related to the transfer of risk is the definition of completion. Although completion will play a primary role in the construction contract, it will also help to define the moment at which the operator takes on the risk for part or the whole project. Delmon (2000) argues that completion should require a sufficient level of performance for the project to begin commercially viable operation.

Carrillo (1996) raises that for the developing world technology transfer is potentially a very important source of benefit, and may occur during any of all the planning, construction and operation stages. Technology transfer however rarely occurs by accident, and there is some evidence that the process will not be only successful if this aspect is pre-planned into the project from the start.

According to UNIDO (1996), one way of transferring technology through concession projects is to give domestic companies the opportunity to participate in concession projects as suppliers of goods and services. Some concession codes and project agreements insist that the project company afford some measure of preference for national goods and services, provided that they are available on competitive terms and conditions.

3.3.6 Issues regarding award

International procurement rules such as the Uruguay Round Agreement on Government Procurement and the World Bank Guidelines on Procurement provide some limits of the use of local suppliers. For example, World Bank procurement policy would allow, under certain conditions, a cost difference of 15 per cent in favour of domestically manufactured goods and 7.5 per cent in favour of domestic contractors.

The objective of such provisions is clearly to encourage the participation of domestic companies, in order to strengthen their capabilities and their competitiveness. Experience suggests that the involvement of domestic suppliers in the development, construction, maintenance and operation of concession projects may be a great help in national capability building and other forms of technology transfer.

General calls for the participation of domestic companies in concession projects have not always been heeded closely by foreign project companies. In a number of projects it appears that such companies have preferred to award subcontractors to suppliers of their own nationality. To underscore the importance of building national capability, some governments have acted to enforce, according to UNIDO (1996), four principles:

1. Domestic suppliers must be included in all invitations to tender for subcontractors provided they offer the goods and services required.
2. The project company may award the contract to domestic bidders whenever they are competitive and must in any case take the domestic content into account when evaluating foreign bidders.
3. The project company must report to the host government all tendering for subcontracts and the tendering and proposed awards to domestic suppliers so that the government can monitor national capability building through subcontracting.
4. The monitored record of a project company will be an evaluation criterion when the project company is bidding to future concession projects.

UNIDO (1996), comments that when the improvements and innovations are made during project construction and operation under the responsibility of the project company, the company will probably insist that all rights, title and interest in the improvement or innovations belong to it. This may be reasonable and acceptable if the improvement or innovation stems solely or mainly from technology programmes and engineering skills provided by the project company. If, however, it

results solely or mainly from the efforts of national contractors to the project, a different result may be appropriate.

There are several practical solutions for dealing with this issue. Since both the project company and the local contractor usually have an interest in obtaining the use of the improvement or innovation made by the other party, the project agreement may provide that each part is obligated to inform the other party about any improvement or innovation made in connection with the project during the concession period. Both parties should have the rights to use the improvement or innovation to perform their obligations on the concession project.

In any case, improvements and innovations made by the project company or by domestic contractors during the concession period may afford an opportunity for the parties to arrange for joint research and technology development.

3.4 THE ROLE OF THE MEXICAN GOVERNMENT WITH CONCESSION CONTRACTS

3.4.1 Developing countries and Mexico

As is been mentioned previously in chapter one, developing countries are widely recognised for their problems, mainly for their enormous poverty and great necessity of infrastructure services. In this context, a developing country is going to be defined as any country in which a significant proportion of the population is yet to be served by adequate infrastructure services. Wells (1973) defines developing countries as "those where incomes per head are relatively low, where only limited supplies of capital are available and where a high proportion of the labour force is engaged in primary production. The most important feature of these countries is their poverty".

Developing countries, according to the World Bank classification, are "countries with low or middle levels of GNP per capita as well as five high-income developing economies -Hong Kong (China), Israel, Kuwait, Singapore, and the United Arab Emirates. These five economies are classified as developing despite their high per capita income because of their economic structure or the official opinion of their governments. Several countries with transition economies are sometimes grouped with developing countries based on their low or middle levels of per capita income, and sometimes with developed countries based on their high industrialization. More than 80 percent of the world's population lives in the more than 100 developing countries".

Countries are classified for analytical purposes. The main criterion is through the gross national product (GNP) per capita. According to the World Bank, developing countries are economies with a GNP per capita less than US $8,356 in 1992. Since Mexico's GNP per capita is US $6,230 in 2003; therefore, Mexico is considered a developing country.

3.4.2 The Mexican government with concession projects through the PPP scheme

According to Baker & M^{c}Keinze (2004) the Mexican Federal Government is currently working on the implementation of a framework for the association of the public and private sectors known as the Public–Private Partnership "PPP" scheme. Through coordinated efforts by the Ministries of Public Function, Communications and Transportation, Health, Public Education and Finance and Public Credit, the Mexican Federal Government is attempting to position Mexico as an attractive market for PPP business private investors.

The experience of PPP deals in other countries constitutes evidence that, when properly implemented, the PPP approach constitutes a viable method for developing infrastructure projects. The interest of the Mexican Government in considering alternative methods for the development of infrastructure projects (such as the PPP scheme) will lead to new business opportunities for the private sector in Mexico. While it will be necessary for the Mexican Government to provide the legal framework for the implementation of said scheme, private companies that may be interested in participating in such projects should become prepared to take advantage of the learning experiences of the first pilot projects being currently implemented. The experience of other countries and the participation of international sponsors with experience in PPP deals will also be essential. One of the most important roles of the Mexican government in the implementation of PPP projects is the provision of certain incentives to the private sector. Some guarantees are mentioned in the next section.

3.4.3 Guarantees by the Mexican Government

One guarantee is the offtake contract which consists in purchasing a minimum quantity of the product. Regarding to the minimum purchased stated in the concession agreement and the guarantee by the principal to pay them, the Secretariat of Communications and Transport (2003), in Mexico, comments that a minimum income guaranty is established to cover bank debt servicing in case of revenue shortfalls. This terminology is called, by the Secretariat of

Communications and Transport in Mexico, subordinate contribution covenant. These resources are contingent, which means that they shall not necessarily have to be spent. The amount of resources will be determined by the concessionaire. As a maximum, the concessionaire can request an amount equal to the debt service, which shall only be payable upon demand after the principal has granted the authorization to initiate operations.

This mechanism is designed by BANOBRAS, which is a Mexican development bank, to encourage the participation of domestic and international private bank financing in terms consistent with the maturity of the projects by ensuring that loans will be fully repaid. This guaranty shall be covered by a development bank and is known as the subordinate contribution covenant of principal's financial assistance.

3.5 SUMMARY

Governments in developing countries require the participation of the private sector in delivering infrastructure projects. If the legal system is developed enough to support private and foreign investment in infrastructure projects; and the more encouragement and assistance private sponsors receive from the government, the better able that the government will be to complement private sector participation in infrastructure projects.

If governments in developing countries take a proactive approach, the private sector's interests will increase. The government may be prepared to share risks with the private sector in order to increase the project's financial viability allocating risks where the private sector is prepared to undertake. Governments in developing countries may provide guarantees in order to attract investments to increase their infrastructure projects. Considerable advantages governments in developing countries take from private companies firstly from the financial and managerial point of view and from the transfer of state of the art technology they provide. Finally, the Mexican government plays an active role providing guarantees to incentive and attract investors for business opportunities.

CHAPTER FOUR

PROJECT FINANCE TO CONCESSION CONTRACTS IN DEVELOPING COUNTRIES

4.1 INTRODUCTION

There is a large demand for investment in infrastructure in every developing region. At the same time many developing countries either do not have sufficient domestic savings or lack the macroeconomic record or institutional and legal infrastructure that are needed to transform domestic savings into appropriate financial instruments for financing private infrastructure. As a result international financing will continue to play an important role in new private investments in infrastructure. In the long run, economic growth, greater volumes of savings, and well developed financial intermediation mechanisms should generate sufficient domestic resources for investment in infrastructure.

Although international financing of private infrastructure projects poses project as well as macroeconomic risks, these could be weighed against the risks of neglecting investments in infrastructure. Poor infrastructure is no longer only a retarding factor for fixed investments in domestic resources, but also severely disadvantages developing countries in attracting foreign capital. There are many ways in which project finance can be obtained.

This chapter provides a description of project finance, outlines some different sources of finance which are divided into domestic and international. It also describes the most important financial instruments widely utilised in project finance. There is a presentation of different issues such as revenues stream and refinancing. There are relevant information about identification of financeable projects and this chapter finishes outlining some significant financial risks.

4.2 PROJECT FINANCE

According to Merna and Njiru (2002) the concept of project finance is widely used in business and finance in developed countries. Many developing countries are also using project finance to raise fund for their infrastructure projects. There is, however, no precise legal definition of project finance as yet.

Ahmed (1999) points out that project finance is tailored to meet the needs of a specific project. Repayment of the financing relies on the cash flow and the assets of the project itself. The risks and returns are born not by the sponsor alone but by different types of investors such as equity holders, debt providers and quasi-equity investors. Because risks are shared, one criterion of a project's suitability for financing is whether it is able to stand alone as a distinct legal and economic entity. Project assets, project-related contracts, and project cash flows need to be separated from those of the sponsor. There are two basic types of project finance: non-recourse project finance and limited recourse project finance.

Non-recourse project finance is an arrangement under which investors and creditors financing the project do not have any direct recourse to the sponsors, as might traditionally be expected for example through loan guarantees. Although creditors' security will include the assets being financed, lenders rely on the operating cash flow generated from those assets for repayment. Before it can attract financing, then, the project must be carefully structured and provide comfort to its financers that it is economically, technically and environmentally feasible, and that is capable of servicing debt and generating financial returns commensurate with its risk profile.

Limited recourse project finance permits creditors and investors some recourse to the sponsors. This frequently takes the form of a pre-completion guarantee during a project's construction period or other assurances of some form of support for the project. Creditors and investors, however, still look to the success of the project as their primary source of repayment. In most developing market projects and in other projects with significant construction risk, project finance is generally of the limited recourse type.

Smith and Merna (1994) comment that project finance is a term used to describe the financing of a particular legal entity whose cash flows and revenues will be accepted by the lender as a source of funds from which the loan will be repaid. Thus the project's assets, contracts, economics and cash flows are segregated from its promoter's such that it is strictly limited

recourse in that lenders assume some of the risk of the commercial success or failure of the project.

Conventional project finance provides no recourse and if project revenues are insufficient to cover debt service, lenders have no claim against the owner beyond the assets of the project; the project in effect being self–funding and self–liquidating in terms of financing.

Unlike traditional public sector projects whose capital costs are largely financed by loans raised by government, concession projects are financed by a combination of debt and equity capital, the ratio between these two types of capital varies between project and country.

Walker and Smith (1995) point out that concession project finance varies from project to project, and country to country. The variability manifests itself primarily because each project has its unique mix of debt and equity with the lenders' perception of viability generally being different from that of the investors. Lenders tend to focus on the downside risk while investors tend to look at the upside opportunity. It is frequently the case that the bankers view a project, and the country in which it will perform, as having a particular set of credit risks, while simultaneously investors perceive different criteria.

Both potential lenders and investors raise different questions which none the less overlap when analysing the commercial viability of the revenue stream assessment. The financial engineering subsequently reflects this, juggling the debt/equity mix to optimise and respond to the confines in which the concession vehicle will operate.

However, Howcroft (1996) gives the following definition that can be applied to some situations: "Project Financing: A financing of a particular economy unit under which the lender partially or wholly relies upon the assets of the unit for collateral and upon the cash flow from the unit as his source of funds for repayment debt."

Merna and Owen (1998) have described the term project finance with specific reference to concession projects as "Each project is supported by its own financial package and secured solely on that project or facility. Projects are viewed as being their own discreet entities and legally separate from their funding sponsors. As each project exists in its own right, Special Project Vehicles (SPVs) are formulated. Banks lend to Special Project Vehicles on a non- or limited recourse basis, which means that loans are fully dependent on the revenue stream generated by the Special Project Vehicle, and that the assets of the Special Project Vehicle are

used as collateral. Hence, although there may be a number of sponsors forming the Special Project Vehicle, the lenders have no claim to any of the assets other than the project itself".

Merna and Njiru (2002) comment that is important to understand the difference between project finance and corporate finance. Corporate finance is traditional finance where payment of loans to lenders comes from the organisation, backed by the organisation's entire balance sheet and not from the project alone. Lenders tend to look at the overall financial strength or balance sheet of an organisation as a prerequisite to lending for a project. So, even if a particular project fails, the lenders will still remain confident of being repaid because the organisation owning the project has a strong financial base.

4.3 SOURCES OF FINANCE

Price (1995) describes that infrastructure projects can be financed from several sources. In wealthy countries, such projects can be funded internally from a single source. However, is not possible in most developing countries, as government funds are often inadequate. If this is the case, infrastructure projects will have to be funded mainly from private sources. These private sources often prefer to finance only part of the project, while the reminder will have to be financed publicly.

Yescombe (2002) argues that it is usually preferable for a project in a particular country to raise its funding from banks operating in that country, first because they have the best understanding of local conditions, and second because the funding can be provided in the currency of the country, so avoiding foreign exchange risks. Thus in developed countries projects are normally financed by local banks or foreign banks with branch or subsidiary operations in the country concerned. Such financing constitutes the largest proportion of the project finance market.

In some developing countries, however, this approach may not be possible. There may be no market for long term loans in the domestic banking market, or the domestic banks may have no experience in project finance. In some developing countries, there are public sector local development banks to fill the gap if the local commercial banks are not able to provide the funding needed, but their capacity is also limited. Thus the international banking market also plays a major role in project finance for developing countries.

From a project financing point of view, Merna and Njiru (2002) may classify financial institutions into two broad categories: domestic and international.

4.3.1 Sources of domestic finance

According to Price (1995) domestic banking has traditionally been viewed as transaction between banks based in one specific country and residents from the same country in its local currency. Transactions of non-residents based in that specific country may not form part of the international business, and can also be deemed as domestic banking when transactions are in the currency of that specific country by a foreign bank.

Domestic financial institutions can be considered to comprise the following broad categories in developing countries such as depository institutions, non-depository institutions and infrastructure development institutions acting as banks.

The depository institutions may be commercial banks, saving banks and building societies. Both commercial banks and saving banks collect deposits from the public and make direct loans to various entities. They also invest in shares. Building societies also collect deposits from the public that are mostly loaned as property mortgages. Only the surplus funds are loaned for other purposes.

The non-depository institutions may be pension funds, insurance companies and unit trusts. The funds received by pensions funds and insurance companies are long term in nature. They are therefore in a position to lend for long periods or invest in equity. Unit trusts are primarily involved in the management of funds, and buy and sell equities in the equity market to make a profit for the purchasers of the unit trust.

There are also institutions such as infrastructure development banks. Banks of this type have been set up in many countries, in particular to meet the requirements of infrastructure financing. They specialised in projects such as water, solid waste collection and disposal, and roads. For example, a specialised infrastructure bank, BANOBRAS in Mexico, is promoting private water and sewerage treatment plants project by guaranteeing that municipalities will pay for the services provided.

Ramamurti (1996) comments that the domestic capital market, when effective at all, has shown a limited absorbing capacity, while demanding higher rates and offering shorter maturities than international institutions. In the early 1990's, domestic financing of infrastructure investment in developing countries were unfeasible. Most countries have, at best, incipient capital markets. As 1994, large domestic placements or maturities of over three years were not feasible in most of

developing countries. Equity finance appears also questionable as evidence of the scant number of new listing and new issues.

Therefore, given the investment amounts required for infrastructure projects in most countries, the domestic capital market, in the near term, is unlikely to be a significant source of financing. As a result, domestic options for infrastructure financing are limited. Thus, the international financial institutions also play a major role to complement project finance in developing countries.

4.3.2 Sources of international finance

According to Merna and Njiru (2002) the globalisation of financial markets has led to enormous growth in overseas banking and an increase in intermediation between the financial institutions of one country and the suppliers of investment funds and the user of these funds from other country. This is possible with active participation of international multilateral financial institutions which have increased significantly. Other sources of international finance for concession contracts are through commercial finance institutions and export credit agencies.

In many projects financed through project finance techniques, multilateral financial institutions, such as the World Bank, the International Finance Corporation, the Asian Developed Bank, the African Developed Bank and the Inter-American Development Bank, become involved. The involvement of these institutions is generally complementary to the private financing of the project and provides a catalytic role. The wide experience and involvement of expert teams of these institutions, in financing infrastructure projects in developing countries, provides confidence to other lenders and investors in the project. These institutions normally participate by providing loans and equity and through cofinancing with other multilateral institutions.

These are all multilateral financial institutions, drawing their funds from several different countries. They operate as commercial banks, lending money at agreed rates of interest. The loans have to be repaid, but the loan conditions are often more favourable than from commercial banks, and they often offer a period of grace before repayments commence.

According to Price (1995) there are many international development agencies which provide extensive funding. Some of these are presented in figure 4.1. In most cases, external donors will set a limit on the funds made available. If project costs are higher than expected, resulting in the donor's limit being exceeded, a considerable burden will be placed on the local economy.

There are a lot of different countries where they provide extensive funding. Some of these international development agencies can provide funds to their country members all around the world, and they are categorised as global. International development banks can be characterised on a geographical basis; for example, national, regional or universalist. The regional category only provides funding to their country members established in certain area.

Global
International Bank for Reconstruction and Development (IBRD), World Bank, Washington, DC
International Development Association (IDA), World Bank, Washington, DC
International Finance Corporation (IFC), World Bank, Washington, DC
Multilateral Investment Guarantee Agency (MIGA), World Bank, Washington, DC
International Fund for Agricultural Development (IFAD), Rome
Regional
Abu Dhabi Fund for Arab Economic Development (ADFAED), Abu Dhabi
African Development Bank (AfDB), Abidjan
Arab Bank for Economic Development in Africa (ABEDA), Khartoum
Arab Fund for Economic and Social Development (AFESD), Kuwait
Asian Development Bank (AsDB), Manila
Caribbean Development Bank (CDB), Barbados
European Development Fund (EDF), Brussels
European Investment Bank (EIB), Luxembourg
Inter-American Development Bank (IADB), Washington, DC

Figure 4.1 International Development Agencies. (Source: Price, 1995)

According to Price (1995) development banks can be defined in a variety of ways and in practice have little in common apart from the basic concept. There are many types of ownership, objectives, sources of finance, policies and degree of government involvement that can be adopted. A development Bank is considered by the United Nations (1979) to be an institution concerned primarily with long-term loan capital.

However, Price (1995) points out that this vague definition can be applied to most banks. In practice, the main objective of a development bank must be to speed up the development process. In most cases these institutions have been established by governments mainly to encourage growth within the private sector of their own economy. International development banks can be characterised on a geographical basis, for example as national, regional or universalist as is shown in figure 4.1. The ownership and membership of regional development banks is not restricted to the regional States, hence entities other than States can also be included.

The objectives of most regional development banks are generally restricted to economic development and integration. Each region has its own problems and regional development banks can produce solutions to encourage economic development, but these have to be restricted to the individual bank's scope of activities. A comparison taken of the approaches taken toward the construction industry by the different regional development banks would be interesting, but difficult to achieve without full disclosure from the institutions concerned.

Kohli, Mody and Walton (1997) say that multilateral institutions, such the World Bank and some development banks, which have traditionally funded public sector infrastructure projects, are now willing to support private sector projects. The role of these agencies is necessarily limited, however. There are many competing claims on their scare resources, and diversion of resources to fund private sector projects may represent no net gain for economy. It can be argued; however, that these agencies can play an important catalytic role in the early stages of attracting the private sector into infrastructure. The transparency of their project evaluation procedures and their ability to benchmark an individual private sector project in a particular country against international experience of similar projects could help avoid controversies that may otherwise arise about private sector projects. Their active involvement as lenders in a project can also help reduce risk perception on the part of other investors. However, the procedures of these institutions are often too cumbersome to be acceptable to private sector investors.

Multilateral institutions could play an important role of financing private sector infrastructure. An innovative role played by multilateral institutions is the use of their guaranteeing capacity to extend the maturities of commercial loans to private sector infrastructure projects.

Kohli, Mody and Walton (1997) outline that bilateral aid agencies have traditionally funded public sector infrastructure projects, but their role in funding private sector projects is likely to be very limited. Their resources are severely limited, and their priorities are shifting to social sector projects, making them reluctant to finance projects, that are commercially financeable.

However, like multilateral agencies, bilateral agencies could play an important catalytic role in the early stages of promoting private sector investment in infrastructure, especially by cofinancing private sector projects with multilateral agencies.

Price (1995) comments that large commercial finance institutions are another potential source of funds for project financing. According to Yescombe (2002), the top 15 commercial banks that provide different project finance to infrastructure projects delivered by concession contracts are presented in figure 4.2. Compared to banks or insurance institutions, finance institutions do not have a depositor base of policy-holders as a source of funds. They must buy all their funds in the debt markets and re-lend at a spread. Consequently, funds from commercial finance institutions tend to be highly priced and limited in volume.

Major Leader Managers of Bank Project Finance Loans, 2001

Lead Manager	Country	Amount ($ millions)	Number of Loans	Average Loan ($ millions)
Citigroup	U.S.A.	15,512	54	287
West LB	Germany	8,235	27	305
BNP Paribas	France	6,429	29	222
Société Générale	France	5,301	17	312
Credit Suisse First Boston	Switzerland	4,742	8	593
JP Morgan	U.S.A.	4,333	18	241
Dresdner Kleinwort Wasserstein	Germany	4,038	17	238
ABN Amro	Netherlands	4,019	19	212
Deutsche Bank	Germany	3,623	14	259
Barclays Bank	U.K.	3,612	18	201
Mizuho Financial Group	Japan	3,187	20	159
Intesa BCI	Italy	2,621	5	524
Bank of America	U.S.A.	2,282	13	176
Crédit Lyonnais	France	2,019	12	168
Royal Bank of Scotland	U.K.	1,191	16	119

Figure 4.2 Top 15 Commercial Banks Providing Project Finance (Source: Yescombe, 2002)

Kohli, Mody and Walton (1997) discuss that international commercial banks are the largest source of private finance for infrastructure development in developing countries. Moreover, banks tend to be "hands-on" financiers, lending on the basis of a detailed analysis of project risk.

There are important limits to bank financing, however. The number of international banks actively involved in developing countries is small, and they are subject to exposure limits for projects and countries. This often leads to syndication, which involves cumbersome procedures. Another important limitation of commercial bank lending is the mismatch between the fifteen to twenty-year- loans needed by infrastructure projects and the seven to ten-year maturities sought by international banks. Maturities of commercial bank loans can be lengthened from the beginning through multilateral guarantee support for later period repayments. Reliance of bank financing for infrastructure projects must be therefore be part of a mix involving other long-term lending, or it may be accompanied by suitable refinancing arrangements.

Regarding export credit financing of heavy and sophisticated equipment and machinery, Walker and Smith (1995) describe that infrastructure projects almost always include components of construction plant, operating plant, vehicles and mechanical and electrical engineering equipment. The manufacturers of this often have access to government agencies that use export credits as a form of export promotion. If a concession project has contractors who can benefit from this support, then the number of cost centres is able to be reduced. Some agencies guarantee against certain and political and commercial risks in the project's host country with respect to the financing of the construction and operating equipment procured.

Some export credit agencies have historically been reluctant to provide a guarantee where a host country guarantee is unavailable. This situation is changing, however, and the agencies are, on a case by case basis, beginning to look at projects where the repayment depends upon the financial and economical viability of the projects such as concessions.

Smith (1999) outlines that export credit agencies (ECAs) typically provide insurance or guarantees to exporters supplying or constructing major projects in foreign countries, or to banks providing loans, although some ECAs have, in recent years, also taken on a role in providing non-recourse or limited resource project finance for concession projects. Some ECAs are part of governments in the developed world whilst others are private companies, but together they play a crucial role in financing and facilitating major projects in the developing world. ECA cover traditionally embraces both political and commercial risk, although political risks are invariably taken by the government bodies.

ECAs are not aid organisations, they provide insurance cover for which they charge a premium and they are expected to at least break even.

Banks would probably prefer to specify explicitly the risks which are not covered, and for all other risks to then be considered as "political", whereas the ECAs would naturally prefer the specific risks covered to be explicitly identified and for all other risks to be considered as "commercial". Of particular concern are risks associated with project documentation, for example take or pay contracts for power supply, where the documents might consequently be found to be faulty or in some way unenforceable. This issue is often of particular importance in developing countries where there may not be the experience to draft watertight agreements.

Within the export credit mechanism, Price (1995) indicates that the sale of goods and services to foreign countries is considerably more complex and risky than domestic sales. Export credits are a mixture of insurance and banking mechanisms specifically to help exporters overcome the main problems associated with overseas trade. Thus, exporters are encouraged to enter markets that they would find too costly if funded only through commercial sources of bank loans and related insurances. Export credit is therefore a form of home government support for overseas trade.

In order to operate in the international market, it has been necessary for all major exporting to develop their own export credit facilities. Because of the differences in political and economic system from one country to another, no two export credit facilities are the same. However, since the problems faced by all countries are very similar, the development of export credit facilities has encountered similar regulations and the same international guidelines. The types of facility provided by the export credit agencies fall into two categories: insurance and financing. Export credit can be provided under either a supplier credit agreement, whereby the exporter is financed by a bank and extends credit to the foreign buyer, or a buyer credit agreement, whereby the foreign buyer is provided with finance from a bank in the exporter" country but payment is made from the bank to the exporter. Under buyer credit, the foreign buyer is responsible for repayment to the lending bank. Export credits to foreign buyers may be granted for different periods depending on the institution, for example, short-term, medium-term and long-term.

Price (1995) mentions that the major exporting nations have developed "export credit insurance" to help reduce exporting risks. Of most concern is the risk of non-payment for either commercial or political reasons. Both of these risks can be covered by export credit insurance, but not many agencies use insurance for this.

Price (1995) points out that export credit agencies may provide various types of financing strategies either medium-term or long-term credit for payment of goods and services associated with a contract. This facility is known as "export credit financing" and enables exporters to avoid a bottleneck of funds when the client wishes to defer payment. The export credit agency will not necessarily supply the finance, but makes credits available in the form of supplier credit or buyer credit.

4.4 FINANCIAL INSTRUMENTS

According to Merna and Njiru (2002), a project finance operation may involve a variety of financial instruments. These may be broadly classified as debt, equity and mezzanine. A description is provided below.

4.4.1 Debt instruments

According to Merna and Njiru (2002), the most important element in project finance is the raising of the debt capital. The main attribute of debt capital is a specified return for the lender over the specific period of time. In project financing, the return on debt capital is linked to the income flows of the project entity and is protected only against the assets of the project. There are a variety of debt instruments such as pure loans and non-convertible debentures. Debt instruments refer to those securities issued by the project that makes it liable to pay a specific amount at a particular time. Debt is senior to all other claims on the project cash flows and assets.

Debt instruments refer to the raising of term loans from banks, other financial institutions including commercial banks, merchant banks, investments banks, development agencies, pension funds and insurance companies; debentures and export credits including buyers' and suppliers' credit. In terms of seniority, senior debt ranks the highest among the financial instruments in term of claims of the assets of a project. This means that in the event of default the lenders of senior debt have the first right to claim the assets of the project.

The terms of loans are negotiated between the borrower (project) and the financial institutions. In large infrastructure projects where the funds required to be raised are very high, term loans are usually provided by more than one bank or financial institution. A group of banks and financial institutions typically pool their resources to provide the loans to the project.

Private infrastructure projects usually access debt financing on a nonrecourse or limited resource project finance basis. In nonrecourse project finance creditors rely solely on the income and assets of the project itself for repayment, rather than on the credit of the project investors. Under limited resource finance the project investor have some limited liability with respect to the project company's obligations, such as timely completion of the project, but do not provide a guarantee of the project company's debts, especially after commercial operation begins. The inherent risks associated with financing of infrastructure projects are compounded by the fact that most investments are very large and capital recovery is achieved over a long period. As a result most projects require debt tenors of ten to twenty-five years. Moreover, a slow rate of capital recovery coupled with a high expected rate of return on equity (20-30 percent) leads to high leverage ratios.

Ferreira and Khatami (1996) comment that debt financing for private infrastructure projects is provided either before or after a project's construction is complete. Construction phase financing usually comes from local and international commercial banks. The role of local commercial banks in developing countries in financing greenfield private infrastructure projects has been very limited due to weaknesses in credit appraisal and financing techniques. In addition to institutional weaknesses, commercial banks in developing countries are usually unable to make long-term loans because the profile of their liabilities is mostly short-term. This short-term profile of bank liabilities (deposits) is largely the result of macroeconomic instability in many countries.

Accordingly, international commercial bank lending through syndicated or individual loans is an important source of project financing, especially during the construction phase. Commercial banks are able to appraise project risks and can provide financial flexibility in response to construction delays or cost overruns. Commercial bank lending is usually guaranteed by export credit agencies, which provide pre-completion cover for varying degrees of commercial and political risk. Coverage of pre-completion risks help secure financing for projects.

Most export credit agencies limit tenors to ten years, mandate semi-annual repayment to principal, and allow only a six months grace period following project completion. These conditions force the brunt of the debt repayment during the early phase of the project's life, when cash flows are most uncertain. As a result projects may not generate sufficient income to retire commercial bank debts if loans maturities are shorter than required. For instance, financing a thirty-year asset, such as a power plant, over ten years results in power rates that are not economic and limits creativity in structuring tariffs. In addition, the export credit agency guarantees often required by commercial banks must be backed by the host government's counter-guarantees. A drawback of such agreements is that government counter-guarantees end up covering both

commercial and political risks. To improve projects' ability to attract long-term commercial bank project financing with fewer guarantees, policymakers must reduce the elements of risk associated with the construction phase and improve the regulatory and market environment in which projects will operate.

Some projects require longer–term financing than commercial banks usually provide to match their revenue profile and repayment ability. In such cases commercial lenders usually try to ensure that projects are capable of obtaining debt financing once the construction period ends.

Multilateral development banks can also design instruments to mitigate refinancing risks. To reduce the need for concessionary multilateral or bilateral support, projects must be able to demonstrate their ability to raise long-term funds in capital markets once commercial operations begin. Thus governments in developing countries will not only have to ensure that local capital markets are strong enough to meet part of the refinancing requirements, they also have to maintain a macroeconomic framework that is not perceived as jeopardising the ability of projects to float debt on international capital markets.

A debenture is similar to a term loan except for the fact that the loan is divided into securities and sold through the stock market to a variety of investors. Debentures are usually in a form of a bond, undertaking the repayment of the loan on a specified date, and with regular stated payments of interest between the date of issue and the date of maturity.

According to Price (1995), syndicated loans are the most important risk-sharing device suitable for large loans. They involve the formal subcontracting of the loan and the associated risk, and are considered to be the same as co-insurance and re-insurance arrangements. Thus, individual banks or institutions can spread the risk associated with large individual projects and avoid overexposure. Syndicated loans have benefits for both the client and the banks. They enable loans to be made for single projects whose funding requirements make them too large for single banks. Because the overall risk is reduced, so is the overall cost of the finance.

The borrower negotiates the loan conditions with one of the banks which acts as the lead manager. It is the responsibility of the lead manager to locate other banks which are prepared to offer (on common terms) a medium term, syndicated, rollover (credit available over a continuing period) Eurocurrency loan to a single borrower. There are many different forms of syndicated loan, which are grouped by the reason for the loan, type pf syndication, drawdown method (drawing money which is available under a credit agreement), and repayment terms, but they are

all linked by the following elements such as duration of the term of the loan, interest rates and the agreed common currency.

4.4.2 Equity finance

According to Merna and Njiru (2002), the process of a project proposed to be funded on a project financing basis starts with the setting up of a particular project legal entity, known as an SPV, Special Purpose Vehicle. The sponsors of the project provide the initial equity capital, known as the seed equity capital. Merna and Owen (1998) define equity capital or pure equity, as the provision of risk capital by investors to an investment opportunity. This usually results in the issuance of shares to those investors. This usually results in the issuance of shares to those investors. A share may be described as an intangible bundle of rights in a company, which both indicates proprietorship and defines the contract between the shareholders. The terms of the contract, that is the particular rights attaching to a class of shares, are contained in the article of association of the company. Equity is the residual value of a company's assets after all outside liabilities (other than to shareholders) have been allowed for. Equity is also known as risk capital, because these funds are not usually secured and have no registered claim on any assets of the business, thus freeing these assets to be used as collateral for the loans which are in debt financing.

Equity, however, shares in the profits of the project and any appreciation in the value of the enterprise, without limitation. The compensation for equity is dividends (dividends are the amount of profits paid to shareholders). No dividends are paid if the business does not make profits. Dividends to the shareholders can be paid only after debt claims have been met. The return on the equity, therefore, is the first to be affected whenever financial difficulties are faced by the project entity. This means that equity investors, in the worst case scenario, may be left with nothing if the project fails, and hence they demand greater return on their capital in order to bear a greater risk.

Kohli, Mody and Walton (1997) point out that private sector infrastructure projects require substantial equity financing, with higher equity requirements required for projects with higher levels of perceived risk. Project investors are an important source of equity in most cases. Although preconstruction, or developmental, costs represent only a small fraction of the cost in infrastructure projects, they can nevertheless run into several million dollars, all of which must be financed by equity provided by project sponsors. Once the developmental phase ends, equity may be committed as part of the financing package. Sponsors typically commit a substantial

proportion of local equity themselves, and they also tie up additional equity from other investors at this stage.

International sponsors may often be keen to link up with domestic investors at this stage on the grounds that this will reduce political risk. Domestic investors tend to evaluate risk less conservatively than international investors, and their involvement often helps to improve the perceptions of international investors.

Well–structured projects can expect to mobilise equity from international infrastructure funds specialising in investment in infrastructure projects. The amounts available through these funds remain modest relative to the total requirement, but the pool of global capital they can tap is very large, and the flow of equity from this source could increase substantially if bank-able projects become available and the track record of implementation improves. An important aspect of these funds is that they allow international investors to pool risks by investing in a mix of projects. They also enable institutional investors, who are relatively risk averse, to invest in infrastructure projects after the construction stage, when project risks are much lower. This provides valuable opportunities for "take-out" financing, enabling projects to be financed through the earlier and riskier stage by much larger involvement of equity from the investors or by high-cost debt, with a subsequent restructuring through sale of investors' equity financing of debt with equity.

Kohli, Mody and Walton (1997) discuss that a limited amount of equity support of private sector infrastructure is also available from multilateral organisations, such as the International Finance Corporation and others. Although these funds can provide only some amount of capital, their participation in a project provides comfort to their investors.

The scope for raising equity from domestic capital markets is probably limited. Public utilities and domestic institutional investors may be willing to contribute part of the equity for project expansion, but significant domestic equity support may not be forthcoming for new infrastructure projects until there is a track record of performance. However, once project implementation proceeds and revenues begin to be generated through partial commissioning, it may be possible to tap a wider range of equity investors.

According to Ferreira and Khatami (1996) the growing experience with international project finance flows suggest that equity is a more readily available component in the financing of infrastructure projects. Infrastructure projects usually have high leverage (debt to equity) ratios, and securing large amounts of long-term debt remains the main financing problem. The number of international emerging market equity funds in the developing world is growing. These funds

include specialised infrastructure funds. Moreover, there are numerous project investors in most infrastructure industries that are willing and able to take equity risks for equity returns.

For investors to achieve returns it is often essential that a project be able to mobilise long-term debt for anywhere up to 80 percent of the cost. Leverage ratios and capital recovery are also subject to specific commercial characteristics in various subsectors. In telecommunications, for example, where shorter technological horizons and less regulated markets result in greater competition and price volatility, investors seek and usually can achieve higher returns over shorter periods. Higher returns result in more equity in the financing composition and therefore a lower leverage ratio. Debt-equity ratios of about 50:50 are common in telecommunications investments. Road and hydroelectric dam projects, require large investments with slow capital recovery. The markets for these services allow a greater degree of predictability in revenues, albeit with less flexibility in tariff adjustment, thus lowering cash flow risks. These characteristics result in higher leverage ratios, with debt tenors that can stretch as long as twenty-five years or more to ensure expected returns and equity.

4.4.3 Mezzanine finance

Mezzanine finance is a concept which has developed to address the need for finance that takes a higher risk than conventional debt, and in exchange receives a lower risk than equity with an appropriately lower reward. Its attraction is that it can be tailor-made via formalised agreement to suit the particular preferences of the different parties involved. Insurance companies and pension funds are increasingly attracted to this concept.

Mezzanine finance, Merna and Njiru (2002) point out, occupies an intermediate position between the senior debt and the common equity. Mezzanine finance typically takes the form of subordinated debt, junior subordinated debt, bonds and preferred stock or some combination of each.

Bonds are well known in project finance especially in large projects. A bond, like any other form of indebtedness, is a fixed income security. The holder receives a specified annual interest income and a specified amount at maturity – no more, no less (unless the company goes bankrupt). The difference between a bond and other forms of indebtedness such as term loans and secured debentures is that bonds are subordinate forms of debt as compared to term loans and secured debentures. Similar to debentures these are issued by the borrowing entity in small increments, usually US$ 1,000 per bond in the USA. After issue, investors on organised security exchanges

can trade the bond. Four variables characterise a bond: its par value, its coupon, its maturity and its market value.

The success of a bond issue depends upon its quality. There are many companies that analyse the investments qualities of publicly traded bonds. These companies publish their findings in the form of bond rating. The ratings are determined by using various financial parameters of the borrowing agency, the general market conditions in which the borrower operates, the political situation of the country in which the project is located and other sources of finance that have been tied up by the project.

Gradations of credit ratings by Standard & Poor's and Moody's from the prime rate credit level of AAA / Aaa down to the minimum "investment grade" rating of BBB / Baa3 (below which most major bond investors will not purchase a bond issue) are as listed in table 4.3. According to Yescombe (2002) most project finance rating are at the lower end of this range. (Below the investment grade level the ratings continue from BB+ / Ba1, etc.)

Investment Grade Ratings

Standard & Poor's	Moody's
AAA	Aaa
AA+	Aa1
AA	Aa2
AA-	Aa3
A+	A1
A	A2
A-	A3
BBB+	Baa1
BBB	Baa2
BBB-	Baa3

Figure 4.3 Investment Grade Rating (Source: Yescombe, 2002)

Subordinated debt is other type of mezzanine finance. Subordinated debt is that debt which is subordinate to senior debt, and generally only has second claim to the collateral of the project company. This means that in the event of default by the promoter, lenders of all senior debt must be paid before lenders of subordinated debt. As is it is second only to senior debt in terms of claims on the project's assets, lenders seek higher returns on subordinated debt. The interest rate of the subordinated debt is usually higher than the interest rate on senior debt which may vary from one financial package to other. Subordinated debt is used mainly for refinancing needs or for restructuring of the finance package of a project.

4.5 IMPORTANT FEATURES IN PROJECT FINANCE

One important issue in the development of the financial package for a concession contract is the revenues stream of the concession project because is the predominant basis of the financial package. Merna and Njiru (2002) comment that the future income stream of the project is the most critical element in any project financing. The entire financial package is dependant on an assured income stream from the project, since lenders and investors only have recourse to the income stream generated by the project once it is completed, and assets of the project that may or may not have any residual value. The project sponsors, therefore, have to demonstrate evidence of future income through various means such as an offtake contract, a purchase agreement, a power sales contract for a power plant, a concession agreement for a toll road project allowing the collection of tolls, or tenant leases for a commercial real estate project.

According to Walker and Smith (1995) concession projects could be subdivided in two principal groupings just for revenues streams guarantees. The first group includes roads, bridges or tunnels with many tolled consumers, whereas the second group includes projects with one major customer and will include power, sewage or water treatment plants where the customer is often a government utility who in turn charges the consumers. The latter generally have less risky revenue streams and enjoy construction and maintenance costs which are relatively simple to quantify. In addition the first group has a further handicap in that they are built for long-term needs and may not reach full user throughputs for decades, and this will generally be reflected in their longer concession period. Schemes which are dependent on vehicle traffic typically have some form of government support to make them attractive to the private sector. Sometimes governments agreed, after negotiation, to allow increased tolls in the event that cash flows fell below a minimum threshold due to poorer traffic volume, or if inflation or interest rates rose higher than originally calculated. The concession allowed for investor equity returns to be within a predetermined range throughout the franchise period.

Other important issue during the concession contract is to consider refinancing. Merna and Njiru (2002) point out that refinancing involves paying off an existing loan with the proceeds from a new loan, using the same property as collateral. There are situations where promoters may consider refinancing. If the current interest rate is lower than the rate on the debt, the promoter may consider refinancing so that short term loans can be rolled over into longer term maturity loans. In infrastructure projects, most lenders are unwilling to offer long maturity in their lending. Thus, the promoter may take advantage of the lower interest rates to refinance short term loans.

If the project is having difficulties in generating sufficient revenues to service its debt and to maintain a reasonable rate of return, the promoter has to restructure its financing techniques to maintain its financial viability. Lower than expected revenue generation may lead to projects already procured utilising project finance, thus defaulting in their debt obligations. Some projects have to be refinanced to ensure that debt obligations are met. However, this involves the risk of refinancing as the debt increases.

Refinancing can provide major financial benefits to a promoter organisation. Once the project has been constructed and operation begun, the lender no longer needs to worry about construction risks. By refinancing the promoter can achieve lower interest payments and thus increase its profit margin.

In contrast, when the actual project revenues exceed projected revenues, the Secretariat of Communication and Transport (2003) of Mexico comments that the following benefits will accrue to all participants:

- The bank loan will be fully repaid before the expected term.
- The Subordinate Contribution Covenant will not need to be executed to fully service debt.
- Risk capital and loans will be recovered in advance and its expected rate of return will be reached in a shorter term.
- Once the equity is recovered with its rate of return, residual revenues will exist until the end of the concession term, and these revenues will be split between the concessionaire and BANOBRAS.

Additionally the Secretariat of Communication and Transport (2003) state that each year, the principal will review the status of the internal rate of return obtained by the risk capital provided for the construction of the project. Once the proposed rate of return is obtained, the concessionaire

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will share the net revenue generated by the project with the Mexican development bank BANOBRAS.

4.6 IDENTIFICATION OF FINANCEABLE PROJECTS

Kohli, Mody and Walton (1997) point out that specialised financing institutions may be able to identify financeable infrastructure projects more effectively and proactively than multipurpose financing institutions. Moreover, they may be able to help structure projects in a manner that makes them financeable, taking care to meet the complex risk mitigation requirements of different types of investors.

Price (1995) states that concession project operates differently through the world, but there are similar characteristics when it comes to creating a financial package. First of all, the viability and profitability of the project has to be established. Second, the project has to be sold to the international money market before work can start. As some previous concession projects have been unsuccessful, most investors regard concession projects as very risky and have to be persuaded that the project is a sound investment.

Common to all types of concession project is the element of equity put into a special-purpose vehicle (usually a consortium including the contractor, the operator and the buyer of the end product) by the projects investors. The equity achieves some purposes. Initially, it acts as an incentive to the contractor to complete the project on time and within the budget. Later, it demonstrates the investing consortium's faith in the economic viability of the project, this encouraging investors to provide additional finance. And the last, it acts as a cushion in the event of the project proving to be less economic than expected.

4.7 FINANCIAL RISKS

Price (1995) comments that concession contract is an approach to project finance. It appears very attractive, as contractors can generate their own work and investors can make substantial profits. However, as with any innovation, there are also associated risks, and the extent of these must be established before investing in such schemes.

Smith (1995) points out that the identification of risks associated with any project is a necessary step before analysis and allocation, especially in the early stage of project appraisal. Lenders and investors will only be attracted to projects that provide suitable returns on the capital invested.

A project often has a number of risks: identifiable risks, which are within the control of one or more of the parties to the project; risks which may not be within any parties reasonable control, but may be insurable at a cost; and uninsurable risks.

By identifying risks at the appraisal stage of the project a realistic estimate of the duration and final costs and revenues of a project may be determined.

According to Price (1995) reservoir risks in concession projects, by their own nature, tend to be a large and have extensive labour and material requirements, It is important that local sources can satisfy the demand. If material or labour has to be imported, then the project cost will escalate rapidly.

Revenue risks are mainly so important that the toll prices are neither too high nor too low. Toll set too high may generate insufficient volumes to make a profit; tolls set too low may create a high volume, but not enough to remove the debt and give a decent return on equity. Predicting the correct market price is one of the major risks associated with most concession contracts.

Completion risk applies to most construction projects, concession projects have an extra need to be completed on time and within budget, as no income can be generated prior to completion. The operation risk predictions of running and maintenance costs need to be accurate, and revenue generated should exceed them. Therefore, the promoter may provide a guarantee in order to reduce considerably and to avoid the completion risk. This guarantee may be provided by the promoter with a performance bond or a surety bond. According to the United States Small Business Administration “a surety bond is a three-party instrument between a surety, the contractor and the project owner. The agreement binds the contractor to comply with the terms and conditions of a contract. If the contractor is unable to successfully perform the contract, the surety assumes the contractor's responsibilities and ensures that the project is completed. There are four types of contract bond and one of the one that applies in infrastructure projects is the performance bond which guarantees that the contractor will perform the contract in accordance with its terms”.

Some risks, such as "force majoure", are either not insurable or not insurable at a reasonable cost. Banks and export agencies will normally be reluctant to assume these uninsurable risks and will seek to have support provided by one or more of the other parties. Equity investors may assume that force majoure risk themselves but normally will not be willing to protect the lender's banks against force majoure. The banks will therefore normally insist that the host country's government address certain of the force majoure risks.

4.8 SUMMARY

Project finance in developing countries has grown in the last years, stimulated by the benefits of globalization and by major domestic policy reforms. Project finance can have a special relevance for developing countries, because it provides a structure for financing large projects, even in relatively risky environments. Relying primarily on a project's own revenues and assets for repayment, such structuring is based on a careful appraisal of the project's risks and potential returns and on sharing those risks, costs, and rewards among a group of sponsors and different investors.

Funding for infrastructure projects in developing countries is not easy to find in local or domestic financial markets; therefore projects to be delivered to developing countries rely in international financial markets such as development and commercial banks. These banks provide different financial instruments. The most common and utilised are debt and equity. The form of financing is achieving through a tailored structure with different financial instruments which may be designed the promoter. Moreover, mezzanine finance is also utilised for major infrastructure projects.

Financial risks have to be fairly allocated and shared by the public and private sector in any financial package. The identification of risks has to be sought by the promoter and the rest of the participants in the event that fluctuations may occur in predicting correct market prices especially in developing countries. Other important aspect that has been raised to improve the financial benefit of the concession project is refinancing.

CHAPTER FIVE

RESEARCH METHODOLOGY

5.1 INTRODUCTION

This chapter introduces the concept of the research approaches showing some definitions and concepts. It explains the different research methods such as experiments, surveys and case studies. It continues with the selection of the research method to be utilised in this research investigation arguing which is the most convenient. Afterwards it outlines the strategies of data collection and which strategy is going to be used to carry out this research within primary and secondary data. The next section is about the generation and implementation of the methodology. Which information is collected to develop the case study, how the hypothetical concession project is developed. Moreover, the verification of the case study and the validation of the hypothetical concession project designed. It finalises outlining the limitations of the research methodology which are some prejudices that influence the research analysis and which are avoided with the process of verification and validation.

5.2 THE RESEARCH APPROACH

The Oxford Encyclopaedic English Dictionary defines research as "the systematic investigation into the study of materials, sources etc. in order to establish facts and reach new conclusions" and it also defines as "an endeavour to discover new or collate old facts etc. by the scientific study of a subject or by a course of critical investigation".

Walliman (2001) points out that "what is certain is that there are many different opinions about and approaches to research". However, as a means of achieving a greater comprehension of our world, research distinguishes itself from the two other basic and more ancient means, those of experience and reasoning.

Experience results in knowledge and understanding gained either individually or as a group or society, or shared by experts or leaders, through day-to-day living. The most immediate form of experience is personal experience, the body of knowledge gained individually through encountering situations and events in life. When solutions to problems are not to be found within the personal experience of an individual, then somebody may turn to those who have wider or more specialist experience for advice, for example a solicitor in legal matters. Beyond this are the 'experts' who have written books on particular subjects, e.g. health care or the finer points of playing golf.

Reasoning is a method of coming to conclusions by the use of logical argument. There are three basic forms of reasoning: deductive, inductive and a combination of both called inductive/deductive. Deductive reasoning was first developed by the Ancient Greeks, and was refined by Aristotle through his deductive syllogisms. An argument based on deduction begins with general statements and, through logical argument, comes to a specific conclusion. A syllogism is the simplest form of this kind of argument and consists of a major general premise (statement), followed by a minor, more specific premise, and a conclusion which follows logically. Inductive reasoning works the other way round. It starts from specific observations and derives general conclusions therefrom. But when inductive and deductive reasoning were combined to form inductive/deductive reasoning, the to-and-fro process of developing hypotheses (testable theories) inductively from observations, charting their implications by deduction, and testing them to refine or reject them in the light of the results, formed a powerful basis for the progress of knowledge, especially of scientific knowledge.

Walliman (2001) comments that "it is the combination of experience with deductive and inductive reasoning which is the foundation of modern scientific research". Walliman (2001) says that "three characteristics of research may be seen to distinguish it from gaining knowledge purely by experience or reasoning such as; gaining experience is an uncontrolled and haphazard activity, while research is systematic and controlled; reasoning can operate in an abstract world, divorced from reality, while research is empirical and turns to experience and the world around us for validation; and unlike experience and reason, research aims to be self-correcting". The process of research involves rigorously testing the results obtained, and methods and results are open to public scrutiny and criticism.

Cohen and Manion (1994) consider that "research is a combination of both experience and reasoning and must be regarded as the most successful approach to the discovery of truth". When there is a need to talk about this type of systematic research, it is usually assumed that it

makes use of the rigorous and questioning techniques of scientific enquiry. This form of enquiry is called scientific method.

Walliman (2001) points out that "scientific method is the discipline which forms the foundation of modern scientific enquiry. It is therefore important to mention some of the main assumptions made in this method of enquiry, and to describe some of its major characteristics. Scientific method has been applied, to a greater or lesser extent, to research in some areas not principally thought of as 'scientific', such as sociology, psychology and education, although some scientists question the appropriateness of doing this".

Blaxter, Hughes and Tight (1996) say that "one other distinction which should be briefly considered at this point is that between method and methodology. These two terms are used widely, but in an inconsistent and confusing manner in the research literature, which is why we have restricted their use and referred instead to families. However, method can be understood to relate principally to the tools of data collection, or what we are referring to as techniques, such as interviews or questionnaires. Methodology can be interpreted as having a more general and philosophical meaning".

5.3 RESEARCH METHODS

There are different types of strategies or methods of doing research. These ways may include experiments, surveys and case studies. Each strategy has peculiar advantages and disadvantages, they may depend upon three conditions: (a) the type of research question, (b) the control an investigator has over actual behavioural events, and (c) the focus on the contemporary as opposed to historical phenomena. Following, there is a review of experiments, surveys and case studies.

5.3.1 Experiments

When people think about natural scientists doing research, McNeill (1990) says, they tend to think of them in a laboratory, probably doing an experiment. The experiment is the classic research method of the natural scientists, and has produced many of its most valuable results, both in pure and in applied science. This is because the experiment is most suited to the assumptions that natural scientists have traditionally made about what they are studying. They assume that the natural world has and independent existence of its own, which is as it is regardless of those who

are studying it, and which is governed by laws which can be discovered by the research scientist if only the right method can be developed. The knowledge that is discovered using this method is regarded as objective and factual, i.e. it is correct for all times and all places, and is not going to be different according to who discovers it.

In the social sciences, there are two broad traditions of research: experimental and no experimental. While both seek to explain human behaviour, they differ critically in the amount of control they have over the data.

The laboratory methods appears to those who believe that, in the last analysis, human behaviour can be studied and explained in the same way as can events in the world of nature. There are assumed to be patterns of cause and effect that can be identified. Laboratory experiments can only last for a relatively short tie, and have to held within the confines of the laboratory.

Moreover, experiments may be satisfactory response to the criticism levelled at laboratory experiments, but they have other problems of their own. The major one is that there is no way for the researcher can hope to be aware of, still less control, all the possible independent variables, and this casts doubt on any conclusions that may be drawn about causes.

The problem works both ways. If there are control of all variables, it has to be set up a totally of artificial situations. If the situation has to be as realistic as possible, it has to be accepted that all the variables can not be controlled, and can therefore never be sure that the cause and effect relationships identified are, in fact, correct.

Experimental research differs from the other research approaches through its greater control over the objects of it study. The researcher strives to isolate and control every relevant condition which determines the events investigated, so as to observe the effects when the conditions are manipulated. Chemical experiments in a laboratory represent one of the purest forms of this research type.

However, the actual experiment is only a part of the research process. There are several planned stages in experimental research. When the researcher has established that the study is amenable to experimental methods, a prediction (technically called a hypothesis) of the likely cause and effect patterns of the phenomenon has to be made. This allows decisions to be made as to what variables are to be tested and how they are to be controlled and measured. This stage, called the design of the experiment, must also include the choice of relevant types of test

and methods of analysing the results of the experiments (usually by statistical analysis). Pre-tests are the usually carried out to detect any problems in the experimental procedure.

Not all experimental research has to, or even can, take place in a laboratory. The experimental methods used must take account of how much it is possible to control the variables. Pre-experimental designs are unreliable and primitive experimental methods in which assumptions are made despite the lack of essential control of variables.

True experimental designs are those which rigorously check the identical nature of groups before testing the influence of a variable on a sample of them in controlled circumstances. Parallel tests are made on identical samples (control samples) which are not subject to the variable.

5.3.2 Surveys

McNeill (1990) points out that a survey is done where the researcher wishes to gather large amounts of data from a relatively large number of people. But there are certain topics which simply can not be studied by this method. Many historical themes are an example, since no respondents are available. Illiterate people can not be given a questionnaire, though they may, of course, be interviewed.

There are some advantages and disadvantages of survey technique of research and may be as follows:

Advantages:

- Large number of people can be studied.
- The method is relatively quick, and relatively cheap.
- If the survey is properly conducted, the results are reliable, and the representative of a much wider population than that directly investigated.
- If the research is properly carried out, the personal influence of the researcher on the results is slight.
- It produces data that can easily be expressed in statistical form. This enables comparisons to be made between different groups and populations.

Disadvantages:

- The interview is a very artificial situation. There is no guarantee that what people say in interviews is a true account of what they actually do, whether they are intentionally lying or whether they genuinely believe what they are saying. People are quite capable of saying one thing and doing another, and of being quite unaware of this.
- Fundamentally, the survey method finds out what people will say when they are being interviewed, or filling in a questionnaire. This may not be the same thing as what they actually think or do. There is therefore a major potential problem with the validity of the findings of such research.

5.3.3 Case Studies

Yin (1993) comments that the case study is the method of choice when the phenomenon under study is not readily distinguishable from its contexts. Such a phenomenon may be a project or program in an evaluation study. Sometimes the definition of this project or program may be problematic, as in determining when the activity started or ended.

Yin (1994) points out that case studies are even found in economics, in which the structure of a given industry, or the economy of a city or a region, may be investigated by using case study design. In all of these situations, the distinctive need for case studies arises out of the desire to understand complex social phenomena. In brief, the case study allows an investigation to retain the holistic and meaningful characteristics of real-life events – such as individual life cycles, organisational and managerial processes, neighbourhood change, international relations, and the maturation of industry.

Whereas some consider the case an object to study and others consider it a methodology, a case study is, according to Creswell (1998), an exploration of a bounded system or a case over time through detailed, in-depth data collection involving multiple sources of information rich in context. This bounded system is bounded by time and place, and it is the case being studied a programme, an event, an activity or individuals. For example, several programmes or a single programme might be selected for study. Multiple sources of information include observations, interviews, audiovisual material, and documents and reports. The context of the case involves situating the case within its setting, which may be a physical setting or the social, historical, and/or economic setting for the case. The focus may be on the case that, because of its uniqueness, requires study, or it may be on an issue or issues, with the case used instrumentally

to illustrate the issue. When more than one case is studied, it is referred to as a collective case study.

5.3.4 Selection of the research method

The choice of research methods deals with at least four problems: what questions to study, what data are relevant, what data can be collected, and how to analyse the results. Another way to think about it is in the process of collecting, analysing and interpreting.

Among the above research methods, the strategy to follow to do this research can not be experiments because they require control over behavioural events. An experiment separates a daily management practice phenomenon from its context, so the attention in experimental practices can be focused only on a few variables where typically the context is controlled by the laboratory environment.

Survey can not be either because the interviews are difficult to answer or most of the people that were involved in the project can not answer them, just the people deeply involved in that specific project and with key positions important to the research. Surveys can try to deal with phenomenon and context, but their ability to investigate the context is extremely limited. The survey designer, for instance, constantly struggles to limit the number of key variables to be analysed such as personnel related to an specific project and circumstances and hence the number of questions that can be asked to fall safely within the number of respondents that can be surveyed.

The case study method is utilised because data collected can be presented in a more comprehensive manner and can be treated more carefully in the context that the researcher is investigating. The case study approach investigates contemporary events within its real life context. For this research investigation, the case study method is utilised because the author presents the information that can be collected and analysed. In brief, the case study allows an investigation to present the key data collected and meaningful characteristics of real life events like an infrastructure project.

The case study research method is focused in the process of enquiry and examination and is designed to discover information. Commonly, from the research methodology, can be obtained some relevant information and guidance to improve different process or methods utilised in the

past. The case study contains detailed data which is collected and categorised such as primary and secondary data.

5.4 DATA COLLECTION

Walliman (2001) says that once the research problem has been formulated, it should become evident what kind of data can be acquired to study the problem, and also what kind of analysis will be appropriate to analyse the data. The reasons for choosing particular data collection and analysis methods are always determined by the nature of what you want to find out, and the particular characteristics of the research problem, and the specific source of information. In fact, it will often be appropriate to decide first on the type of analysis, quantitative or qualitative, which will be required to investigate your research problem, and then to the type of data which need to be collected in order to make that analysis.

Note, however, that the categories of data collection and analysis are not always as distinct they might at first appear. They can, depending on the particular research aims, be closely interlinked. In exploratory research, the data may be continuously analysed as they are collected, the analysis giving clues as to the most fruitful area of further data collection and subsequent analysis. When a particular phenomenon is investigated according to a specific predetermined methodology, it might not even be possible to begin the analysis until all the relevant data have been collected.

When considering what data is might to be required, is recommended to consider carefully the sources, the availability and the possible methods of collecting data. When considering analysis, think about the tools, techniques and resources required. The different research strategies have often distinctly different methods for data collection and analysis.

According to Yin (1994) "the sources of evidence may be six such as documentation, archival records, interviews, direct observations, participant-observation and physical artefacts". However, Marshal and Rossman (1989) say that "a complete list of sources can be quite extensive – including films, photographs, and videotapes; projective techniques and psychological testing; proxemics; kinesics; "street" ethnography; and life histories".

Documentation: documentary information is likely to be relevant to every case study topic. This type of information can take many forms and should be the object of explicit data collection plans. For instance, it can be considered the following variety of documents:

- Letters, memoranda, and other communiqués
- Agendas, announcements and minutes of meetings, and other written reports of events
- Administrative documents–proposals, progress reports, and other internal documents
- Formal studies or evaluations of the same "site" under study
- Newspaper clippings and other articles appearing in the mass media

For case studies, the most important use of documents is to corroborate and augment evidence for other sources. Researchers who based their studies on documents may take considerable use of secondary data; that is, data which has already been collected, and possibly also analysed, by somebody else.

Hakim (1987) comments that secondary analysis is any further analysis of an existing dataset which presents interpretations, conclusions, or knowledge additional to, or different from, those presented in the first report or the inquiry as a whole and its main results. Secondary analysis offers economies of time, money and personnel – advantages that are particularly attractive at times when funds for new research are scare.

Examples of documents which might form secondary data for research include:

- Census statistics and reports;
- Government White Paper;
- Company annual report;
- Institutional documents;
- Books and journals;
- Newspaper, television and radio programmes.

These are some reasons for using secondary data, according to Yin (1994):

- Because collecting primary data is difficult, time consuming and expensive.
- Because you can never get enough data.
- Because it makes sense to use it if the data wanted already exists in some form.
- Because it may shed light on, or complement, the primary data collected.
- Because it may confirm, modify or contradict your findings.
- Because it allows you to focus your attention on analysis and interpretation.
- Because you can not conduct a research study in isolation from what has already been done.
- Because more data is collected than is ever used.

Archival records: for many cases, archival records – often in computerised form – also may be relevant. These can be as follows:

- Service records, such as those showing the number of clients served over a given period of time
- Organisational records, such as organisational charts and budgets over a period of time
- Maps and charts of the geographic characteristics of a place
- Lists of names and other relevant commodities
- Survey data, such as census records or data previously collected about a "site"
- Personal records, such as diaries, calendars and telephone listings

For some studies, the records can be so important that they can become the object of extensive retrieval and analysis. When archival evidence has been deemed relevant, and investigator must be careful to ascertain the conditions under which it was produced as well as its accuracy.

Interviews: Yin (1994) comments that "one of the most important sources of case study information is the interview. Such a conclusion may be surprising, because of the usual association interviews and the survey method. However, interviews are also essential sources of case study information".

The interviews may take several forms. Most commonly, case study interviews are of an open-ended nature, in which you can ask respondents for the facts of the matter as well as the respondents' opinions about the events. In some situations, you may even ask the respondent to propose his or her own insights into certain occurrences and may be use such propositions as the basis for further inquiry.

A second type of interview is a focused interview, according to Merton, Fiske & Kendal (1990), in which a respondent is interviewed for a short period of time – an hour, for example. In such cases, the interviews may still remain open – ended and assume a conversational manner, but you are more likely to be following a certain set of questions derived from the case study protocol. For example a major purpose of such an interview might be simply to corroborate certain facts that you already think have been established.

Yet a third type of interview entails more structured questions, along the lines of a formal survey. Such a survey could be designed as part of a case study. This situation would be relevant, for

instance, if you were doing a case study of a neighbourhood and surveyed the residents or shopkeepers as part of the case study.

Overall, interviews are an essential source of case study evidence because most case studies are about human affairs. These human affairs should be reported and interpreted through the eyes of specific interviewees, and well informed respondents can provide important insights into a situation. They also can provide shortcuts to the prior history of the situation, helping you to identify other relevant sources of evidence. However, the interviews should always be considered verbal reports only.

The collection of data in this research investigation is carried out through primary and secondary data. Primary data is gathered through communication by postal letters or letters by electronic mails, requesting specific information about the details of the process of the project in different aspects such as conception, design, operation and maintenance, concession agreements and contracts, financial strategy, assignment of revenues stream, payment mechanism, among others, which are considered vital for the development of the case study to present in this research investigation. Data collection was also achieved through secondary data through different books from recognised authors in the field of project finance and a number of journals regarding projects from international experiences in project finance.

The data collected is verified with the intention of review its quality. Verification consists of the review by key informants of the representation, consistency and completeness of the information utilised in the case study. The verification process of the existing case study developed in this research investigation has been running simultaneously since the beginning of the collection of information such as government support, concession agreements and contracts containing risks and guarantees and the financial package containing the utilisation of financial instruments such as debt and equity. Furthermore the process of verification is outlined in chapter eight.

5.5 DATA ANALYSIS

Walliman (2001) points out that "little sense can be made of a huge collection of data; therefore an essential part of research is the analysis of the data. This analysis must be carried out in relation to the research problem. What will help to judge the type of and amount of data required is to decide on the methods which will be used to analyse data. In turn, the decision on the appropriateness of analytical methods must be made in the relation to the nature of the research problem and the specific aims of the research project".

According to Walliman (2001) there are several reasons why we analyse data, some of which are the same as the reasons for doing research. The major reasons may are in order to:

- Measure
- Make comparisons
- Examine relationships
- Forecast
- Test hypotheses
- Construct concept and theories
- Explore
- Control
- Explain

Yin (1994) comments that two general strategies of analysing cases study evidence are the following:

1. - Relying on theoretical propositions. The first and more preferred strategy is to follow the theoretical propositions that led to the case study. The original objectives and design of the case study presumably were based on such propositions, which in turn reflected a set of research questions, reviews of the literature, and new insights.

2. - Developing a case description. A second general analytic strategy is to develop a descriptive framework for organising the case study. This strategy is less preferable than the use of theoretical propositions but serves as an alternative when theoretical propositions are absent.

Within the process of data collection, case study, analysis of the case study, interviews; it can be determined that the development of the method to be proposed generates the main criteria for a doctoral research, which is the contribution to knowledge through innovation and originality of the research.

During the phase of data analysis, bias for the case study is avoided through a process of verification and validation. According to Miles and Huberman (1994), bias is described as "seeing what somebody wants to see, mis-perception, mis-interpretation and making too much of ambiguous data. The potential for bias to influence the research is managed by using the project

documents as the primary data source. By taking care to read only what they contained it is considered that any innate bias will have been significantly reduced".

Multiple case studies rely on replication to generate theory and statistical generalisation. Since privately financed infrastructure projects delivered by concession contracts are unique, they will not produce replica results and can not provide statistical generalisation.

During the process of gathering information of a case study or some cases study of concession contracts or PPP contracts, the research is going to be focused in looking for information related to organisational schemes; contractual, guarantees and risks issues.

The data is going to be analysed with the intention of producing and designing a hypothetical concession project which is presented in chapter seven. All this is with the purpose of fulfilling the requirement which is stated in the aim of this research investigation which is to generate a new model for privately financed infrastructure concession contract involving governments, financial markets and construction firms.

The designed hypothetical concession project is validated with the purpose of testing the hypothesis as is mentioned above when is outlined the reason of why we analyse data. Validation consists in demonstrating and confirming that it is designed a reasonable and sensible hypothetical concession project. With the intention to construct validity; the validation of this research investigation is achieved through different methods of triangulation. The method to employ to validate this research investigation is through investigator triangulation which consists in the use of several researchers, evaluators and experts in the field of project finance for concession contracts for developing countries. The hypothetical concession project is validated in chapter eight.

5.6 DESIGN OF THE RESEARCH METHODOLOGY

The research methodology necessary for this thesis consists of four parts. The first part consists of setting up the aim and objectives and of making an extensive literature review of the objectives in order to achieve the aim and also describes the research methodology; the second part comprises the development and description of a case study of a privately financed infrastructure project in Mexico; the third part explains and justifies the generation of a hypothetical concession project and the forth expresses the conclusions of the author regarding the objectives. The four parts of this research investigation are described below in figure 5.1.

Part one: Literature review

Part two: Development of case study

Part three: Generation of hypothetical concession project

Part four: Conclusions

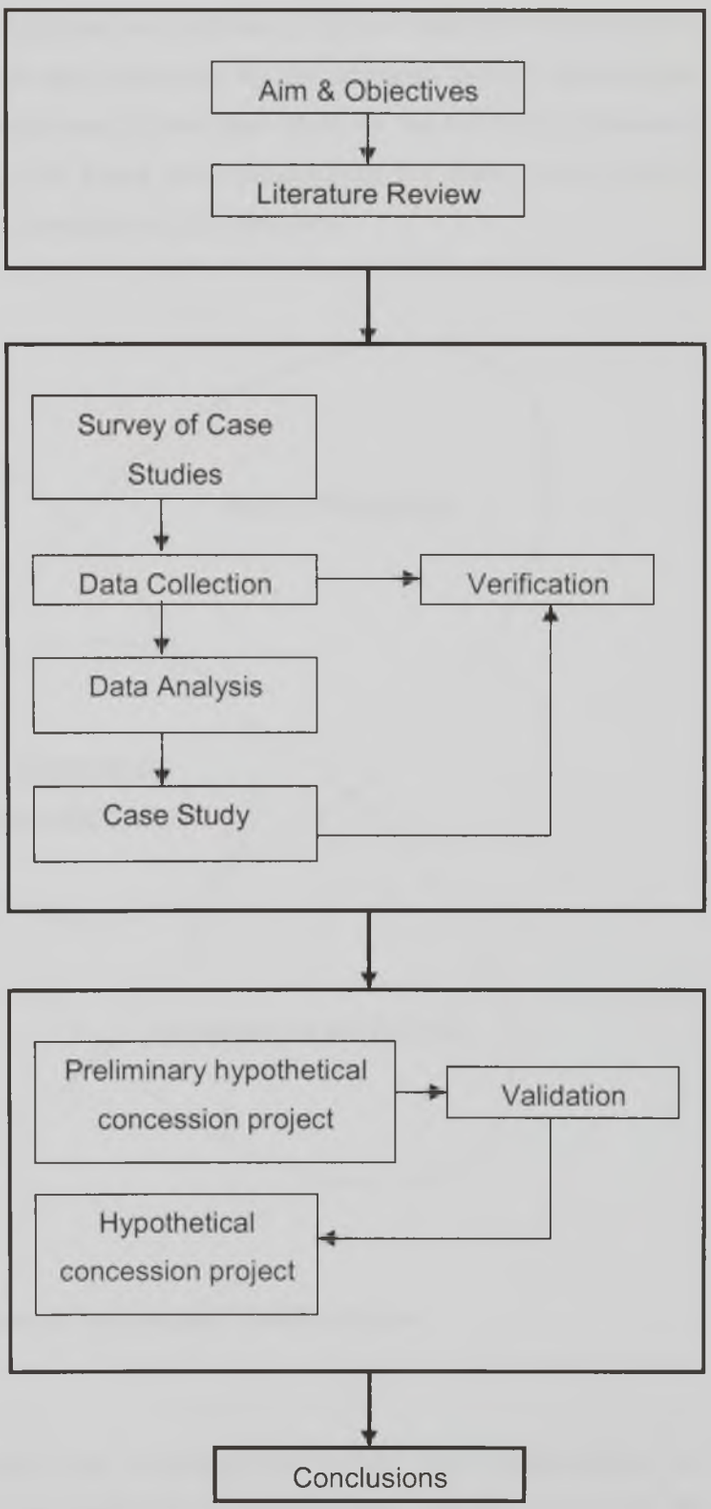

Figure 5.1 Flow Diagram of the Research Methodology

The research methodology is integrated and limited, as is shown in figure 5.2, to a combination of different components such as 1) the real practices and problems, 2) the choice for the research method to utilise and 3) the confidentiality of data requested by the promoter and 4) the detailed data elicited from the promoter in the development of the case study of the existing concession contract in Puerto Vallarta, Mexico. Thus, with these four components the author was able to choose the complete research methodology considering its limitations.

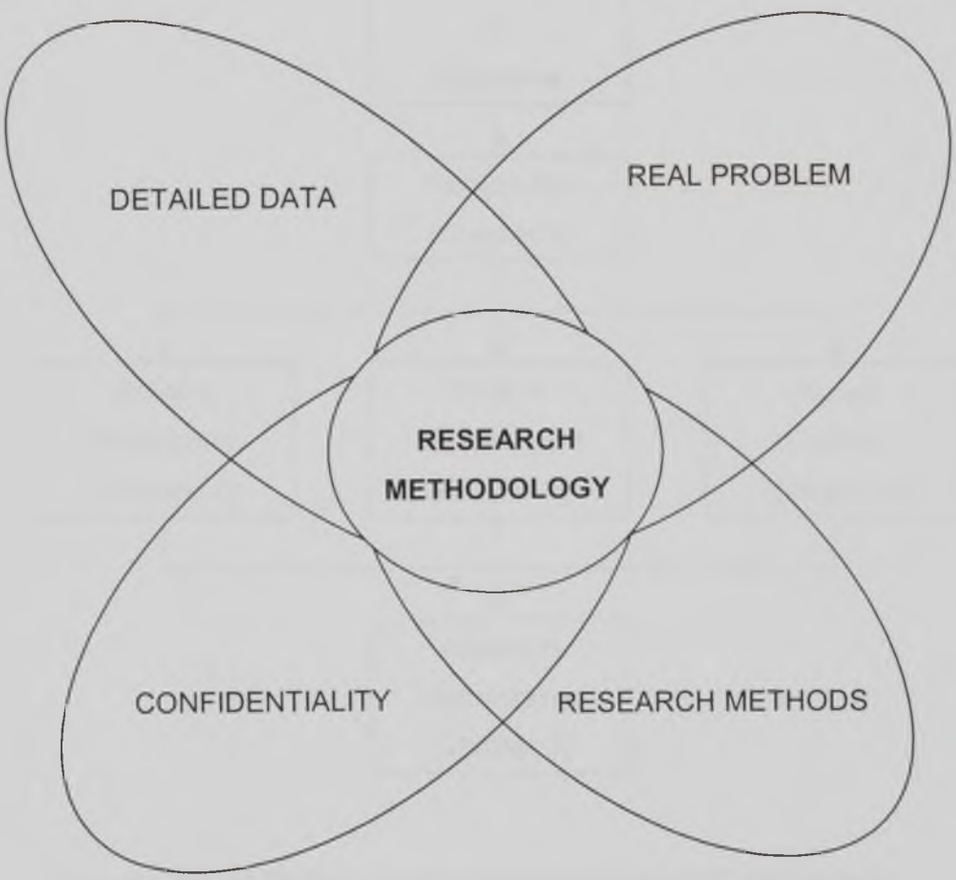

Figure 5.2 Integration of the Research Methodology

The research methodology was developed and complemented taking into consideration the limitations of recourses, time and cost for performing the next step, which is part of the contribution to knowledge. Thus, the most feasible strategy was to develop a hypothetical concession project and validate it with several experts with ample experience in project finance in developing countries especially in Latin America. The presentation of real practices and problems is found in chapter one in the justification of this research investigation consisting in the insufficient funds that the public sector allocates to infrastructure projects in developing countries.

Detailed data of an existing concession contract was elicited from the promoter which is found in chapter six respecting the confidentiality they requested. Another important component to complement this research methodology consists in a selection of methods for doing research such as survey and case study. This has been already explained in this chapter in the section of selection of the research method.

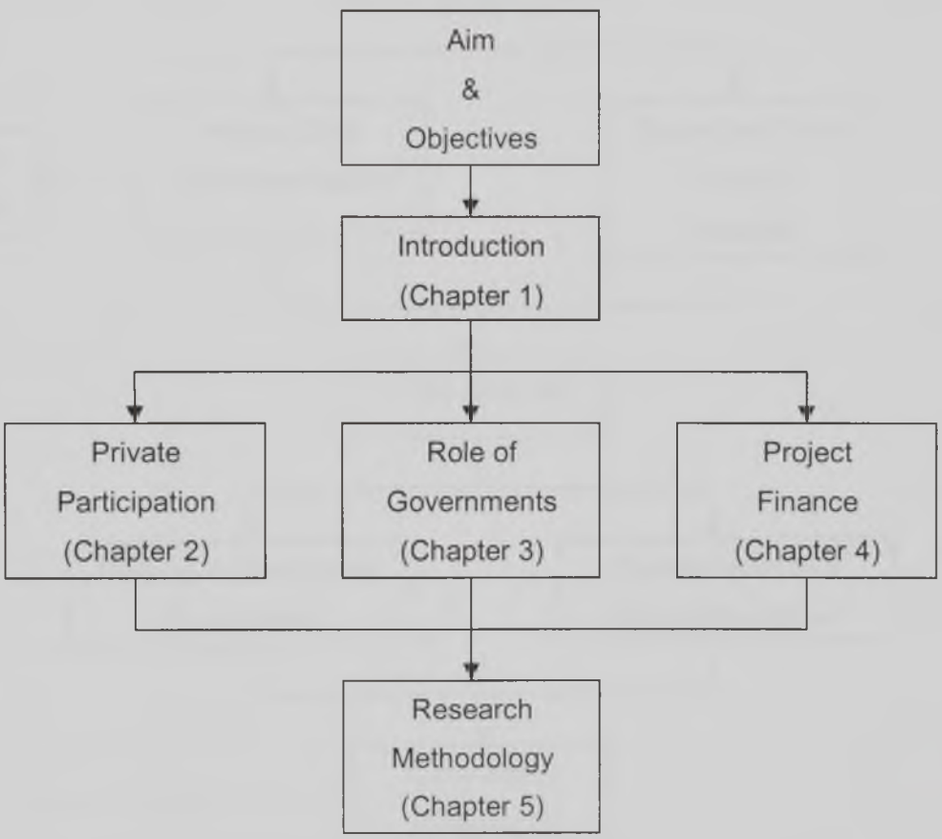

Figure 5.3 Flow Diagram of part one of the Research Methodology

Regarding figure 5.1, part one consists in setting up the aim and objectives and to carry out and extensive literature review as is shown in figure 5.3. Part two of the research methodology utilises the survey method and the case study method which comprises the development and the description of an existing infrastructure project in Mexico which is privately financed through the concession contract model strategy which is the case study presented in chapter 6. Figure 5.4 shows the research methodology employed to develop the case study in this research investigation.

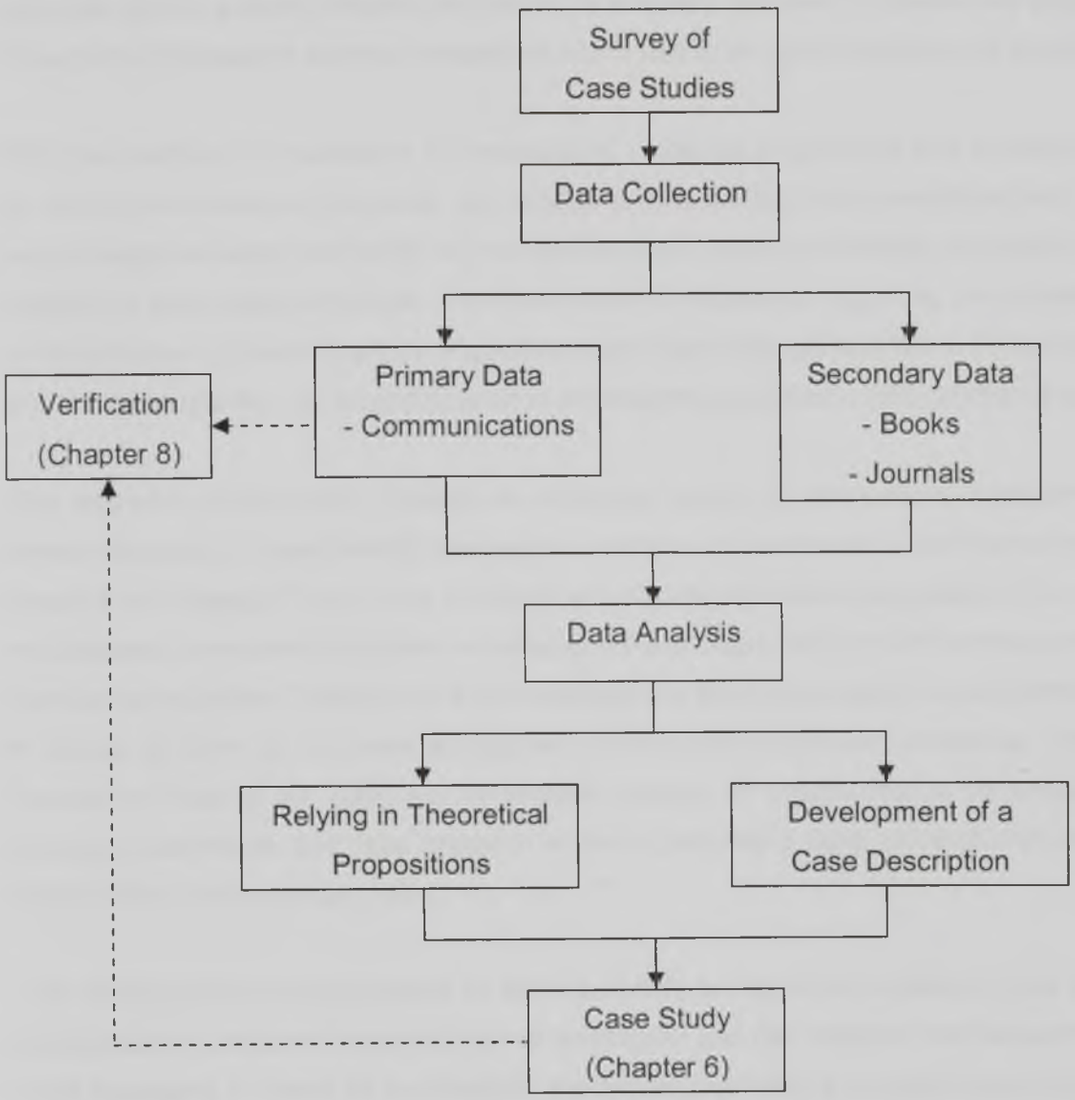

Figure 5.4 Flow Diagram of part two of the Research Methodology

In order to develop the case study, information was provided by the experts working in a privately financed concession projects already operating in Mexico. Empirical information and experiences were obtained through communications by several experts already working in concession contracts in Mexico that serve to develop this case study along with data theory from books and scientific journals from recognised specialists in the subject of project finance in developing countries.

The research investigation is focused on one specific case study research with information provided by the several experts performing a privately financed infrastructure project delivered through the concession contract model and which has to be under operation in Mexico.

With the intention of developing the case study, evidence is gathered and is interpreted in order to satisfy the research objectives. Knowledge and expertise from specialists help to recognise which design will work and which will not and to adapt designs according to constrains of different subjects or knowledge structures. Literature review is explained regarding the private participation in infrastructure projects, the role of governments in developing countries in infrastructure projects and the characteristics of project finance in concession contracts in infrastructure projects.

The research methodology includes an extensive survey of international companies that have ample experience in performing concession contracts in developing countries especially in Latin America and Mexico. This survey is carried out primarily in internet searching in the web pages of multinational companies that have undertaken infrastructure projects with concession contracts in developing countries. This survey is also extended to the public sector or governments especially in Mexico in order to find more companies working with concession contracts. This research is focused in looking for sufficient information related to organisational schemes; contractual, financial, guarantees and risks issues in order to generate a case study of one project, eliciting both primary and secondary data.

The development and description of the case study is built in accordance to the characteristics that the author set up in the objectives to investigate and the features that the author considered most important in order to understand the actual practices that concession projects face in Mexico.

Therefore, a case study of a water treatment plant in Puerto Vallarta, Mexico was developed not only because the project is in Mexico, but also because is the only project that has not suffered any major contractual and financial modification since the beginning of the concession period like the all the concession projects after the Mexican crisis devaluation in December 1994. Furthermore, during the search of the existing and solid case study, the author only obtained response from Biwater International which has a concession project in Mexico; nevertheless, the author found that the access of the data was restricted and constrained because Biwater International argued concerns regarding the privacy policy and copyright of their business practices.

The third part of the research methodology consists in the generation of a hypothetical concession project which is organized following different phases as is shown in figure 5.5.

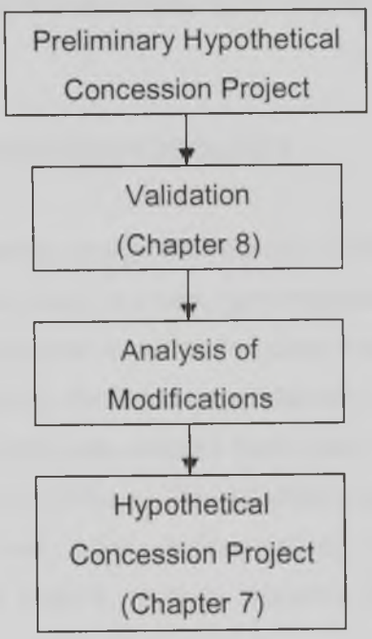

Figure 5.5 Flow Diagram of part three of the Research Methodology

The author designed a strategy including a survey of theoretical propositions from different authors and authorities in project finance, developing a descriptive framework for organising the hypothetical concession project based on the objectives; taking into consideration the empirical data collected from the existing case study in Mexico including the author's experience acquired in its development; and including new perspectives, insights and assumptions from the author. After the preliminary hypothetical concession project, validation is carried out, analysis of modifications proposed by the experts of project finance in the process of validation which finalises with the hypothetical concession project presented in chapter seven.

After the preliminary hypothetical concession project is generated and proposed, the author sent to several experts in the field of project finance with experience in Mexico or developing countries the preliminary hypothetical concession project in order to validate it. The validation process consisted in demonstrating and confirming that preliminary hypothetical concession project has been designed in a reasonable and logical manner and that represents a solution.

When the experts finish the validation process, the experts reply with some comments and proposed few modifications. The modifications are analysed by the author and few concepts have to be changed and incorporated. The analysis to incorporate and to change concepts is mainly through discussions. Subsequently, the conclusions are then presented.

5.7 LIMITATIONS OF THE RESEARCH METHODOLOGY

In the same manner that is important to design the research methodology, it is also important to mention some prejudices in research such as bias, generalisation and replication. According to Yin (1994), there are traditional prejudices against the case study research. Although the case study is a distinctive form of empirical inquiry, many research investigators nevertheless have disdain for the strategy. In other words, case studies have been viewed as a less desirable form of enquiry than either experiments or surveys. The greatest concern has been over the lack of rigor of case study research. Too many times, the case study investigator has been sloppy and has allowed equivocal evidence or biased views to influence the direction of the findings and conclusions.

The possibility also exists that people have confused case study teaching with case study research. In teaching, case study materials may be deliberately altered to demonstrate a particular point more effectively. In research, any such step would be strictly forbidden. Every case study investigator must work hard to report all evidence fairly. What is often forgotten is that bias also can enter into the conduct of experiments and the use of other research strategies, such as designing questionnaires for surveys or conducting historical research. The problems are not different, but in case study research, they may have been more frequently encountered and less frequently overcome.

Denscombe (2002) points out that the idea of good research requires detachment and open-mindedness implies that research is not expected to be biased. Bias, in social research, as Hammersley and Gomm (1997) explain, has a number of dimensions, but behind them all it would be fair to say that anyone would be suspicious of findings for research if they were to believe that the researcher had been biased when carrying out the research.

There is an expectation that research should be able to adopt a position that is impartial and where are no personal interests in the outcome of the investigation. Research that intentionally ignores theories or data which do not coincide with the researcher's point of view will be open to a criticism of bias. To avoid this, the researcher must take proper methodological precautions to

avoid error, for example by assessing the relative validity of alternative interpretations. In effect, one should try to see things from the point of view of others. This can even mean giving consideration to views the researcher might find personally repugnant, offensive or outrageous if those views are being used by others in the field to explain a particular social phenomenon.

Another concern about case studies, according to Yin (994), is that they provide little basis for scientific generalisation. In fact, scientific facts are rarely based on single experiments; they are usually based on a multiple set of experiments, which have replicated the same phenomenon under different conditions. The same approach can be used with multiple case studies but requires different concept of the appropriate research designs. The short response is that case studies, like experiments, are generalizable to theoretical propositions and not to populations and universes. In this sense, the case study, like the experiment, does not represent a sample, and the investigator's goal is to expand and generalise theories which is called analytic generalisation and not to enumerate frequencies which is called statistical generalisation.

Even though, generalisation is not automatic, a theory must be tested through replications of the findings in a second or more similar case study, where the theory has specified that the same results should occur. Once such replication has been made, the results might be accepted for a much larger number of similar case studies.

Hersen and Barlow (1976) comment that "replication logic of case studies are analogous to that used in multiple experiments". Thus, if one has access to two or more case studies, the appropriate research design is one in which the same results are predicted for each of those case studies. If similar results are predicted for each of the case studies, replication is said to be taken place. Since this research investigation involves one case study, it can be understood that generalisation may not take place. Even though, as Yin (1994) suggests, case studies, like experiments, are generalizable to theoretical propositions and not to populations and universes.

According to the Collins dictionary, replication is a repetition of a procedure, such as a scientific experiment, and analogously for this research, is the repetition of the same case study. Neuliep (1991) points out that conceptual replication are an attempt to convey the same crucial structure of information in the independent variables to subjects. This aspect is usually considered the crucial one for laboratory experiments, field experiments and other type of field studies. This study can not rely in an exact or partial replication. An exact replication is when every single step is made exactly to the previous case study. A partial replication is when there has been some change such as a single deletion or a single addition. For the purpose of this research investigation, the development of one specific case study intends to consider a unique

infrastructure project delivered by the private sector though the concession strategy, and this investigation is not going to perform a multiple case study with different projects or with the same infrastructure project.

5.8 SUMMARY

The research approach was defined and outlined in order to understand the research approach. Several methods of research were outlined such as experiments, surveys and case studies. Furthermore, the case study was the method more adequate for this research investigation because there was only one case to be studied to put empirical and theoretical data in a clear context. In this chapter, it was also reviewed the strategies of data collection. These data may be through primary and secondary sources. This chapter also reviewed the approaches of data analysis.

Thus, a research methodology is design and consists of four parts. First is to set up aim and objectives. Literature is reviewed taking into consideration the objectives in order to find the way to tackle the research problem. The second step is to design a case study. Case studies are surveyed in Mexico. After collecting information of case study design, it will be generated a case study which simultaneously will be verified by key informants. The third part consist in designing and building a preliminary hypothetical concession project which is designed in order to achieve the aim of this research investigation which is the design of a new system for delivering infrastructure projects to Mexico. This hypothesis will be validated by experts in the field of project finance in concession contracts of infrastructure projects to developing countries. The fourth part consists in drawing conclusions which is the last part of the research methodology. Prejudices in research are outlined in order to avoid them through the verification and validation process.

CHAPTER SIX

CASE STUDY – BOOT PROJECT WASTEWATER TRETMENT PLANT PUERTO VALLARTA, JALISCO, MEXICO.

6.1 INTRODUCTION

This chapter highlights the most relevant facets of this specific concession BOOT project. This investigation starts with the recent country profile of México, pointing out the way how this country is seen in terms of the global economy and comments on some of the key factor that México need to have in order to be suitable for the private sector participation through concession contracts of infrastructure projects. Later on in the project history outlines about the necessity of the service in that region.

The financial package contains the structure of equity and debt of the total project. Comments are made about the payment mechanisms which is carried out for the whole concession period explaining in detail how is going to be done, the role of the participants and their obligations and priorities within the concession.

The final topic covers the assignment of revenue streams where is clarified the base flow of the concession with its variances. The assignment of risks is outlined to explain the involvement of the participants and their risk allocation and the guarantees of the investors are explained.

6.2 RECENT COUNTRY PROFILE OF MEXICO

Nowadays, Mexico is the world's 13th-largest economy, its eighth-largest exporter of goods and services, and fourth-largest oil producer. Far-reaching stabilisation and structural reform efforts since the late 1980s are rapidly transforming the Mexican economy and clearly putting the country on a higher growth track. Despite the massive setback from the 1994-95 financial crisis, the country experienced a trend of average annual economic growth during the 1990's of close to three percent compared to the virtual stagnation of the economy in the 1980's. The initially export-led recovery after the 1994-95 financial crises has brought the trend of average annual economic growth close to five percent.

Trade liberalisation and in particular the North American Free Trade Agreement (NAFTA) has been one of a successful factor that has contributed to this rapid economic transformation. The nation continues to make an impressive recovery. Trade with the US and Canada has tripled since NAFTA was implemented in 1994. Mexico completed free trade agreements with the European Union, Israel, El Salvador, Honduras, and Guatemala in 2000, and is pursuing additional trade agreements with countries in Latin America and Asia to lessen its dependence on the US.

Whilst prudent economic policies have stabilised the economy and provided a platform for growth, Mexico's membership of NAFTA in 1994 has been the major catalyst for growth. Duty free access to the North American market has led to a surge in Foreign Direct Investment (FDI) as overseas companies set up factories in Mexico. Such investment has had two important effects. It has plugged the current account deficit (which in the mid 1990's was plugged with speculative capital) and it has led to a boom in exports. NAFTA has had the overall effect of seeing the Mexican economy become increasingly integrated with that of the US.

A sign of the turnaround in Mexico's economic fortunes was the recent decision by Standard & Poor's, Moody's and Fitch to raise Mexico's international credit rating to investment grade. A further surge in FDI is already underway as multi-nationals prepare to take advantage of the European Union / Mexico free trade agreement.

Since Mexico's entry into the General Agreement on Tariffs and Trade (GATT) in 1986, much emphasis has been put into restructuring Mexican industry and increasing competition, partly through an extensive programme of privatisation and liberalising domestic markets. Such policies have been implemented despite a major setback in 1994 when Mexico experienced her third debt

crisis in 12 years (every six years which was in the same of president's change), as massive outflows of funds and an attempt to hold the value of the peso depleted international reserves to the point of default.

Mexico is the largest trading nation in Latin America and the eighth largest in the world. Gross Domestic Product (GDP) growth has been strong since 1996 and foreign direct investment has surged into the country attracted by Mexico's low costs of production and membership of NAFTA.

In addition, the steady trend towards political liberalisation and demands for greater democratisation over the past decade has recently been accelerated following the country's July 2nd 2000 presidential election. Vicente Fox of the Partido de Acción Nacional (PAN) was elected President by an enough margin over the candidate of the Partido Revolucionario Institucional (PRI), which has governed Mexico for the last 71 years. Despite Mr. Fox's convincing mandate, the president-elect's party, PAN, allied with the Green Party, failed to win an absolute majority in both houses of Congress. His administration, after the president's inauguration on December 1st, 2000, might need to build a cross-party consensus for its legislative program to improve reforms for the private sector participation in the delivery of infrastructure services.

6.2.1 Project history

Puerto Vallarta is a major tourist resort located on Banderas Bay on Mexico's Pacific coast. The town's population has increased six-fold since the mid-1960's which resulted in the overloading of the original wastewater treatment facilities.

In the early 1990's the Mexican government through its municipality of Puerto Vallarta, in the state of Jalisco in Mexico, was seeking for private sector participation in the provision of infrastructure services.

At that time Puerto Vallarta was the fourth most important holiday resort in Mexico. In order to attract investment such as hotels and international tourists it was recognised that the infrastructure had to be improved. Foreign investment and tourism are an extremely important source of foreign income for the state of Jalisco and Mexico. Nowadays Puerto Vallarta is the number two most important holiday resort after Cancun.

The water authority in Puerto Vallarta, SEAPAL (Sistema de Agua Potable y Alcantarillado de Puerto Vallarta) and the state government of Jalisco were planning to improve the sewage

treatment facilities in the city as the rapid growth in tourism had outstripped existing plants, one primary treatment plant in the city centre with its outfall to the sea at the side of one well recognised luxury hotel, and another with the capacity of 170 l/s activated sludge plant near the airport. The authorities recognised the need to give more good sewage treatment and prevent pollution of Banderas Bay, in the Pacific Ocean, if Puerto Vallarta was to grow into a major international holiday resort.

Some international and national private construction companies were asked by the state authorities to submit a proposal for sewage treatment improvements. The proposal submitted was the construction of a major new sewage treatment plant with a capacity of 750 l/s on the outskirts of the city that provides water services to 250,000 people. All the proposals were considered by the authorities. However, when the likely costs were known, the authorities realised that they could not finance the project due to the lack of money,' so the companies who had submitted the proposals were then asked who could provide finance and how this could be done. Biwater was the only company that could offer some form of financing. The proposal put forward was a Build, Own, Operate and Transfer, BOOT, scheme which involved Biwater taking the responsibility and risk for the financing, design, construction and operation of the plant in return for a monthly tariff. The contract is not a purely concession but is a "Prestación de Servicios" like "Pay as you go". Thus the Puerto Vallarta plant was built and it was the world's first Greenfield privately financed BOOT wastewater treatment plant.

By the end of 1991 and in the beginning of 1992 Biwater International was part of a government trade mission to Mexico looking for business opportunities. During this mission contact was made with Comision Nacional del Agua (CNA, National Water Commission) and other government departments and they put Biwater in touch with the authorities in Puerto Vallarta.

The contract was signed in 1992 and after a 2-year construction phase the plant began operation 13 February 1995, significantly immediately after the peso devaluation in January 1995.

Finalised the agreement in 1993, the Puerto Vallarta scheme was the first sewage privatisation project awarded by the Mexican Government. Puerto Vallarta Water Authority (SEAPAL Puerto Vallarta) commissioned Cascal to finance, design, construct, operate and maintain a new wastewater treatment facility for the city under a Build Own Operate and Transfer BOOT basis.

Cascal established a special purpose Mexican subsidiary company, Compañía Tratadora de Aguas Negras de Puerto Vallarta SA de CV (CTAPV) for this project. CTAPV constructed the plant and is responsible for its operations for the first fifteen years, ensuring the effluent meets the

required discharge standards. In compensation, CTAPV receives a tariff which is related to the flow treated.

Finance was provided by the International Finance Corporation and the Mexican Bank of Public Works (Banobras) making Puerto Vallarta the first privately financed 'Greenfield' site sewage treatment plant in the world. The scheme was structured and financed without any direct Government Guarantees.

Construction commenced in mid-1993 with commissioning in early 1995 and operations starting soon after. The design of the new works was based on an original concept by SEAPAL-Puerto Vallarta and was subject to detailed seismic analysis due to its location in an earthquake zone. A major ground improvement scheme was required due to the high water table and weak soil. Ground improvement was carried out with 3,800 stone columns, each 900 millimetres in diameter and eighteen metres deep.

Since 1995 Puerto Vallarta has grown and has moved from the fourth placed resort in Mexico to the second, while Cancun is still the first, and part of this growth can be attributed to its non- polluted ocean. The plant in Puerto Vallarta is acknowledged as the best plant in Mexico and probably Latin America and the effluent it produces is of a very high quality and far exceeds the Mexican and International quality standards. SEAPAL has just been awarded a certificate of quality by CNA for human contact with the effluent, in other words you can swim in it, and this is the only one ever granted in Mexico.

Initially the company, which held the contract, was Biwater International, a major constructor and operator of water and sewage treatment plants in the world. In 1998 Biwater International formed a joint venture with the Dutch utilities group, Nuon. This joint venture, called Cascal, was for the concession side of the business only, Biwater continuing as a separate construction company. The existing contract in Puerto Vallarta passed to the new company, Cascal.

The building of a new wastewater treatment plant has protected the environment, ensuring the bay and beaches remain pollution free. This has enabled Puerto Vallarta to develop into a major international holiday resort.

Further complications are due to major fluctuations in foreign residents and tourists which at any one time can be up to eighty thousand people. Additional sewage comes from ships berthed in the local port facilities which must also be treated.

The plant is designed to treat a maximum sewage flow rate of 2,500 litres per second, which has never failed or exceeded the permissible limits. The plant is fed by a seventeen kilometres long rising main from the town. Full biological treatment which exceeds internationally recognised standards is provided, based on a conventional activated sludge process.

The site comprises a screening and grit removal plant, followed by an oxidation ditch, which uses horizontal shaft aerators. Final clarification is provided using circular settlement tanks, the excess sludge is aerobically digested and mechanically dewatered to twenty-one percent dry solids content so that it is suitable for landfill or agricultural purposes. The final effluent is chlorinated to ensure that the discharge from the plant meets the required bacteriological standards. The effluent quality exceeds the environmental standards set by the Mexican Government and the World Bank.

The state has a big interest to increase the attractiveness of Puerto Vallarta as a holiday resort and tourist related industries in order to increase and attract business opportunities and investment such as hotels and international tourists.

6.3 THE CONCESSION CONTRACT AND ITS ORGANISATIONAL STRUCTURE

As previously commented on the type of contract is a BOOT concession contract. The concession contract is between the client which is SEAPAL, a governmental agency in Puerto Vallarta, and the promoter which is called CTAPV, a purpose private company wholly owned by Cascal, there is more detail in investors as participants. CTAPV provides the service of financing, design, construction, maintenance and operation of the sewage treatment and finally the client which is the hotelier industry and the inhabitants of Puerto Vallarta pay an established tariff to the government through SEAPAL. After the end of the concession contract the asset is transferred to the client. The concession contract period is for 15 years and the total cost of the sewerage treatment plant was US $ 33.2 million which was built in less than 2 years. The following are the main participants:

Principal: SEAPAL (Sistema de Agua Potable y Alcantarillado de Puerto Vallarta) is the Puerto Vallarta water authority, a municipality of the state of Jalisco, in México.

Promoter: CTAPV (Compañía Tratadora de Aguas Negras de Puerto Vallarta S.A. de C.V.) a special purpose Mexican company was formed wholly owned by Cascal and

this company has the contract with the Principal SEAPAL and is the owner of the plant.

Supplier: BIWATER MEXICANA a subsidiary of Biwater International which is a major UK constructor and operator of water and sewage treatment plants in the world.

Lenders: BIWATER DE MEXICO a subsidiary of Biwater International which is a major UK constructor and operator of water and sewage treatment plants in the world, BANOBRAS (Banco Nacional de Obras y Servicios Públicos, S.N.C.) is a Mexican bank of source of loan financing to private sector for infrastructure projects of Mexican public services, and IFC (International Finance Corporation) is a member of the World Bank Group and is the largest multilateral source of loan and equity financing for private sector projects in developing countries.

Investors: BIWATER DE MEXICO a subsidiary of Biwater International which is a major UK constructor and operator of water and sewage treatment plants in the world, and CASCAL a Joint Venture between Biwater International and Nuon, where Nuon is a Dutch Utilities Group.

Users: SEAPAL is legally the user, even though the actual users are the hotelier industry and the inhabitants of Puerto Vallarta.

Operator: BIWATER MEXICANA a subsidiary of Biwater International which is a major UK constructor and operator of water and sewage treatment plants in the world.

Constructor: BIWATER INTERNATIONAL which is a major UK constructor and operator of water and sewage treatment plants in the world.

The following figure 1 in the next page shows the concession BOOT Corporate Structure with all its projects participants, contracts and agreements.

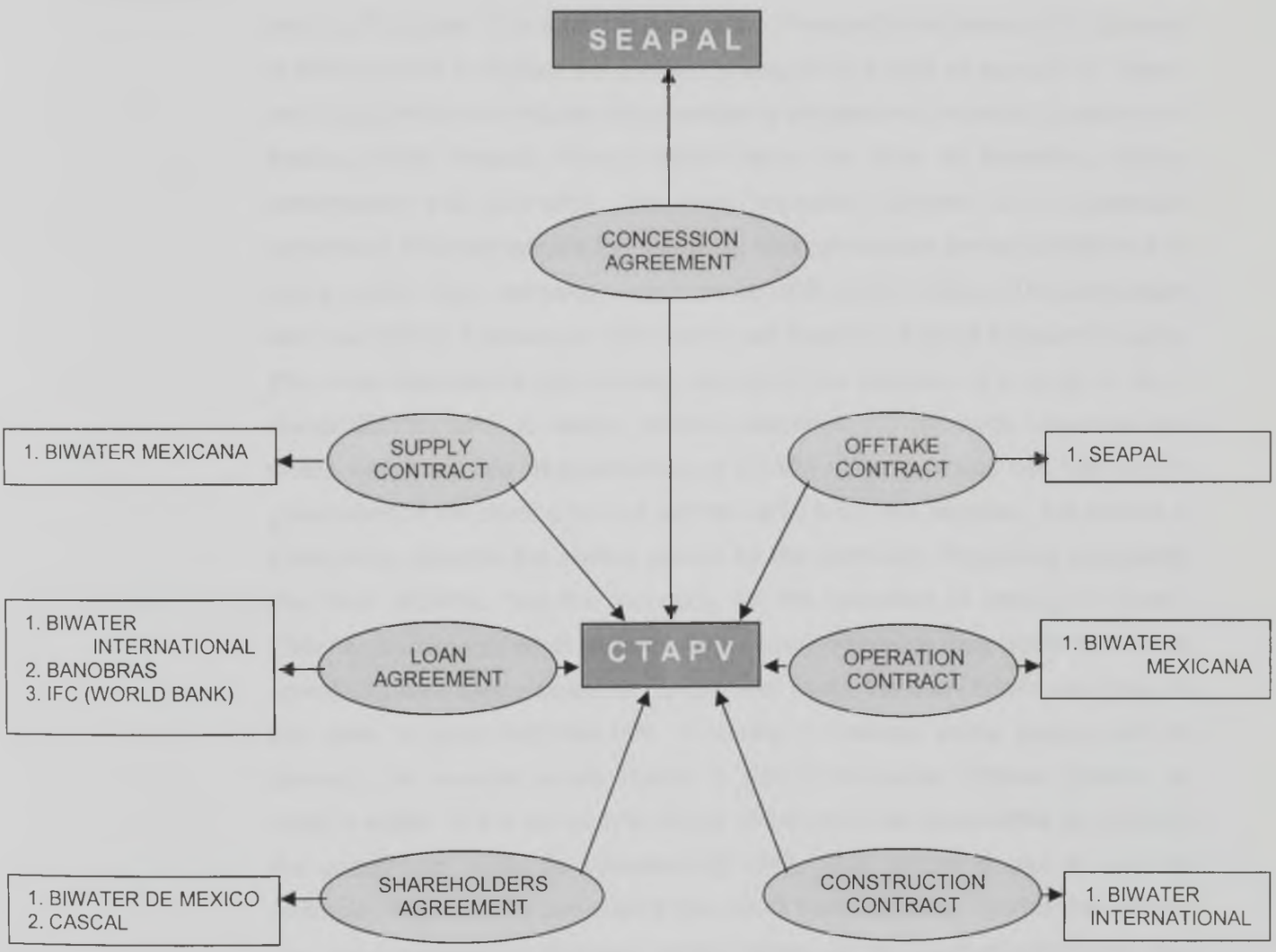

Figure 6.1 The Corporate Structure of the Project (Source: Biwater International Ltd., 2003)

6.3.1 Contracts and agreements

Concession Agreement:

This contract states the rights, responsibilities and risks between the Principal and the Promoter. This agreement is called "Prestación de Servicios" in Spanish or Mexican and in English the contract is said to be a "pay as you go" or "take or pay" type, where in this case the promoter or the operator provides the service of treating water treated. The promoter takes the risks of financing, design, construction and operation. The most important features of a concession agreement and contract are the following. The concession period consist in a 15 years period. The concession total cost is USD $ 33.2 million. The concession start the 13th of February in 1995 and it will finish the 12th of February in 2010. The risks allocation is not formally set out in the contract. It is really a set of responsibilities such as design, finance, operation, maintenance, insurance and others which are the responsibilities of CTAPV. The only real risk falls on the government if the client does not pay the tariff, but if this happens, the trustee or fideicomiso absorbs the invoice issued by the promoter. Regarding exclusivity, the client SEAPAL has the monopoly for the collection of sewage in Puerto Vallarta. If drainage exists people have to use it otherwise they would have to do something with their sewage to comply with some Mexican norms and laws, in this case is called NORMA 002. In reality if drainage exists people want to connect. As sewage works Cascal is not in the same "offtake situation as potable water. If it is not sent to us our client would be responsible for polluting the ocean and would be penalised by CNA. The project is take or pay, for example, they have to pay even if they don't send anything. Hence the lenders can see a guaranteed minimum income stream. In the event of refinancing, this is always possible if the interest rates and other aspects make it attractive. Simply refinancing without a substantial risk of financial reasons does not make economic sense unless the terms of the new loan are far better than the existing. Refinancing is possible in this case because the concession can take out a new loan with a Mexican bank for the outstanding part of the Cascal loan. Hence the capital is lower and the loan is immediately converted from a dollar liability to the peso one. In the event of default, there are clauses in the contract which covers default from the contractor and from the client. In the worst case the client can substitute the contractor. Concerning safety, this is the responsibility of the contractor who must comply with all Mexican legislation and carry sufficient

insurance. The plant is actually operated with much higher standards of safety than other plants in Mexico. Furthermore, the tariff is increased for inflation based on the official INPC (Índice Nacional de Precios al Consumidor) which in English is national index of customer prices. The base tariff is set at April 1991 prices and the present tariff is indexed from that price using the INPC for the current month over the INPC for April 1991. If the monthly increase in inflation is greater than 1.5% the tariff is increased, if not the tariff is increased every six months. Additionally, the exchange rate is based in the market year after year and is not fixed, is floating. When is time to charge, which is every 26th of the month, the exchange rate is taken as the market establishes it and the central Bank of Mexico. In this specific project, the exchange rate is between the Mexican peso and the American dollar. The guarantees are involved in the project funds and share retention agreement. The contract is a form of guarantee to the lenders, but all the loans are ultimately guaranteed by the parent company, Cascal. Hence CTAPV which is a Mexican company guarantees all the loans of SEAPAL throughout the contract.

Supply Contract: The supply contract runs within the Operation Contract which is held by CTAPV during the operational contract period.

Loan Agreement: The project funds and share retention agreement is a document which is the security given to the lenders for the loans. In case of financial problems with the contract the lenders get their money through this agreement which is underwritten by Cascal. More information may be found in the financial package outline.

Shareholders Agreement: There is no shareholders agreement as CTAPV is a fully owned company of Cascal. There are no partners involved.

Offtake Contract: This contract is made by SEAPAL and CTAPV. There are some fixed payments throughout the whole period of the concession. More detail may found in the payment mechanism outline.

Operation

Contract: This contract is made by SEAPAL and CTAPV. Even though the operational fee is charged by Biwater Mexicana to the Trustee which is a fixed monthly fee through the operation period of the concession. More detail may be found in the assignment of revenue stream outline.

Construction

Contract: This contract is between SEAPAL and CTAPV. The actual constructor was Biwater International, which is a major constructor and operator of water and sewage treatment plants.

6.4 FINANCIAL PACKAGE

The essence of this project is to provide a service, the provision of water supply. The facility that gives the service is provided by an investment of capital, which demands a return. That return is provided through the sale of the product, in this case, the water to the consumer. Thus, the financial structure could be seen in two parts, the provision of capital to realise the facility for the project and the return of that capital with its profits. This provision is carried out through a combination of secured debt, equity and return via the water-selling price.

The company was responsible for raising all the finance necessary for the design, procurement, operation and maintenance of the project during the concession period. The total cost of the project was US $ 33.2 million which sum was provided through a combination of debt and equity. The plant was financed using a debt to equity ratio of 3:1.

Therefore, total debt is US $ 25.2 million and equity is US $ 8.0 million, which are shown in more detail in the following table 6.1.

FUNDING	INTERNATIONAL US $ Million	NATIONAL US $ Million	TOTAL US $ Million
EQUITY		8.0	8.0
DEBT	16.9	8.3	25.2
TOTAL	**16.9**	**16.3**	**33.2**

Table 6.1 The Financial Structure of the Project (Source: Biwater International Ltd., 2003)

In the beginning of the contract, the original intention of the contractor was to sell equity in CTAPV. If equity is sold it is a means of providing capital which reduces the financial exposure of

the contractor. Effectively, this type of contract is working as a joint venture. The equity sale did not go ahead as the financial institution was correct in seeing a foreign exchange problem and they were in the point of signing with one of the major Mexican banks when they pulled out at the last minute, citing exchange rate risk as a great concern.

Since 1944 until 1994 the Mexican financial system was based on fixed exchange rates. This equity sale was going to be in December 1994 just before the peso crisis / devaluation which started to happen every six years since 1982 followed by 1988 and finishing in 1994. Since 1994 the Mexican financial system changed and is based on floating exchange rates.

CTAPV was left without the income from the sale and this had to be made up. Hence it was covered by an intercompany loan. CTAPV had to pay for the whole construction and it was financially sounder for the parent company to lend rather than insert more capital.

Hence, Biwater was forced into becoming a lender to the project. The loans were only finalised at the very end of the construction phase, then, the whole plant was actually built with money from Biwater and the loans when disbursed was used to pay back this money to the promoter.

6.4.1 Equity

The equity is basically held by Biwater de Mexico S.A. de C.V. The minor shareholder is to cover the Mexican requirement which states to have at least two shareholders.

The shareholders and their respective shareholding are shown in the following table 6.2.

SHAREHOLDERS	% SHAREHOLDING
BIWATER DE MEXICO	99.9
CASCAL	0.1
TOTAL	100.0

Table 6.2 The Equity Structure of the Project (Source: Biwater International Ltd., 2003)

The shares in CTAPV are not quoted or traded on the stock exchange. They 100 % owned by Biwater de Mexico S.A. de C.V.

6.4.2 Debt

The following table 3 shows the debt providers and their respective commitments.

LENDERS	OFFSHORE US $ Million	LOCAL US $ Million	TOTAL US $ Million
BIWATER INTERNATIONAL			
Senior debt	9.9		9.9
BANOBRAS			
Senior debt		8.3	8.3
IFC (World Bank)			
Senior debt	5.0		5.0
Subordinated debt	2.0		2.0
TOTAL	**16.9**	**8.3**	**25.2**

Table 6.3 The Debt Structure of the Project (Source: Biwater International Ltd., 2003)

The interest rates for loans are as follows in the next table 6.4.

BIWATER INTERNATIONAL	Senior loan	LIBOR[2]	+	3.5 %
BANOBRAS	Senior loan	TASA LIDER[1]	+	3.5%
IFC (WORLD BANK)	Senior loan	LIBOR[2]	+	2.875 %
IFC (WORLD BANK)	Subordinate loan	LIBOR[2]	+	3.5 %

Table 4 Interest Rates of Debt Finance (Source: Biwater International Ltd., 2003)

The senior loan is a normal loan made by the lenders which had the usual conditions of repayment; i.e. repayment of capital and interest from day one. The subordinate loan was set out to even out the financial load on the company where interest was paid straight away but capital payments were deferred for four years. All the loans have to be paid back by the end of the year 2005.

The rates of returns are fixed by the following:

TASA LIDER[1] is the best rate among the following 3 rates and applies mainly in Mexico:

- TIIE: Tasa de Interés Interbancaria de Equilibrio (inter-bank equilibrium interest rate)
- TIIP: Tasa de Interés Interbancario Promedio (average inter-bank interest rate)
- Cetes: Certificados de la Tesorería de la Federación (federal treasure certificates)

The LIBOR[2] rate is the London Inter-Bank Offered Rate

The IFC loans were swapped from US$ American Dollars into MXN Mexican Pesos in 2001 at 16.78 % for the Senior loan and 17.51 % for the Subordinated loan at exchange rate of 9.13 MXN Mexican Peso. All these are fixed to take out the exchange rate risk. Therefore, the IFC changed to pesos to remove foreign exchange rate risk. Repayments were made in dollars before the swap and income is in pesos.

6.4.3 Payment mechanism

The lenders or banks required some form of guarantee, and this is in the form of a continuous revolving line of credit of payment of a monthly invoice supported by the federal tax funds payable to the State of Jalisco, which is a paraestatal organisation in Mexico.

The whole financial structure of the contract is managed through a FIDEICOMISO (trust) set up between the promoter CTAPV and the principal SEAPAL. The fideicomiso is operated by BANOBRAS, separate from the lending arm of the bank.

The monthly tariff payment made by SEAPAL is paid directly to the fideicomiso. This must be received by the twenty fifth, 25th, day of each month while the tariff is paid one month in arrears.

If the payment is not made by the due date, the following day which is the twenty sixth, 26th, day of the month, the trustee (fideicomiso) through Banobras, takes the money from the federal tax funds destined for the state of Jalisco, automatically opens the continuous line of the credit and pays the invoiced amount, which is the tariff payment into the CTAPV account.

This guarantee removes most of the risk and the continue use of the guarantee would mean the client is in deep financial trouble which would put the contract at risk.

There is a financial penalty on SEAPAL for the use of this line of credit. It has been used twice in the first two years of the contract when inflation was extremely high and SEAPAL had not got their finances sorted out. The state gives this guarantee as the "body responsible for our client". The line of credit covers up to a continuous 6 months payments.

The fideicomiso or trustee for this specific concession project has a strict order of priorities for payments from the CTAPV account managed by itself and all the income of CTAPV is paid into the fideicomiso or trustee. This order is as follows:

1. Operation fee to Cascal
2. Taxes to the Mexican government
3. Fideicomiso or trustee fee
4. Interest on the three senior loans agreed with Biwater, Banobras and IFC
5. Capital on the three senior loans agreed with Biwater, Banobras and IFC
6. Interest on the subordinate loan agreed with IFC
7. Capital on the subordinate loan agreed with IFC
8. Create a reserve equal to six months payments of capital and interest of all the loans.
9. Pay interest on any other loan which might exist.
10. Pay capital on any other loan which might exist.
11. Pay administration fee to Biwater Mexicana for operating the company CTAPV.
12. Pay to CTAPV any remaining money after comply with the previous 11 priorities.

After the strict priorities of the payment are paid, any profit or dividend can be paid. CTAPV does not control any part of its funds; although, it actually makes the tax payments with others and the funds have to be requested from the fideicomiso and supported by the corresponding documentation.

As the loans are paid off the amount of money available in the fideicomiso increases and CTAPV should start to generate profit in year 12 of the contract. This type of investment in this contract is a long term.

The operation is done under a strict contract between CTAPV and Biwater Mexicana. The plant is operated by Biwater Mexicana SA de CV., a Cascal company; the old name has never been changed as the legal costs in Mexico to change the company name are extremely high. The invoice for operation from Biwater Mexicana is sent to the fideicomiso one month in arrears and it is paid with highest priority on the twenty sixth, 26th, of the month. Biwater Mexicana pays for all operation and maintenance of the plant.

The fideicomiso is set up mainly to protect the lenders. It has a technical committee which meets once per year unless there is a need for some special meeting, e.g. change from Biwater International to Cascal. The committee has 5 members, one from each lender, IFC, Banobras and Cascal, previously Biwater International. These have voice and vote and one each from SEAPAL and CTAPV with voice but no vote. The following figure 2 in the next page shows the payment mechanism.

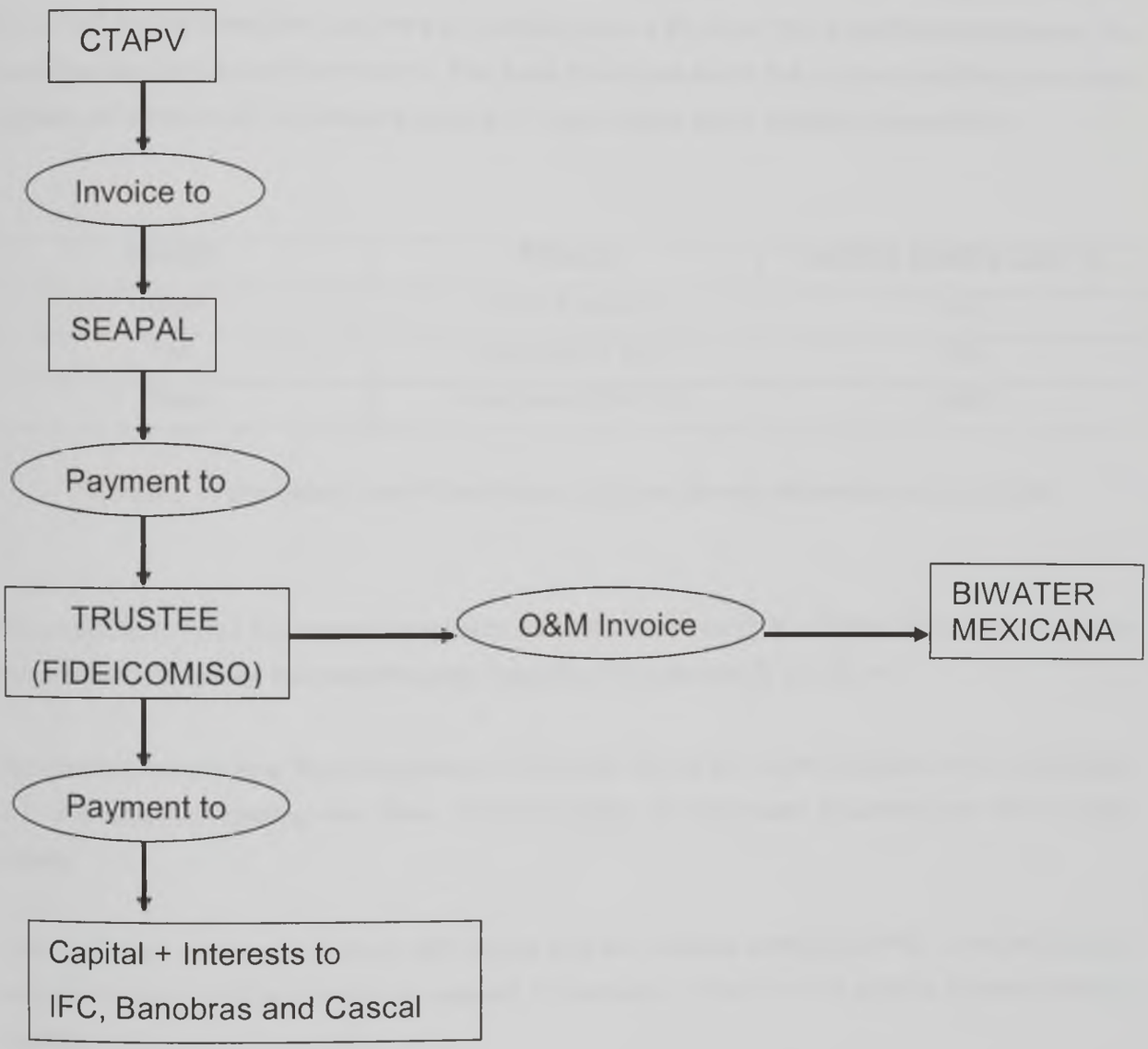

Figure 6.2 The Payment Mechanism (Source: Biwater International Ltd., 2003)

6.4.4 Assignment of revenue stream

The contract is said to be a "pay as you go" or "take or pay" type. SEAPAL have to pay at present \$3.14 /m^3 for the base flow and there is a credit given of \$0.42 /m^3 for the difference between the base flow and the actual flow treated. This base flow is set out in the contract and there are three phases as is shown in the following table 6.5. These prices are in Mexican pesos MXN.

PHASE	PERIOD	WATER BASE FLOW l/s
One	Year 1 and 2	600
Two	From year 3 to 9	750
Three	From year 10 to 15	1,000

Table 6.5 Water Base Flow of the Project (Source: Biwater International Ltd., 2003)

For example, in 2002 the monthly invoice to SEAPAL is 750 l/s @ \$ 3.14 /m^3 MINUS the credit for the difference between the base flow and the actual flow treated @ \$ 0.42 /m^3.

The credit is much lower than the base as it is only to reflect the slightly reduce costs in electricity and chemicals for treating less flow. The fixed costs of manpower, financing etc. are not flow related.

The unit prices are based on April 1991 prices and are indexed using the INPC. If the inflation in any month is >1.5% the unit price is indexed immediately. If not the unit price is indexed every 6 months.

The operational fee charged by Biwater Mexicana is a fixed monthly fee MINUS the same credit given by CTAPV to SEAPAL for actual flows lower than the base flow. This monthly fee is indexed in the same way as the CTAPV / SEAPAL unit price.

The following figure 3 shows the cash flow and project structure according to Biwater International.

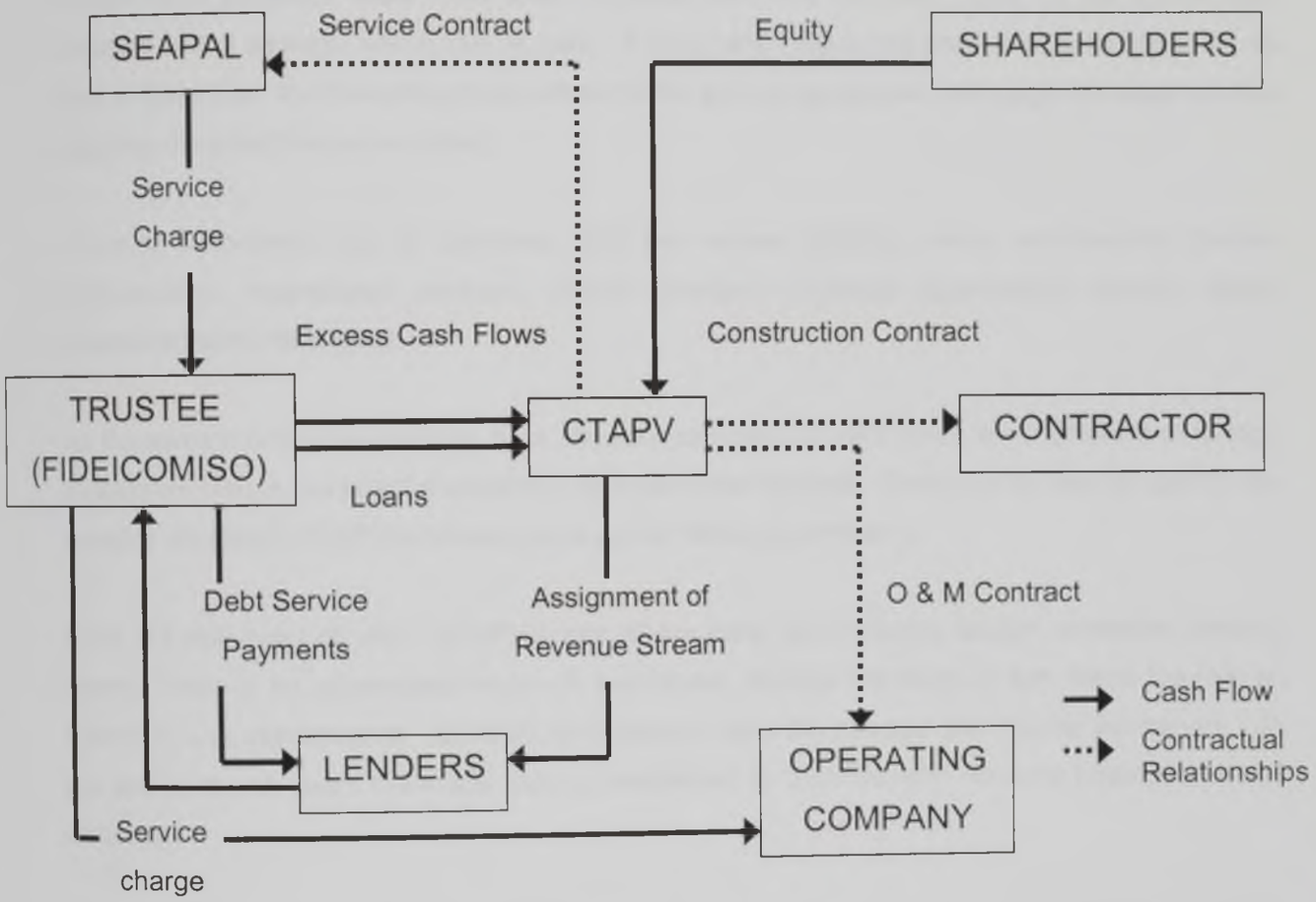

Figure 6.3 Cash Flow and Project Structure (Source: Biwater International Ltd., 2003)

6.5 ASSIGNMENT OF RISKS

As previously commented, the allocation of risks is not formally set out in the contract. It is really a set of responsibilities such as design, finance, operation, maintenance, insurance and other responsibilities which are the responsibilities of CTAPV. The only real risk fall on the government if the client does not pay the tariff.

The contract between CTAPV and SEAPAL covers virtually all eventualities, third party acts, bankruptcy, force majeure, among others and is extremely comprehensive. There are penalties for CTAPV if the effluent quality is outside the contractual limit which means that there is no failure in 7.5 years and limits of volume and influent quality on SEAPAL. There are financial penalties if the plant fails to meet the effluent quality standards. If there is continual failure the

company can be substituted and this would be a major problem. The plant has never had a failure hence these penalties have never been imposed. SEAPAL also has limits on the volume and strength of the sewage which can be sent. If these are outside the limits the plant has to try its best to treat them but the contractual effluent limits are not applicable. Although we have had this situation the plant has never failed.

There is something like 34 contracts with the various funding, loans, construction, trustee (fideicomiso), operational contract, parent company financial guarantees among others associated with this project.

As the investment is theoretically by a Mexican company CTAPV there is no problem of foreign investment issues, no special enabling legislation was required. There are no special grants, tax benefits etc given. CTAPV is treated as any other Mexican company.

From the risk point of view, CTAPV takes all the risks like financial, design, operation, among others. There is no guaranteed return on investment. Biwater Mexicana in turn takes the risk on operation and maintenance. SEAPAL only have to send the sewage and pay for the service. At the end of the 15 years the whole plant is transferred to SEAPAL with no extra payment, free of all taxes.

As part of the contract and a requirement of the loans CTAPV has to insure against damage and loss of business. There are no requirements for bonds etc. as the plant is the property of CTAPV. If it fails to meet the contract there are financial penalties inside the contract.

6.6 SUMMARY

This chapter has clarified the development of an existing project outlining the conditions of the host country's current economy and the necessity of the project. These conditions contributed to develop an innovative solution, thus the Puerto Vallarta plant was built and it was the world's first greenfield privately financed BOOT sewerage wastewater treatment plant.

The Mexican government had, in the early stages and during the competition stage, taken the responsibility of finance the whole project, the government only ask for proposals for sewerage treatment improvements to some national and international construction companies. However, when the likely costs were known, the authorities realised that they could not finance the project due to the lack of money, so the companies who had submitted the proposals were then asked

who could provide finance and how this could be done. And just one company could offer some form of financing and this was Biwater International.

Some structures are expounded in order to visualise and understand the strategy followed by the participants in the concession with the intention to show some parts of the agreements and contracts which are explained in detail. Financial aspects have been presented which demonstrated that is possible to deliver infrastructure projects with private finance through the concession contract strategy. Therefore, this case study represents a successful business opportunity for the private sector in a developing country.

CHAPTER SEVEN

HYPOTHETICAL CONCESSION PROJECT

7.1 INTRODUCTION

This chapter outlines a hypothetical case study utilising the concession approach. This hypothetical case study is intended to be detailed enough to permit analysis of contractual and financial issues involving a financing concession project in Mexico. The information and issues are intended to highlight contractual and financial issues related to Mexico.

It also presents the Mexican government participation. These efforts are considered such as bureaucratic and political support, legal and regulatory support and finishes with the macroeconomic indicators which are key elements to attract private sector participation in order to deliver infrastructure projects. It also describes the concession agreement in detail including different agreements and contracts which is considered another essential section in order to clarify the rights and responsibilities of all the participants.

This chapter discusses financial instruments which are utilised in privately financed concession; debt, equity and mezzanine. These financial instruments are tailored differently according to the concession project characteristics within the financial strategy, payment mechanism, assignment of revenues stream and the evaluation of the project's risks.

Finally, it describes some financial engineering of different cash flows for the hypothetical concession project with the intention of explaining and analysing the results through comparisons.

7.2 THE STRATEGY FOR THE HYPOTHETICAL CONCESSION PROJECT

This hypothetical concession project is a waste water treatment plant in Mexico delivered through public and private participation as is shown in the figure 7.1. It is a form of Public – Private Partnership (PPP) contractual agreement where the public and the private sector contribute in different forms and divide the risks. This approach consist in the involvement of the private sector providing the total of funding of the facility and the public sector consuming a minimum quantity of the service which is allocated through the revenues stream of the concession project with the intention of reducing the risks of paying the financial commitments of the private sector. This is explained in more detail subsequently in this chapter.

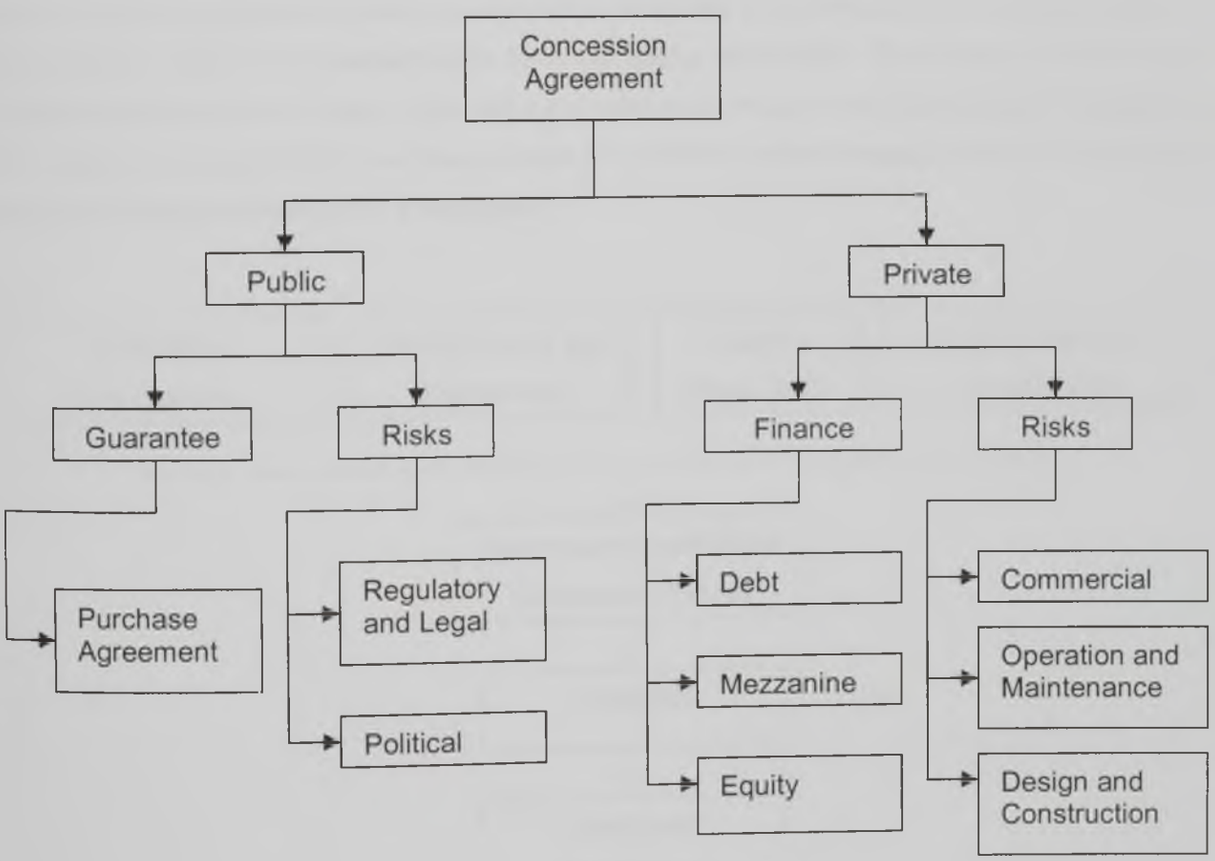

Figure 7.1 Public and Private Participation Scheme for Mexico

The hypothetical concession project is based on a waste water treatment plant procured by the municipality of Los Mochis, Sinaloa, Mexico, with a maximum capacity of 2,500 litres per second.

This city had no waste water treatment plants and the local municipality is procuring a facility with a minimum capacity of 800 litres per second. The waste water is treated by the promoter through the operation and maintenance contract and charged to the municipality through the offtake contract. The concession will be granted to the promoter that tenders for the lowest price of treated waste water. The construction period is two years after sanction. The concession period extends 15 years after construction. Moreover, the principal will grant an optional extension of 5 years in the event that refinancing is accomplished in year 10; thus the promoter is obligated to restructure the financial package at year 10 of the concession period if they want to continue undertaking the concession project.

The generation of this hypothetical concession project was organized as detailed in chapter five and as is shown in the figure 7.2 below. The hypothetical concession project is based on a waste water treatment plant; taking into account the empirical data collected from the existing case study in Mexico including the author's experience acquired in its development; and including new perspectives, insights and assumptions from the author and others. These led to a preliminary hypothetical concession project, followed by a validation. Analysis of modifications proposed by the experts of project finance in the process of validation which finalises with the hypothetical concession project presented in this chapter.

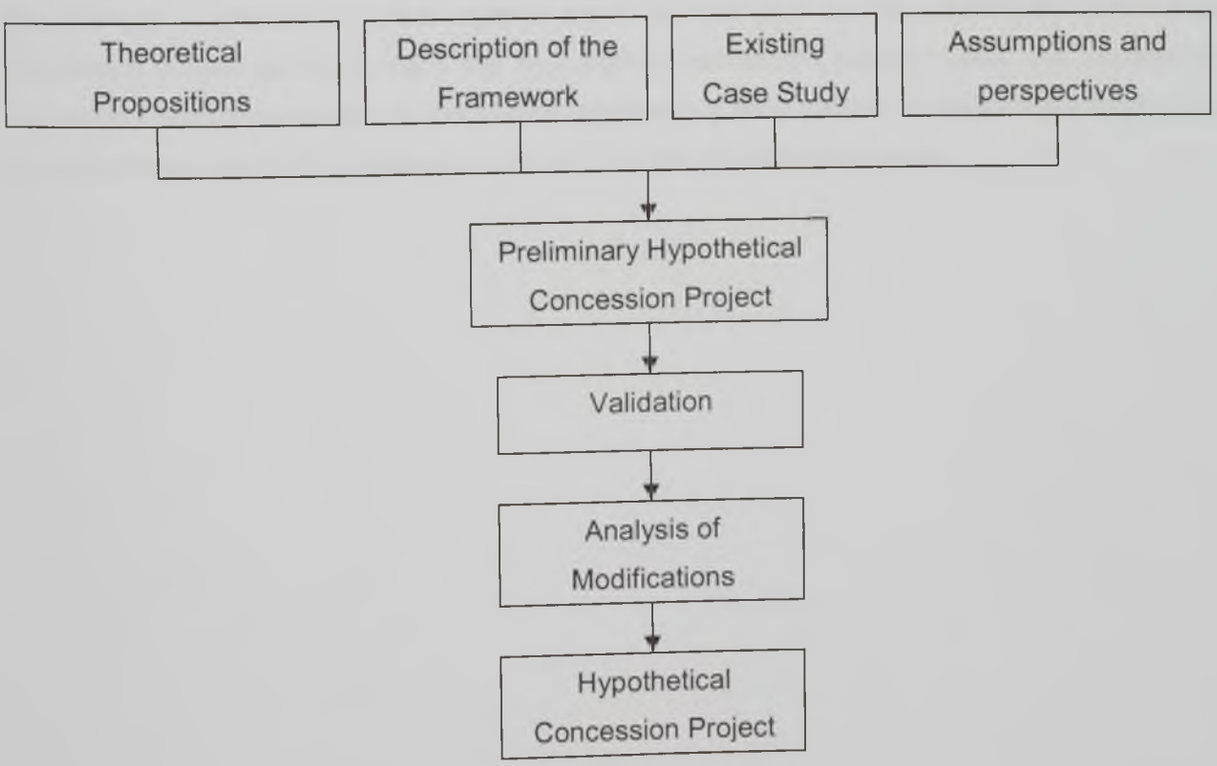

Figure 7.2 Flow Diagram of the Preparation of the Hypothetical Concession Project

After the preliminary hypothetical concession project had been generated, the author sent details to several experts in the field of project finance with experience in Mexico or developing countries the preliminary hypothetical concession project in order to validate the hypothetical concession project. The validation process consisted in demonstrating and confirming that preliminary hypothetical concession project has been designed in a reasonable and logical manner and that represents a relative solution. The experts replied with some comments and proposed few modifications.

After the process of validation few concepts were changed and incorporated in the hypothetical concession project such as the addition of a surety bond and changes in percentages of debt and equity because the experts considered sensible to make that incorporations and changes. Furthermore, the modifications were analysed by the author and few concepts such a surety bong and changes in the debt/equity ratio were incorporated to make a feasible hypothetical concession project. The analysis to incorporate the surety bond was carried out reviewing companies that provide them, finding evidence that surety bonds are used for infrastructure projects in developed and developing countries which made possible to incorporate the surety bond. Regarding the change of the debt/equity ratio, this was carried out by reviewing literature which provided evidence that the margin of ratio suggested by the experts is possible. Therefore, the changes suggested by the experts were incorporated to the preliminary hypothetical concession project giving a result the hypothetical concession project. Thus, the hypothetical concession project generated by the author represents a solid solution in delivering infrastructure projects through the PPP concession contract; and this is presented below.

7.3 CHARACTERISTICS OF THE MEXICAN GOVERNMENTAL SUPPORT

Augenblick M. and Custer B.S. (1990) suggests that governments in developing countries, in order to attract private sector participation in the delivery of infrastructure projects through concession contracts, are strongly recommended to provide different types of support and commitments which may be required by the private sector because this kind of projects are long term. Thus, most of these requirements are with the purpose of securing the investments and to generate certainty to the project and therefore to the participants. The basic supports from the government may be the responsibilities and risks that both want to assume and share to provide infrastructure projects with private sector participation. These tasks, which are described below, may be with the intention to commit to the promoter with political and bureaucratic support, to provide acceptable and satisfactory legal and regulatory system and to keep adequate macroeconomic indicators.

The role of the government is found in two different levels such as country and project level. The country level is related to the general governmental and legal issues and the project level is referred to the conception of the specific concession project. The country level consist in the responsibility assumed by the federal government which the author considers that is divided in two parts as is shown in figure 7.2 which consist in legal and conception. Legal includes promotion, allowance of private finance, bid and grant infrastructure projects; and conception includes minimum usage studies, project programme, budget and quality, rights and environment.

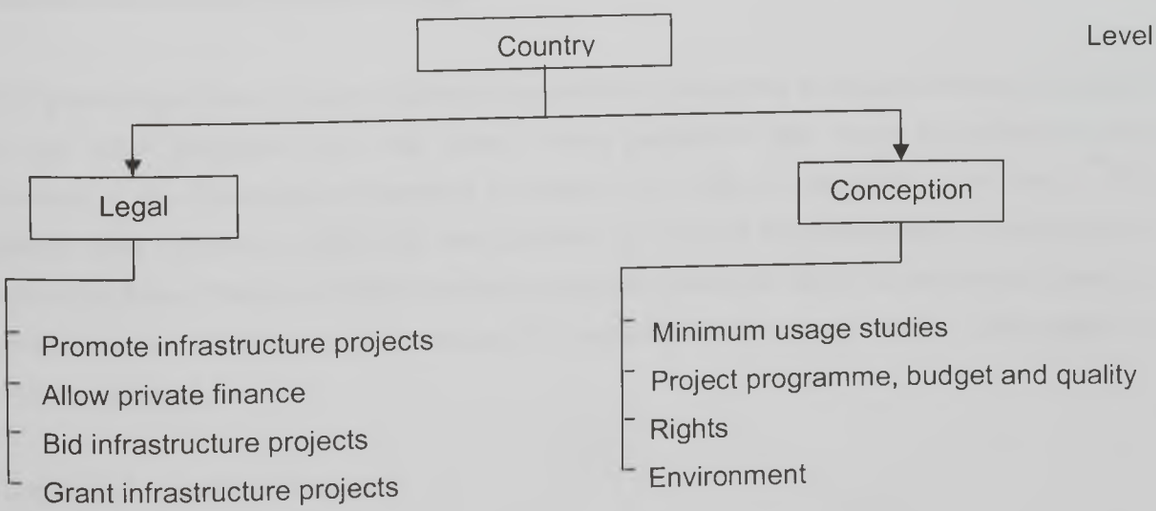

Figure 7.3 Governmental Support at Country Level

The project level involves all related to the pure project which is divided in three parts as is illustrated in figure 7.3 which consist in guarantees, supports and risks. Guarantees include purchase agreement, land acquisition and to provide supplies if is necessary. The supports include political, bureaucratic and legal and regulatory. Risks include that the government undertakes the risks of force majeure, minimum usage and equity if is applicable.

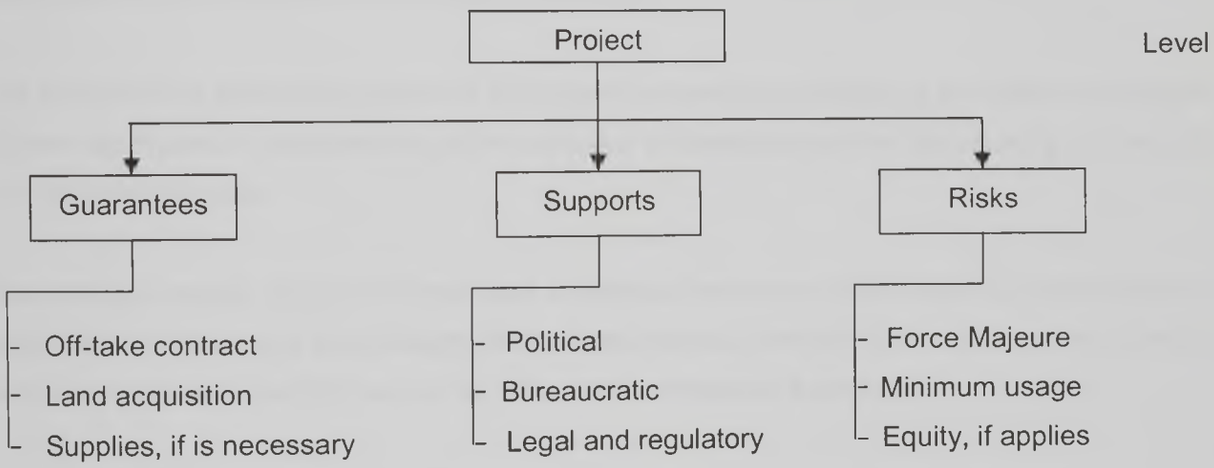

Figure 7.4 Governmental Support at Project Level

7.3.1 Governmental and political support

The host government has to assign sufficient experienced personnel to resolve various regulatory issues and other problems that may arise. These personnel also have to understand the complexities of the concession contracts in order to be able to negotiate in its terms. The negotiators have to have a high rank and authority to commit its government to resolve any problem in due time. The government also has to include personnel acting as an advisory team to the government with exposure, knowledge and experience of private sector participation in infrastructure projects.

7.3.2 Legal and regulatory support

Within the regulatory support the principal is committed to permit international and national private sector participation of infrastructure services through concessions in all aspects such as

finance, planning, design, build, operate and maintain. This support has to be by providing acceptable and satisfactory legal and regulatory system. Furthermore, this support has to be also by knowing all the participants' role and responsibilities as well as knowing organisational structures to facilitate the degree of communication.

For property and land use rights the government has to allow the promoter to use the land in accordance with the design of the concession contract to perform the service. In the same manner, the principal should have some clauses in its law regarding expropriation due to some operations require the use and ownership of the land.

The principal may select the location of the property where they consider is the best place to build the new facility and is responsibility of the promoter to finance or pay for the property and include it in the project's costs.

The principal should require the promoter to provide insurance in the case of other risks not stipulated in the contract; even though, the principal may be committed to provide to the promoter some similar insurances that can not be insured by commercial agencies.

7.3.3 Macroeconomic indicators

The macroeconomic indicators are one of the key factors and also a very strong argument to the feasibility of the analysis to finance an infrastructure project in the context of developing countries. Therefore, the government has to keep them adequately in order to attract foreign investment to deliver infrastructure projects. The most relevant indicators are inflation, interest rate and exchange rate which are discussed below within the section of the concession agreements and contracts.

7.4 CONCESSION AGREEMENTS AND CONTRACTS

7.4.1 Concession agreement

This is a waste water treatment plant procured by the municipality of Los Mochis, Sinaloa, Mexico, with a maximum capacity of 2,500 litres per second. This city has no waste water treatment plants and the local municipality is procuring a new facility with a minimum capacity of 800 litres per second. The waste water is treated by the promoter and charged to the municipality. The concession is granted to the promoter that asks for the lowest price of treated waste water.

The construction period is two years after sanction. The concession period is 15 years after construction. Moreover, the principal will grant an optional extension of 5 years in the event that refinancing is accomplished in year 10; thus the promoter is obligated to restructure the financial package at year 10 of the concession period if they want to continue undertaking the concession project.

The refinancing includes the rest of the financial package not paid back to sponsors and investors since the beginning of the concession project and refinancing also includes the previous principal's financial assistance allocated in the event that the principal consumed below 800 litres per second where they provided the complementary funds. According to the principal's report of the case study in Mexico, this financial assistance is been provided when they does not consume the minimum quantity. Information regarding principal's monthly consume is found in the web page of SEAPAL, where there is sufficient evidence that the principal occasionally did not consume the minimum quantity, copy in appendix D. Thus, these contributions by the principal include interests that will be reimbursed to the principal at refinancing and subsequently the principal will grant to the promoter a 5 years extension period.

The principal and the promoter have to make an off take contract throughout the concession period consisting of 800 litres per second of flat minimum usage. Nevertheless, the principal will not provide an off take contract for the extension period. The principal will pay only for the service they really utilised in the extension period. Furthermore, the principal authorizes for the concession period and the extension period that the promoter has to elaborate separate off take contracts of waste water treatment with different private consumers when they consume quantities above 50 litres per second and more.

In a different manner, in the event that the performance of the concession project exceeds the forecasted revenues of the investors, the promoter and the principal will share the additional profits with 50 per cent for each one.

Concerning taxation, this is only done from year thirteenth through year fifteenth taking only a percentage of the total income of the concession project. This percentage has to be at 40 per cent only throughout this period. Taxation is included at 40 per cent in this period with the intention of allocating some income to the principal to pay the governmental support and of reviewing the revenues stream of the investors. Taxation will be carried out also in the extension period of the concession project which is from year fifteen to year twenty.

The construction, operation and maintenance phases of the concession project have to be technically and economically supervised altogether with some personnel of the principal, the promoter and additionally by an external expert committee previously allocated by the principal and the promoter.

The promoter has to provide a surety bond to the principal with the intention of mitigating technical risks of completion and operation. Additionally, the promoter has to be committed by contract that they have to carry out the whole concession contract and with the assignment of transfer technology to the principal and to the municipality.

The principal will permit the promoter to provide additional connections in request by the principal and with agreement by the promoter. In addition, if the promoter needs to use then principal's existing infrastructure in order to treat waste water to private users, the promoter will have to pay to the principal the utilisation of the principal's infrastructure.

Regarding controversies, the principal and the promoter have to agree to have an external expert committee allocated by them in order to resolve technical and economic disputes. In the event that can not be resolved by the external expert committee, they will have to resolve the problems through the federal courts, and if this is not resolve with Mexican authorities, they will have to resolve with international courts.

Quality assurance has to be regulated, carried out and documented by the promoter. In the event that the promoter can not comply with this requirement, the principal may apply penalties to the promoter. These penalties may be start from a reduction of the price of the water treated to the non-payment of that water treated always considering the acceptability and quality of the water treated.

The risk allocation has to be formally set out in the concession agreement. This is discussed subsequently in the allocation of risks at the end of the financial package section. However, the promoter has to undertake some of the risks such as finance, design, construction, operation and maintenance, guarantee of the facility in any failure, insurances and quality of the product. The government has to assume some of the risks such as to provide territory to build the new facility and to consume a minimum quantity of the service.

One of the most relevant features in concession contracts with private finance is that the principal has to give a guarantee to the promoter regarding the financial commitments undertook by the promoter and this guarantee is particularly established in the off take contract and in the provision of the territory to build the facility. Some guarantees by the promoter are to finance, to design, to construct, to operate and to maintain the facility in acceptable conditions and as well to deliver with satisfactory conditions the quality of the product.

In order to accomplish with the transfer of technology and the transfer of the facility, the promoter has to start to hand over and to prepare Mexican national personnel three months before the official transfer is completed. Moreover, all the transfer documentation and preparation has to be carried out in Spanish language.

7.4.2 Supply contract

This has to be set up with the promoter and the supplier. This is a key contract because if the supplier fails to give the service, probably the facility stops doing its work and may generate penalties and increase the debt burden of the financial commitments. The suppliers also have to guarantee the adequate operation of heavy and sophisticated equipment and machinery.

7.4.3 Loan agreement

The loan agreement is between the promoter and the sponsors. These loans may take different forms such as debt, mezzanine finance such as some types of bonds, a type of debt with an export credit agency, some form of debt from a supplier in form of credit and also equity. The more debt the project has, the less the risk sponsors are willing to take. Furthermore, debt has to be no less than 50 per cent of the financial package; nevertheless, it is proposed to have no more than 75 per cent.

7.4.4 Shareholders agreement

The shareholders agreement is between the promoter and the investors. This agreement is made by the investors of the project, normally are the promoter or some other participants. To invest in certain countries is consider by rating agencies part of a strategy with the intention of having more risks and to obtain higher revenues. In Mexico, by law, there has to be at least two different investors. It may be beneficial to the project to sell equity to the public in the event that the promoter does not want to undertake the total amount of equity. It would be very beneficial also to have equity from the government.

7.4.5 Off take contract

The off take contract is made by the principal and the promoter. This contract is with a fixed minimum consume and price. The principal has to buy a minimum flat amount of waste water to treat throughout the whole period of the concession. This amount is 800 litres per second even if the promoter is treating less than 800 litres per second and if the facility is not fully in use. The principal has to pay monthly the minimum flat quantity of consume in the assignment of revenues stream in order to give some certainty to the promoter to pay back the financial commitments in order to deliver the facility. In the event that there are industrial activities with 50 litres per second and more needing these services, the promoter will provide the service with a different off take contract directly with the client.

7.4.6 Operation contract

This contract is signed by the Promoter and the operator. The operator generally is the Promoter because it works also as a leading constructor and operator. The operation contract is also known and worked in some cases doing maintenance to the facility through the whole concession project. This contract also includes a surety bond with the intention of mitigating construction and technical risks of completion and operation as it is also included in the construction contract.

7.4.7 Construction contract

The construction contract may be signed by the Promoter and with one, several or some constructors, according to the field of construction and labour. They can be national or international firms depending on their speciality. Also the Promoter can sub-contract some small businesses of the surrounding areas and be leading the construction works. A surety bond is also

incorporated in the operation contract with the intention of mitigating technical risks of completion and operation.

7.5 FINANCIAL PACKAGE

The type of funding of concession projects are influenced by the cost of the initial capital investment which is allocated to the design and the construction of the new facility and is also based in the net income stream that the promoter receives after commissioning and throughout the whole concession period. The initial capital investment consists in raising money through a financial strategy from capital markets through financial instruments with the intention to ensure capital for the design and construction phases of the new facility while the net income stream consists in guaranteeing the repayments of commitments such as loans, investments and the operation and maintenance of the new facility. The promoter has to seek for funding to finance the concession project through different capital markets and these are from international or local sources and the money must be raised through financial instruments in form of debt, mezzanine and equity.

The financial strategy of the concession contract is carried out in the conception phase. Thus, the promoter structures a financial strategy for the funding which consists in financing several phases such as conception, sanction, design, build and start up, and commissioning as is shown in the following figure 7.4. The sanction phase and the last phase called commissioning act as milestones. In the sanction phase, the promoter only has to wait for the result whether they are awarded or not from the principal and in the commissioning phase is just when the project has made the tests of everything in order to start the operation and maintenance phase. In the conception phase of the project the promoter has to raise the total amount of money through a financial strategy until the commissioning phase with the intention of building and completing the new facility to be ready for operation.

In the event that the promoter is financially a very strong company, they can structure the financial strategy from the conception to the commissioning phase through a bridge loan which is short term loan and which is restructured with a different financial strategy in the commissioning phase. This restructure is carried out in the event that the promoter can sale their debt instruments to international and national commercial institutions, and also may sale mezzanine financial instruments through issuance of bonds. If the bonds are issued in Mexico, they have to be in local currency and in this case in Mexican pesos. This is with the intention of reducing exchange rate of foreign currency risks.

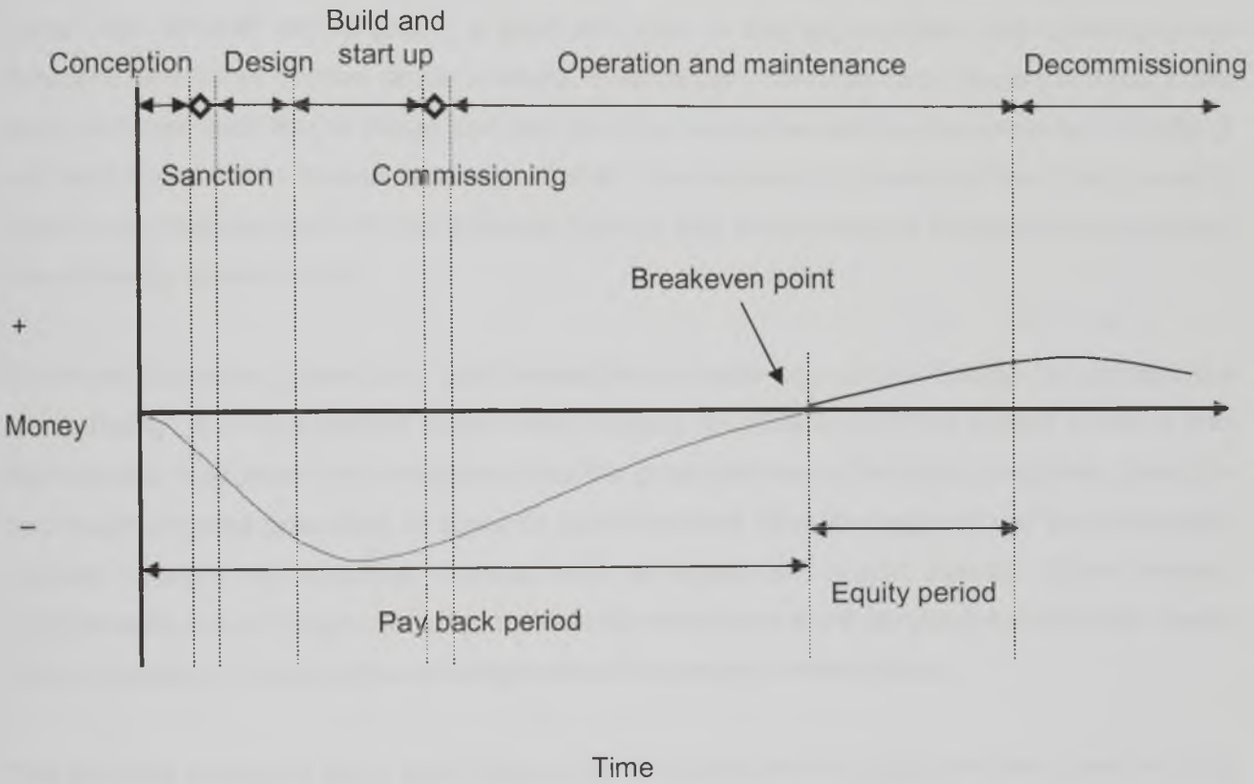

Figure 7.5 Investment Curve in Concession Projects

If the preceding financial strategy is not possible or if the promoter is not financially strong to support the whole financial structure of the project, the concession project has to be financed in the early phases of conception and design by the promoter and consider this capital as equity.

Afterwards the financial instruments for financing from the build until the commissioning phase have to be a short term loan instrument; it also has to be guaranteed by the promoter through the utility and their capital assets. This type of loan may be a bridge loan instrument which is a short term loan to finance the project temporarily before being replaced or refinanced by a long term loan at the very beginning of the operation and maintenance phase. In this event, the facility does not have any longer the construction risk; therefore, the facility provides the guarantee that is operating.

In the event that the previous instrument can not be obtained by the promoter, another way of financing the concession project from the build to the commissioning phase is through commercial papers which is a short term instrument supported by a special line of credit and by a

recognised international banking corporation. Some of the most important characteristics of the commercial papers are maturity lasting until the commissioning phase and with a specific rate of return. Also another way is getting a short term loan or bonding issuance until commissioning through international or local capital markets. Even though, the most cost-effective is through the short term loan such as the bridge loan and the most expensive may be the issuance of bonds. If any debt finance is in foreign currency, all debt finance has to be swapped into local currency which is the Mexican peso for this financial strategy with the purpose of mitigating the exchange rate of foreign currency risk.

The most expensive phase is to build where the promoter has to find funding to construct the whole facility. A very important factor which impacts the total cost of the project is heavy and sophisticated equipment and machinery that the promoter has to financially negotiate since the very beginning and potentially to agree to pay them back after the beginning of the concession contract through any suppliers' contract with an export and import agency. If the financial commitments are in foreign currency, the commitments have to be swapped into Mexican pesos with the intention of reduce the exchange rate of the foreign currency risks.

The previous funding is short term finance with the intention that right after the commissioning phase, the promoter has to restructure or refinance the financial strategy with long term instruments in form of debt, equity and mezzanine throughout the whole concession period. Refinancing after construction is possible if is endorsed against the facility because the construction risks have disappeared and is more likely to refinance at this stage.

In the beginning of the concession project, the promoter may provide initial capital through equity or arrange some form of short term loan to construct the facility. The long term debt financing may be acquired by a better cost–effective financial strategy because once the concession project is in the operation and maintenance phase, the risks are significantly inferior.

The commissioning and the operation and maintenance phases are when the finished concession project has a lot of credibility because is running and this is the time when the promoter has to restructure the financial strategy in order to reduce the debt burden of the previous financial commitments, and also to lower the interest costs and to reschedule the repayments.

Long term debt instruments work in a form of securities which have to be return to the lender or sponsor. Normally are categorised and named as senior debt. Debts include some different fees in percentages that are charged by the capital markets. Long term debt financing has to be set up with fixed interest rates linked to a standardised well known rate and slightly different from the

previous loans agreed with the purpose of putting the concession project in operation and essentially to pay back the financial commitments undertaken by the promoter.

For concession projects in Mexico, long term debt financing are found in the international and national capital markets. There is an international lending institution such as the World Bank which provides project finance through one of its members named the International Finance Corporation which supports concession projects in developing countries with the amount up to 25 per cent of the total cost of the facility. Another international financial institution is the Interamerican Development Bank which also provides, like the World Bank through the International Finance Corporation, financial support with an amount up to 25 per cent of the total cost of the facility. And also there is a recognised national lending institution in Mexico such as BANOBRAS which also supports to the project finance of infrastructure projects with a long term debt and with an amount of 25 per cent of the total cost of the facility. Thus, through the financial capital markets and with well recognised national and international financial lending institutions debt financial can be raised. If the loans are made through these financial lending institutions, the loans have to be a fixed rate loans. Moreover, they may use commercial floating rates set up in the capital market from the country where the money comes from. These international institutions may also use swaps with the purpose of mitigating the exchange rate of the foreign currency risks from the country they deliver the capital.

Mezzanine finance is the second financial instrument to be classified after the debt finance and before equity finance. Subordinate loans are also considered as mezzanine finance. Bonds are another form of mezzanine finance. Mezzanine finance also takes a form of syndicated loan which is raised by several banks and the bank that raises the largest amount of capital is the representative of the syndicated loan.

Besides within mezzanine finance, bond issuance is an innovative strategy to finance infrastructure projects through concession contracts in developing countries. In the event that bond issuance is consider the best strategy because there are no more capital resources, this strategy should be carried out through the international or national capital market through the promoter considering that if bond issuance is international, the promoter has to undertake the exchange rate of the foreign currency risk and if is local, the promoter has to raise the funding in Mexican pesos with the purpose of reducing the exchange rate of the foreign currency risks.

When the promoter raises fixed bonds and converts or divides the bond issue into shares, the promoter becomes the issuer of the bonds. Bond prices are fixed with par value, coupon rate, maturity date and market price. These bonds may be sold to anybody through the capital markets

or kept by the promoter. The maturity date may be at the beginning of the estimated equity stage in order to separate both stages which are to pay back the senior loans from the bonding and to receive revenues from equity.

Equity is the financial instrument that has to be set up by the promoter as an investment and has to be made by the promoter's interests or attractiveness to the concession project. Providing equity since the very beginning in the conception phase of the concession project is considered a commitment from participants which raises the confidence of lenders and investors.

Because of the fact that the International Finance Corporation, the Interamerican Development Bank and BANOBRAS are lending up to 75 per cent of the funding with long term senior and subordinated debt, it may be reasonable to set a debt-to-equity ratio of around 75 / 25. Nevertheless, in the event that the promoter is not prepared to undertake the 25 per cent in equity, they may undertake from 15 per cent to 20 per cent and the rest have to be raised by the one agency or development bank that arrange the financial structure of financial instruments with debt and mezzanine finance.

In this concession project, the promoter includes the construction company and other international and local investors. Whatever the percentage of equity the promoter considers, it is recommended to set equity and this should be 50 per cent in local currency and 50 per cent in foreign currency with the intention of mitigating the currency exchange rate risk. Therefore 50 per cent of the equity should be swapped into Mexican pesos.

In the event that 80 per cent or 85 per cent of the total cost of the concession project has been achieve through the International Finance Corporation, the Interamerican Development Bank and BANOBRAS, and the promoter is not interested in finance the other 15 per cent to 20 per cent through equity, this percentage of capital has to be raised by the promoter through bonding. Nevertheless, past experiences of infrastructure projects delivered through concession contracts have shown that promoters invest in equity from 10 per cent to 30 per cent.

In the event during the operation and maintenance phase that the concession project is not making a sufficient amount of money to pay back its financial commitments, refinancing has to be considered at year ten in the operation and maintenance phase through the promoter in the international or national capital markets.

The refinancing includes the rest of the financial package not paid back to sponsors and investors since the beginning of the concession project until year ten and refinancing also includes the

previous principal's financial assistance allocated in the event that the principal consumed below the amount agreed in the off take contract where they have provided these complementary funds. These financial contributions provided by the principal include interests that will be reimbursed to the principal at refinancing and subsequently the principal will grant to the promoter a 5 years extension period without off take contract where the promoter will undertake the commercial risks that did not undertake in the concession period. Moreover, by year ten, the project has to have solid private off take contracts with individual companies and a forecast of the real consume by the principal.

This may be possible if the interest rates of the debt refinancing are set up fixed with fixed interest rates linked to a standardised known rate and slightly different from the previous loans agreed with the purpose of putting the concession project in continue operation and also stop incrementing the previous financial commitments.

In the event of refinancing, the promoter has to raise these funding through another long term financial strategy senior debt, subordinated debt or syndicated loan or bond, and equity. All these financial instruments should be found in both, the international or national capital market.

All the debts may be swapped into Mexican pesos. Equity may be kept 50 per cent in its original currency and the other 50 per cent has to be swapped into Mexican pesos with the purpose of reducing the exchange rate of foreign currency risk.

One way may be also from the promoter's, principal's or investor's country capital market, because they have more knowledge of their local business experience and are more familiar with their own business environment. A feasible financial instrument to refinance should be through bond issuance for the concession project, issued by the promoter. In the event that the promoter can not refinance the facility, the promoter may leave the concession and undertake, if they agree, to manage the facility until the principal agrees.

7.5.1 Payment mechanism

In developing countries, as mentioned before in exclusivity, the government has the monopoly of processing the whole service in infrastructure projects. Thus, the payment mechanism may be from the user to the governmental agency with a periodic collection of the tariffs and once the collection is finished every month, the principal through its own agreed payment mechanism has to pay to the promoter.

In the event that the government do not collect the minimum agreed, the principal has to set up a mechanism such as a trust where they should get money form government in order to pay back the minimum amount agreed in the concession agreement. Furthermore, the principal have to document these financial supports monthly.

In the situation where the designed capacity of the plant has a huge capacity for the reason that the plant is planned and designed to be used for a longer term further from the concession period, the principal has to off take a low percentage of the product and may increase or escalate the off take percentage periodically until the project satisfies the real demand at the time is that is in real use.

The principal has to off take a minimum agreement of 800 litres per second of the product of the overall capacity of the plant with the intention of showing to the promoter the need of the concession project and in the event that a other industrial companies need more than 50 litres per second, the promoter may do another off take contract with that companies, this is in order to satisfy the exclusivity clause. The 800 litres per second undertaken by the promoter has to be paid directly from the private customers to the promoter or concessionaire.

The principal has to make direct payments to the promoter every month. A trust has to be set up between the principal and the promoter in the event that the principal fails in consuming the minimum quantity agreed in the off take contract, thus the promoter can guarantee the minimum income stream through the trust. The trust has to have to list an order of priorities to pay such as interest and the capital of the financial commitments, administrative and operational fees, among others.

7.5.2 Assignment of revenues stream

This is one of the most important contracts in a concession project for both the Principal and the Promoter. Basically is where the prices are set up. The price of the tariff is calculated through the forecast of demand of the service followed by the necessity of the project. This matter is one of the most important because it falls directly to the consumer which essentially is the financial instrument that is paying back in full for the infrastructure service that is supposed to be delivered and distributed by the host government.

The principal should guarantee the purchase of 800 litres per second of the service and the rest of the service the promoter should undertake it which is the risk of selling waste water treatment to the private sector or to others customers. Where the designed capacity of the plant has a huge capacity for the reason that the plant is planned and designed to be used for a longer term further from the concession period, the principal has to off take a low percentage of the product and increase or escalate the off take percentage periodically until the project satisfies the real demand at the time is in real use.

This has to be a take-or-pay contract in a based agreed tariff and the company that offers the most economic price per unit should undertake the concession project. Fundamentally, the principal has to off take a low percentage of the product which in this case is 800 litres per second in the early operation and maintenance phase and analyse the possibility of increasing the flow of the product. Furthermore, the promoter and the principal have to agree in the context of escalation of the off take unit price link to inflation and the escalations have to be every year.

7.6 ALLOCATION OF RISKS

The allocation of risks has to be set out in the concession agreement. It has to cover all eventualities such as design, construction, completion, operation and maintenance, quality service, third party acts, bankruptcy, financial, cash flow, force majeure, inflation and currency exchange. These risks are organised into five major categories such as political, construction, operation and maintenance, financial and market risks.

7.6.1 Political risks

Political risks are war, revolution, expropriation of the utility and assets, tax revision and export restriction which have to be undertaken and protected by the principal. Inflation and currency exchange have to be treated at floating rates through periodic escalations.

7.6.2 Construction risks

Construction risks are mainly completion and cost overruns. In the event that the promoter did not finish in the agreed time, the completion and cost overruns risk has to be undertaken by the promoter. Design is also undertaken by the promoter.

The preliminary testing has to be undertaken by the principal in the event that they provide the information for the design and construction of the utility.

The promoter has to establish a contingency credit facility for the construction phase to cover unanticipated exposes through a recourse equity instrument. Furthermore, the promoter has to provide for the construction contract a surety bond with the intention of mitigating construction and technical risks of completion and operation as it is also included in the operation and maintenance contract.

7.6.3 Operation and maintenance risks

Operation and maintenance risks are in the event of any cost of an operational problem and this kind of risks have to be undertaken by the promoter because they normally have the operation and maintenance contract. If the problem is with the machinery, this risk should be undertaken by the supplier.

The promoter has to establish a contingency credit facility for the operation and maintenance phase to cover unanticipated exposes through a recourse equity instrument. Additionally, like in the construction contract, the promoter has to provide for the operation and maintenance contract a surety bond with the intention of mitigating operation, maintenance and technical risks for the operation of the facility throughout the whole concession period and the extension period.

7.6.4 Financial risks

Financial risks relate to fluctuations in currency exchange rates, inflation and cost of capital through interest rates and have to be treated through periodic escalations monthly. The debt and mezzanine finance has to be undertaken by the principal and equity by the promoter and investors.

In the event that the promoter did not get enough income to pay back debts, the principal should allow the promoter to extend the period of the concession and the promoter should look for some strategy to refinance the rest of the debts. The extension of the concession contract can not be more than 5 years overall.

To reduce exchange risk of foreign currency, the promoter has to swap into the local currency which is the Mexican peso the debt and mezzanine finance; and with equity finance the strategy should be 50 per cent in foreign currency and 50 per cent swapped into the Mexican peso.

Taxation may be carried out in the last three years of the concession period in order to monitoring equity revenues and should be in a sensible percentage of the full income, but by any means more than 50 per cent.

In the event that the 50 percent of the off take is not achieved by the principal, refinancing should be carried out by the promoter and undertake the commitment of refinancing. Nevertheless, the promoter may take control of the operation and management of the facility and without any revenues, unless they consider allocating some equity to the concession project. It would be beneficial to the concession project if the promoter establishes a contingency credit facility of the financial activities to cover unanticipated exposes through a recourse equity instrument.

7.6.5 Market risks

Some of the market risks which are mitigated by the principal may consist in the updating of the price of the unit of the service; and this may be by the escalation of the price per unit every year linked with the Mexican inflation rate and the exchange rates involved.

If the promoter does not have enough customers or demand to sell more than 800 litres per second of the product that is not bought by the principal, the risk falls to the principal in complementing the assignment of the revenues stream. If this is happening, to refinance should be arrange through the promoter at year if the principal want to enhance their financial viability and to stop paying for the service that is not consuming.

7.7 DESCRIPTION OF THE FINANCIAL ENGINEERING OF THE CASH FLOWS

To complement the previous hypothetical concession project, a financial analysis is carried out with the intention of discussing its feasibility to deliver the project and to explore different financial elements such as income stream and interest rates of debt and mezzanine finance. This is achieved throughout a financial engineering model. Therefore a description of the financial engineering model is presented in order to analyse subsequently some of the cash flows generated.

The total cost of the new wastewater treatment plant in Mexico is USD 35 million, the time to build the new facility is 2 years and the total time of the concession period is 15 years with an optional

extension period of 5 years only in the event that refinancing is carried out by the promoter at year ten.

Different components and factors are considered to analyse this hypothetical concession project. These components are income stream, operation and maintenance, debt finance and mezzanine finance. These factors are modified with different percentages that diverge in some components and for this specific analysis are the differences of the income stream and the interest rates to be used for mezzanine finance.

Income stream is assumed according to the cash flow already collected and analysed in the case study carried out in this research investigation in a percentage that goes from a ratio of its own income divided into the total cost of the facility which gives a result of 14 per cent. However, this analysis also considers as well percentages of income such as 12, 14, and 16 per cent with the intention of discussing the performance of the cash flows. Operation and maintenance is considered at around 42 per cent of the annual debt commitment. The pay back period of debt finance is considered in the first five years during the whole concession period.

Regarding debt financing, senior interest rate of the loan is considered in a flat percentage of 5 per cent from year one to year five; this is slightly superior compared to the senior interest rates observed in the international and Mexican financial markets. Senior loan is considered from year one to five because of senior loan is the first money to be paid back of any type of loans.

Concerning mezzanine financing, interest rates are considered in a different way from the senior interest rate. These rates utilised in mezzanine debt may be through a subordinated loan, bonding or preferred stock and the interest rates are higher. For this analysis the interests rates are consider 7.5, 15 and 20 per cent from year six until the rest of the financial instruments are paid back assuming that are mezzanine financial instruments. It starts with 7.5 per cent which is a commercial rate, takes a 15 per cent which is also a commercial rate and finishes with 20 per cent which is may be the less attractive interest rate to acquire and to be found in any financial market for an infrastructure projects inclusive for refinancing.

The cash flows are divided into several groups which vary in the percentage of the income stream and in the percentage of the interest rates of mezzanine finance. All the groups take the same senior loan interest rates and assume different interests rates for the mezzanine finance with the intention of comparing them from another and visualise the differences. Therefore, the cash flows are divided into three groups by the interest rates of the mezzanine finance which are 7.5, 15 and 20 per cent. On the subject of equity finance, this is theoretically everything after mezzanine

finance. Therefore, for practical reasons for this financial engineering model equity finance will keep the same rates as mezzanine finance; nevertheless, equity finance is everything after debt and mezzanine finance.

Furthermore, two cash flows are presented considering refinancing at year ten with the purpose of analysing the results and differences regarding the final income stream. Refinancing is carried out to in order to reimburse the principal's financial assistance, in the event that these were provided, which complemented the payment commitments that the promoter paid to sponsors and investors and that the principal did not utilise in the past ten years.

7.8 EXPLANATION AND COMPARISON ANALYSIS OF RESULTS OF THE CASH FLOWS

The following paragraphs describe and explain the cash flows charts considered for this research investigation in order to visualise their differences, and subsequently, the discussion by groups of the cash flows generated. All the cash flows are calculated in Net Present Value, NPV.

Cash flows were generated considering less than 14 per cent having a result that only 12 per cent may be able to be analysed because it gave a positive internal rate of return. Subsequently, cash flows with the income streams of 12 per cent, 14 per cent and 16 per cent were considered to make further analysis.

Figure 7.5 shows the investment curves considering a common interest rate of 7.5 per cent for mezzanine finance, they may be instruments in form of subordinate loan or syndicated subordinated loan. It also illustrates how the investment curves perform with the different income streams of 12 per cent, 14 per cent and 16 per cent which finishes giving an idea of the final cumulative amount of money over the concession period. These amounts are USD 32 millions, USD 21 millions and USD 11 millions respectively.

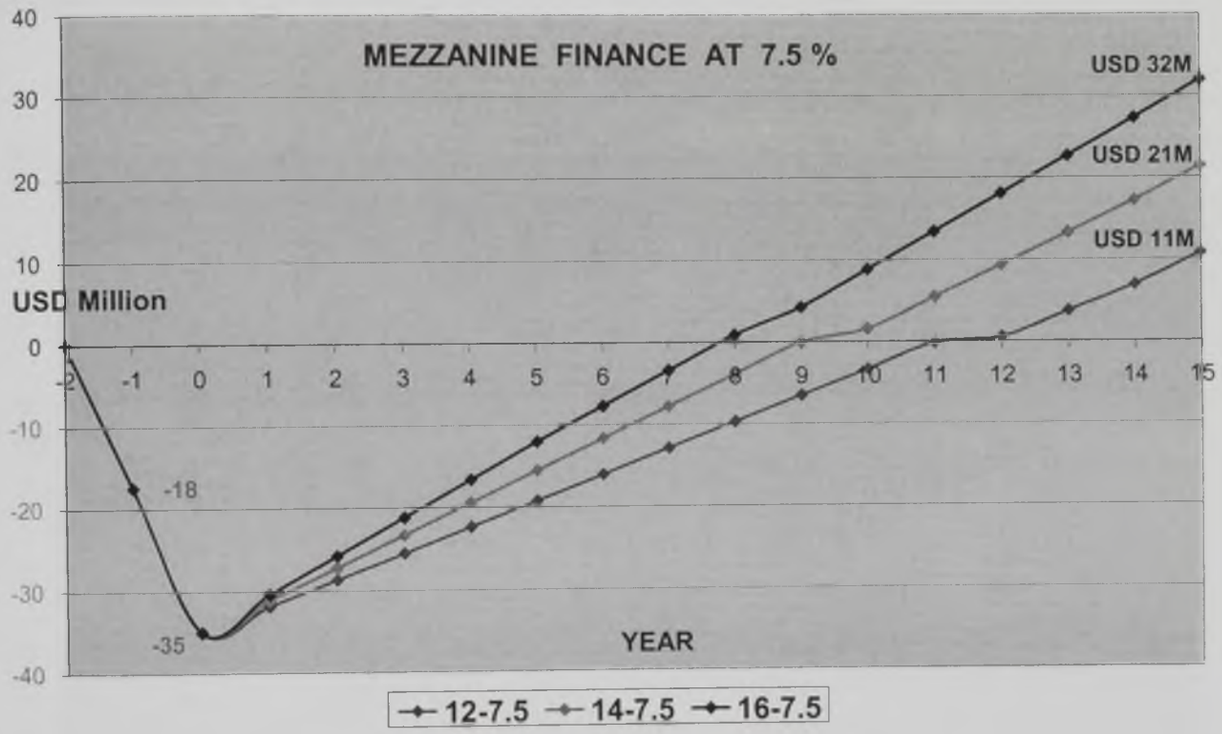

Figure 7.6 Mezzanine Finance with Interest Rates of 7.5 per cent

A significant difference from the income of 12 per cent giving approximately USD 11 millions to the income of 14 per cent giving approximately USD 21 millions. This difference gives an approximately total of USD 10 millions which are considerable revenues for any investor that corresponds in more than 28.5 per cent of the same new facility. In the same manner is presented the difference of the income stream of 14 per cent and 16 per cent giving USD 11 millions difference.

From the above, it is expected to have the same results for the following figures 7.6 and 7.7 which have the same logic accordingly to the common interest rates of 15 per cent and 20 per cent respectively.

Figure 7.6 shows the investment curves considering a common interest rate of 15 per cent for mezzanine finance, these instruments may be in form of subordinated loan, syndicated subordinated loan and different kind of bonds or preferred stock. This figure also illustrates how the investment curves perform with the different income streams of 12, 14 and 16 per cent which

finishes giving an idea of the final cumulative amount over the concession period. These amounts are USD 9 millions, USD 20 millions and USD 31 millions respectively.

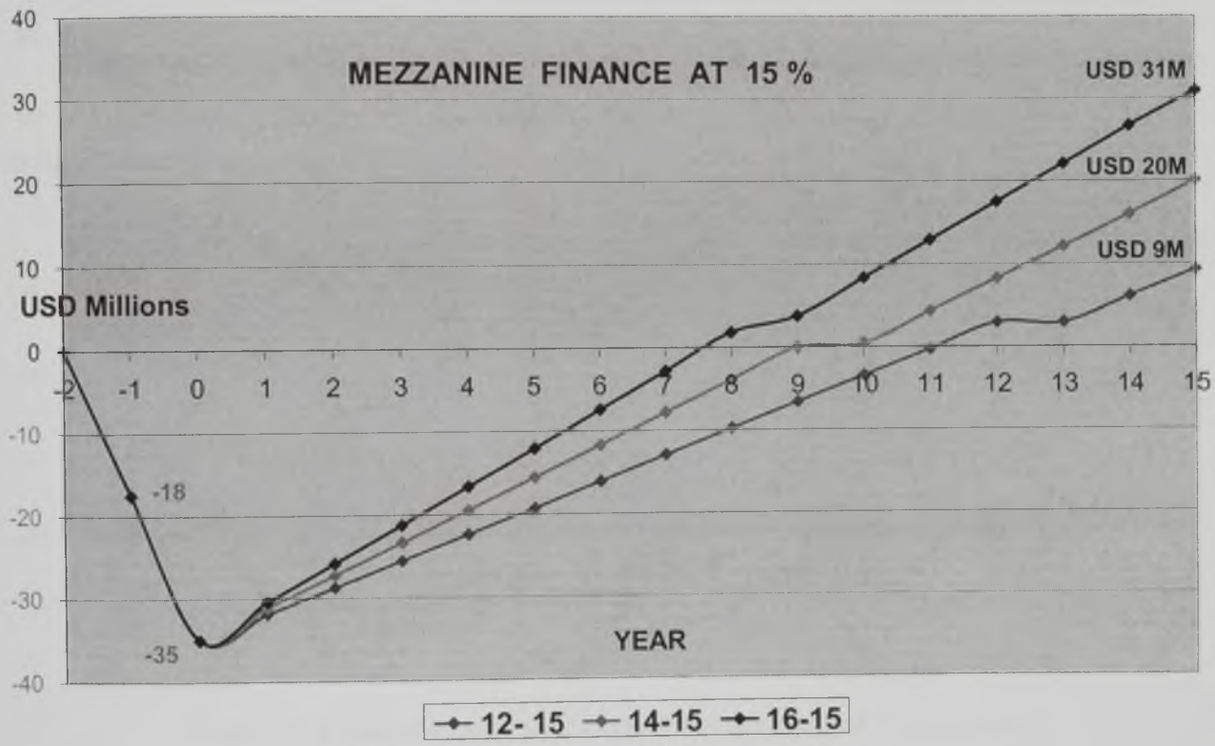

Figure 7.7 Mezzanine Finance with Interest Rates of 15 per cent

Figure 7.7 shows the investment curves considering a common interest rate of 20 per cent for the period of mezzanine finance, these instruments may be preferably in form of different kinds of bonds and preferred stock. It also illustrates how the investment curves perform with the different income streams of 12, 14 and 16 per cent giving an idea of the final cumulative amount over the concession period. These amounts are USD 8 millions, USD 19 millions and USD 30 millions respectively.

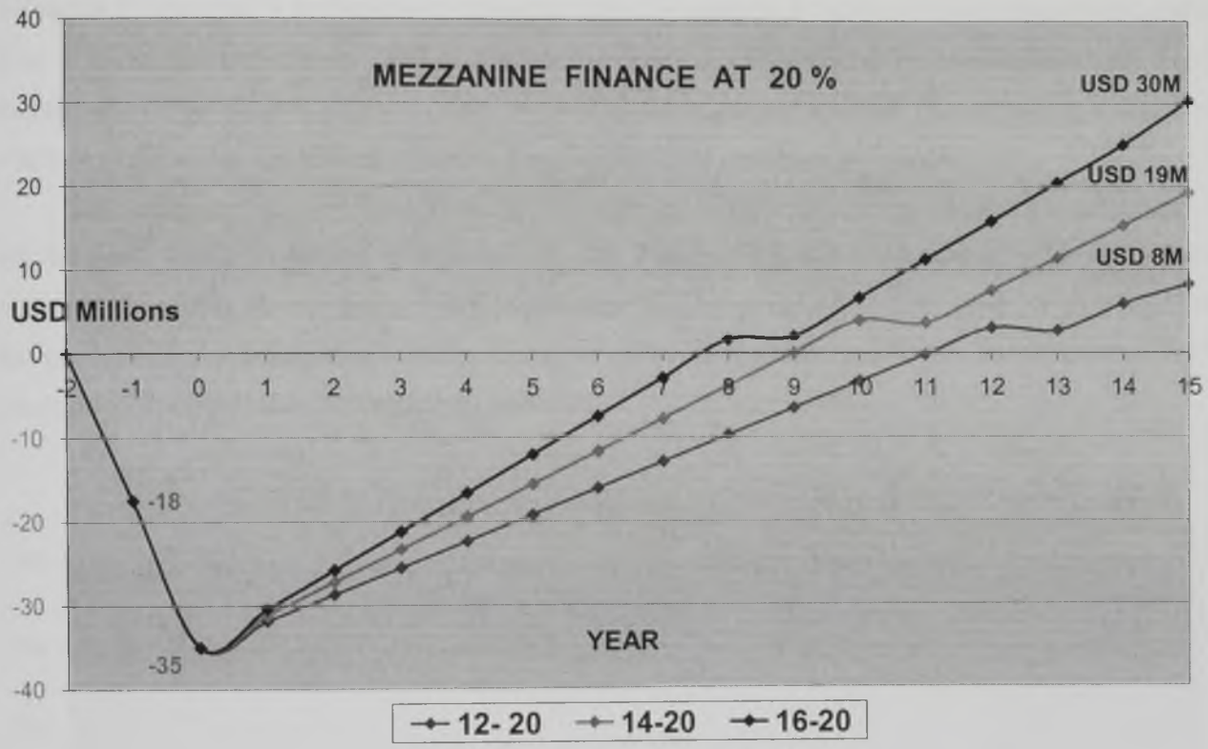

Figure 7.8 Mezzanine Finance with Interest Rates of 20 per cent

As a result of the previous figures 7.5, 7.6 and 7.7, it can be seen that from every percent of income stream of 12, 14 and 16 per cent the revenues varies at the end of the concession period which strongly suggests that the higher percentage of the income stream is, the higher the revenues stream will be seen.

Figure 7.8 illustrates the performance with an income stream of 16 per cent of the total cost of the new waste water treatment plant and also shows the investment curves with different interest rates of mezzanine finance. These instruments may be utilised preferably in form of subordinate debt or mezzanine debt for the interest rate of 7.5 per cent, it may also take a form of different types of bonds and preferred stock when the interest rates are 15 per cent or 20 per cent. Thus, the figure 7.8 presents the final cumulative amount over the concession period. These amounts are USD 32 millions having an interest rate of 7.5 per cent, USD 31 millions with an interest rate of 15 per cent and USD 30 million with an interest rate of 20 per cent, giving a result of approximately USD 1 million of difference from 7.5 per cent to 15 per cent and from 15 per cent to 20 per cent.

Therefore, after income stream rates and interest rates were assessed, there is sufficient evidence to see that is preferable to consider and to negotiate a higher income stream rate rather than a lower interest rate for debt or mezzanine finance, because the income stream rate highly influences more than the interest rates for debt and mezzanine finance. Nonetheless, it does not imply to not look for the lowest interest rates for debt and mezzanine finance.

All the cash flows presented in figures 7.5, 7.6, 7.7 and 7.8 are considering to be carried out without refinancing at year ten in order to visualise the influence in the event that the principal and the promoter have to take the decision to refinance the project and also if the possible promoter is persuaded to undertake refinancing at year ten.

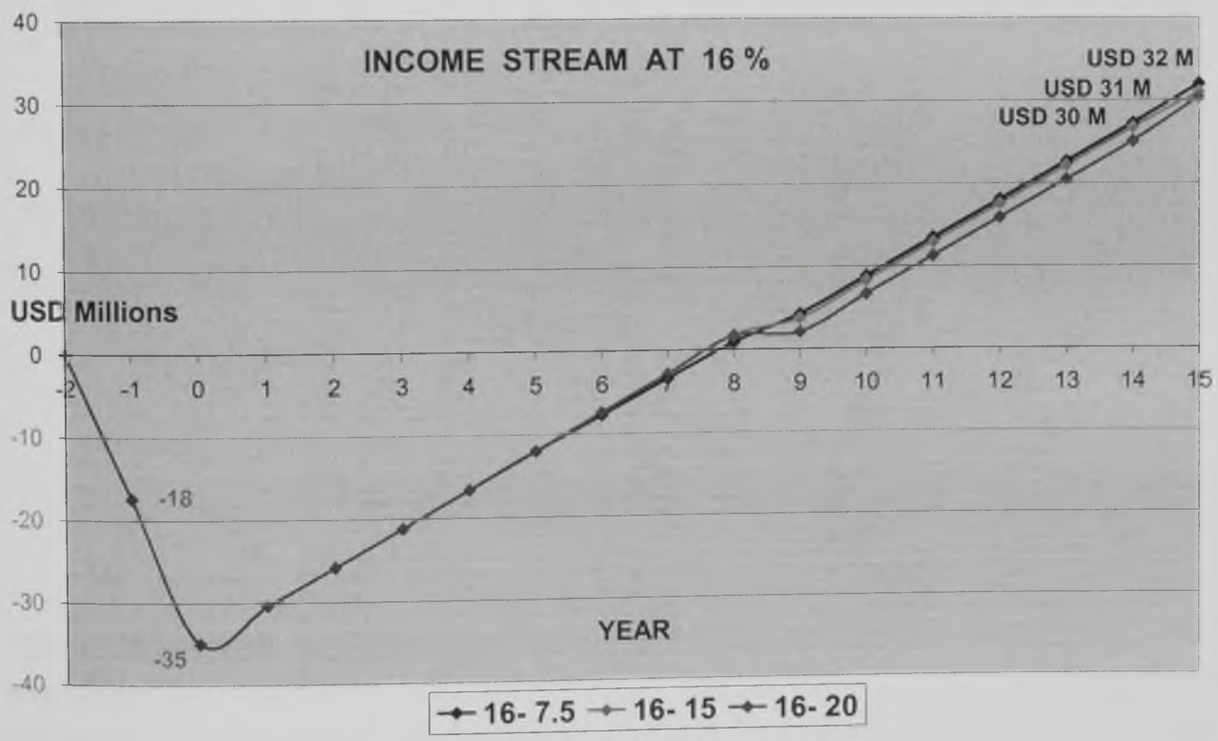

Figure 7.9 Income Stream of 16 per cent

Furthermore, with a different perspective from the previous figures 7.5, 7.6, 7.7 and 7.8, cash flows are presented below considering refinancing at year ten in figures 7.9, 7.10 and 7.11. Three amounts to refinance are considered in the following three figures which are USD 5, 7.5 and 10 millions. The cash flow of comparison without refinancing is with an income stream of 14 per cent

of the total price of the new facility having mezzanine interest rate of 7.5 per cent. All the cash flows consider a 20 per cent of refinance after year ten.

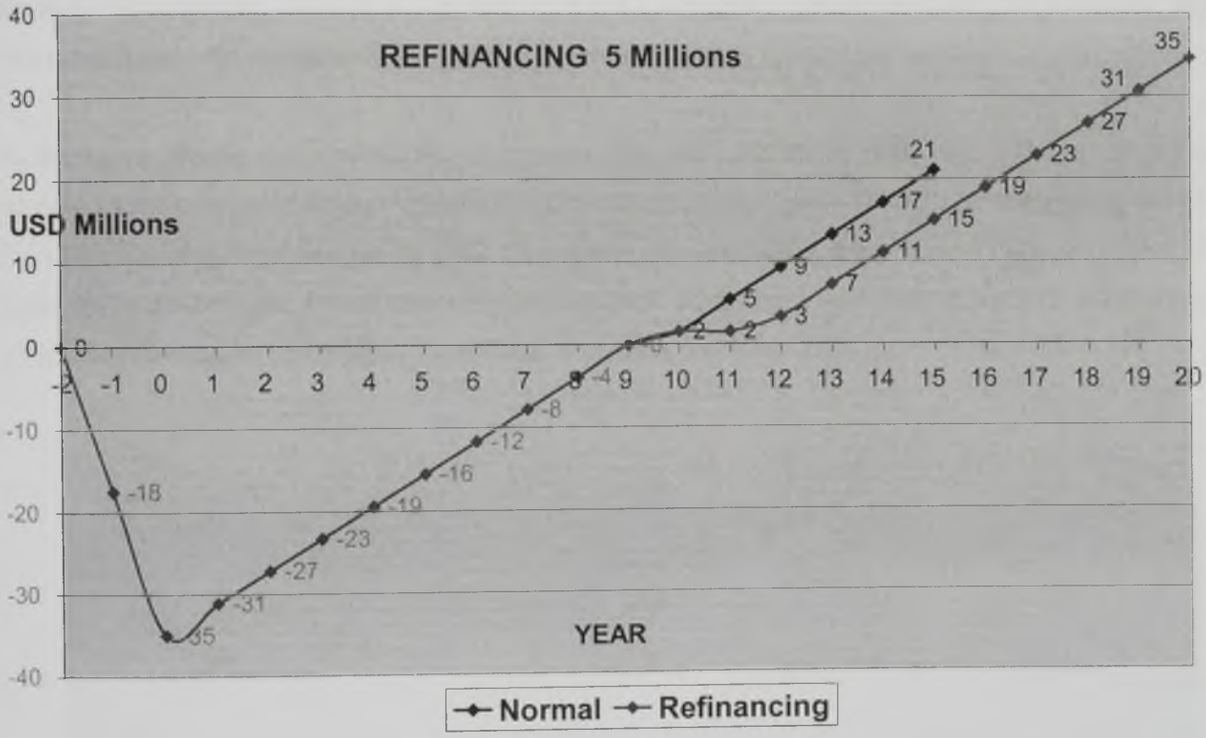

Figure 7.10 Refinancing 5 Millions at year 10

Figure 7.9 shows the normal cash flow that has an annual income stream of 14 per cent of the total cost of the facility with debt finance of 5 per cent from year 1 to year 5 and mezzanine finance of 7.5 per cent from year 5 to year 10. From year 10 to year 20 the interest rate is 20 per cent because is considered refinancing period. Additionally, it is important to comment that rates for equity are not considered in this analysis; nevertheless, it may be seen as an interest rate of 20 per cent in refinancing. In figure 7.9 the amount of refinancing is USD 5 millions. This figure shows that with refinance the promoter will obtain USD 35 millions by the end of year 20 and USD 21 millions at the end of year 15 without refinancing. It can also be seen with refinancing, that the promoter will have the same amount of returns at year 16.5 that are obtained in year 15 without refinancing, taking only 1.5 years to reach the same amount with refinancing and having another 3.5 years to make more profits.

This is a considerable difference of USD 14 millions in 5 years. Figure 7.9 also shows that the whole financial commitments are paid back including interest rates by year 9 and after that, the promoter will receive profits. Thus, refinancing is carried out as an alternative of returning the financial assistance that the principal may have provided throughout the concession period to the lenders and investors through a trust set up in the concession agreement with the promoter. And this is possible with refinancing the project in the form that is articulated herein.

Furthermore, figure 7.10 presents refinancing with an amount of USD 7.5 millions. The total income to the promoter at year 20 is USD 32 millions while in year 15 without refinancing is USD 21 millions giving a difference of USD 13 millions. Nevertheless, after year 17 the promoter will have USD 21 millions which are obtained in year 15 without refinancing and in addition the promoter will receive up to USD 31 millions of returns until year 20.

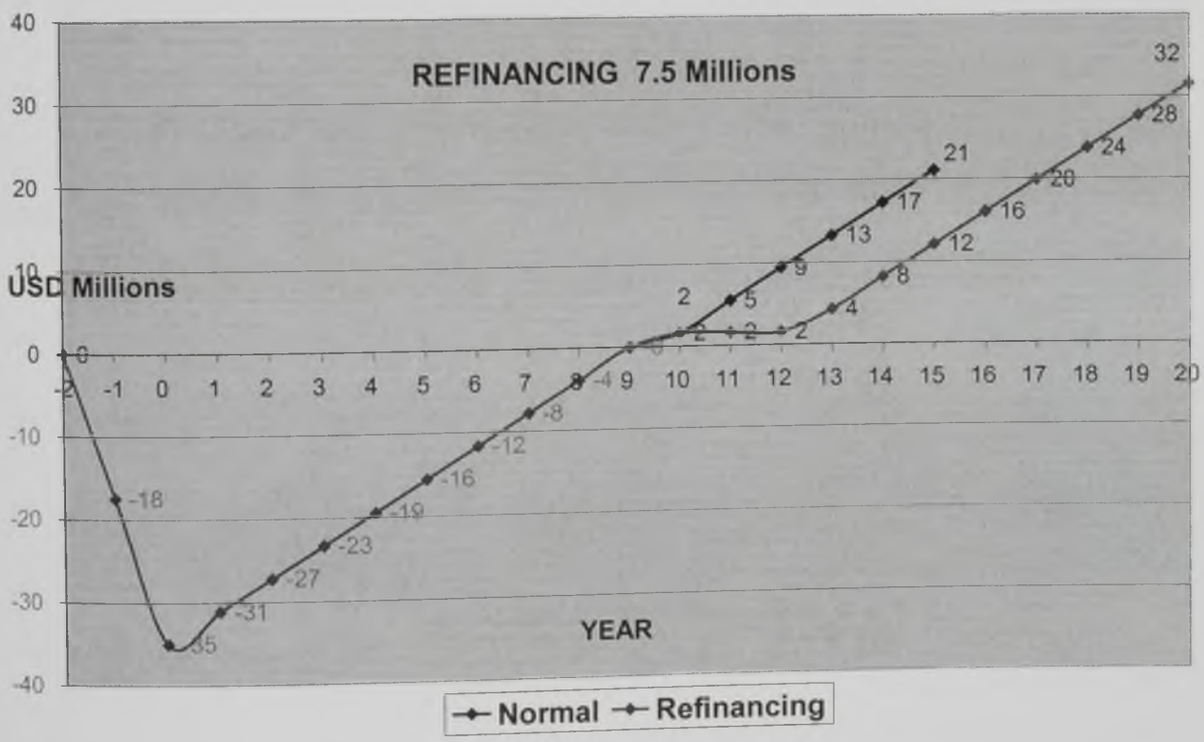

Figure 7.11 Refinancing 7.5 Millions at year 10

In figure 7.9 the amount of refinancing is USD 5 millions. This figure shows that with refinance the promoter will obtain USD 35 millions by the end of year 20 and USD 21 millions at the end of year 15 without refinancing. It can also be seen with refinancing, that the promoter will have the same

amount of returns at year 16.5 that are obtained in year 15 without refinancing, taking only 1.5 years to reach the same amount with refinancing and having another 3.5 years to make more profits.

Additionally, figure 7.11 illustrates another refinancing with USD 10 millions. The results are a total income of USD 29 millions at year 20 with refinancing and USD 21 millions without refinancing. The latter amount is reach in refinancing at year 18; therefore, the project still provides attractive returns to the investors giving a difference in profits of USD 8 millions. Moreover, the three previous figures 7.9, 7.10 and 7.11 evidencing that the less the amount to refinance, the higher the revenues are.

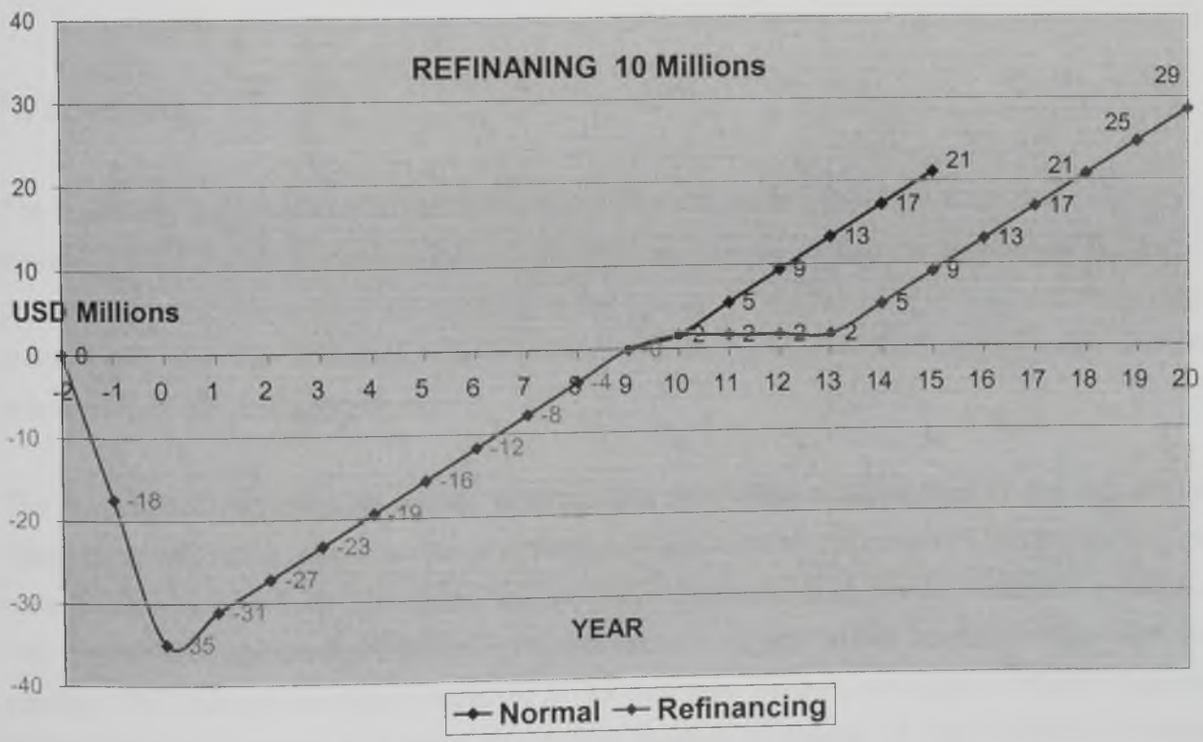

Figure 7.12 Refinancing 10 Millions at year 10

As a result, having an income stream of 14 per cent of the total cost of the waste water treatment plant will benefit the promoter in delivering the concession project to the principal. The interest rates for debt and mezzanine were taken from development banks to make more realistic this analysis. Furthermore, it was considered to include refinancing at year 10 because as is shown in the previous financial cash flow figures that all the financial commitments were paid back before

year 9 without considering equity; nevertheless, it was considered 20 per cent for refinancing. It has also clarified that is possible to refinance the capital provided by the principal, in the event that the consume were below the agreed, only if the concession project provides an extension in order to compensate financially the promoter for longer term finance to improve their returns.

Therefore, the previous cash flow analysis through comparisons suggests very strongly that having a high income stream, having a low interest rate of the financial instruments and carrying out refinancing, the revenues would be higher.

The main changes and improvements are found in the concession agreement and the financial strategy. Within the concession agreement the changes are setting up the risks more clearly, and in the financial strategy is adding different financial instruments and refinancing.

7.9 SUMMARY

The hypothetical concession project produced in this chapter is a representation of a waste water treatment plant privately financed through the PPP concession strategy to Mexico. Its design and preparation are explained in the beginning of this chapter. The scheme is divided into three major areas which are the concession agreements and contracts, the financial package and the preparation of different cash flows.

The hypothetical concession project which is the new system mentioned in the aim of this research investigation identifies relevant characteristics such as the country's circumstances, the concession agreements and contracts for this specific infrastructure project especially in Mexico. The concession agreement contains different terms that are crucial to its development and viability. The financial package designed in for this new system conjugates different financial instruments and markets that make the project feasible to finance. It also contains a several figures showing cash flows changing different concepts that make clearer financial viability including refinancing at year ten. In the last three cash flows it can be seen that the concept of refinancing improves the margin of the revenues of the project. Subsequently, the next chapter validates this new system.

CHAPTER EIGHT

VERIFICATION AND VALIDATION

8.1 INTRODUCTION

The purpose of this chapter is to verify and validate the present research investigation. It reviews various definitions of the terms verification and validation from different authors and consequently, it describes and selects the verification and validation approach for this case study research. It explains the verification and validation method utilised for the hypothetical concession project of chapter seven.

8.2 TERMS OF VERIFICATION AND VALIDATION

According to Creswell (1998) multiple perspectives exists regarding the importance of verification in qualitative research, the definition of it, and the procedures for establishing it. For example, writers search for and find qualitative equivalents that parallel traditional quantitative approaches to validity. LeCompte and Goetz (1982) display this approach when they compare issues of validity and reliability to their counterparts in experimental design and survey research.

Yin (1994) points out that because a research methodology is supposed to represent a logical set of statements, the researcher also can judge the quality of any given design according to certain logical tests. Concepts that have been offered for these tests include trustworthiness, credibility, confirmability and data dependability, according to the United States General Accounting Office (1990).

To establish the trustworthiness of a study, Lincoln and Guba (1985) use the terms credibility, transferability, dependability and confirmability as the naturalist's equivalents for internal validity,

external validity, reliability and objectivity. To utilise these terms, they propose techniques such as prolonged engagement in the field and the triangulation of data of sources, methods and investigators to establish credibility. To make sure that the findings are transferable between the researcher and those being studied, sufficient description is necessary in order to confirm the data.

As another example, rather than use the term validity, Eisner (1991) discusses the credibility of qualitative research. He constructs standards such as structural corroboration, consensual validation, and referential adequacy. In structural corroboration, the researcher relates multiple types of data to support or contradict the interpretation. As Eisner states, "we seek a confluence of evidence that breeds credibility, that allows us to feel confident about our observations, interpretations and conclusions. Moreover, he recommends that to demonstrate credibility, the weight of evidence should become persuasive. Consensual validation seeks the opinion of others, and Eisner refers to an agreements among competent others that the description, interpretation and evaluation and thematics of an educational situation are right. Referential adequacy suggests the importance of criticism, and Eisner describes the goal of criticism as illuminating the subject matter and bringing about more complex and sensitive human perception and understanding.

Creswell (1998) point out that verification has also been reconceptualised by qualitative researches with a postmodern sensibility; it is an incitement to discourse. Lather (1991) comments that current paradigmatic uncertainty in the human sciences is leading to the re-conceptualising of validity and calls for new techniques and concepts for obtaining and defining trustworthy data which avoids the pitfalls of orthodox notions of validity. For Lather the character of social science report changes from that of a closed narrative with a tight argument structure to a more open narrative with holes and questions and an admission of situatedness and partiality.

Lather (1991) gives a different reconceptualisation of validity. She identifies two types of validity including triangulation (multiple data sources, methods and theoretical schemes) and construct validity (recognising the constructs that exist rather than imposing theories / constructs on informants or the context).

Another individual who shares a conceptualisation of validity is Wolcott (1990). He suggests that validity neither guides nor informs his work. He does not dismiss validity but rather places in a broader perspective. Wolcott's goal is to identify critical elements and write plausible interpretations from them. He ultimately tries to understand rather than convince and voices the view that validity distracts from his work of understanding what is really going on. Wolcott claims

that the term validity does not capture the essence of what he seeks, adding that perhaps someone will coin a term appropriate for the naturalistic paradigm. But for now, Wolcott says, the term understanding seems to encapsulate the idea as well as any other.

For Creswell (1998) the approach of verification consists of five points which are shown subsequently:

1. To view verification as a distinct strength of qualitative research in that the account made through extensive time spent in the field, the detailed thick description and the closeness of participants in the study all add to the value of the study;

2. To use the term verification instead of validity because verification underscores qualitative research as a distinct approach, a legitimate mode of enquiry in its own right;

3. To employ the terms trustworthiness and authenticity as general concepts to use in establishing the credibility of the study;

4. To employ different frames of verification (validity) if using a postmodern perspective; and

5. To recognise that the verification of a study has procedural implications and can be assessed by the researcher.

There are multiple views of verification and validation, which show that writers view it from a qualitative and quantitative perspective to find equivalents, employ a distinct language to provide legitimacy for it in naturalistic research, reconceptualised it within a postmodern framework, or suggest that is a distraction to good research.

Verification and validation changes from one research method to other research method in order to suits the needs for the investigation. Therefore, the following section will identify the most appropriate verification and validation approaches for this case study research.

8.3 VERIFICATION AND VALIDATION APPROACHES FOR CASE STUDY RESEARCH

For case study validity, to verify and to validate research, Yin (1994) proposes different strategies through construct validity, internal validity, external validity and reliability. These approaches or tests have been commonly used to establish the quality of any case study research. These tests are summarised as follows:

- *Construct validity:* establishing correct operational measures for the concepts being studied.
- *Internal validity* (for explanatory or casual studies only, and not for descriptive or exploratory studies): establishing a casual relationship, whereby certain conditions are shown to lead to other conditions, as distinguished for spurious relationships.
- *External validity:* establishing the domain to which a study's findings can be generalised.
- *Reliability:* demonstrating that the operators of a study such as data collection procedures can be repeated, with the same results.

After the summarised explanation above, these previous four strategies are explained subsequently in more detail with the intention to find the strategy that better fits to verify and validate this research investigation.

8.3.1 Construct validity

Yin (1994) points out that the first test is especially problematic in case study research. People who have been critical of case studies often point to the fact that a case study investigator fails to develop a sufficiently operational set of measures and that subjective judgements are used to collect the data. To meet the test of constructing validity, according to Yin (1994), an investigator must be sure to cover two steps which are in the following page:

1. Select the specific types of changes that are to be studied in relation to the original objectives of the study, and

2. Demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

For doing case studies, three tactics are available to increase construct validity. The first is the use of *multiple sources of evidence*, in a manner encouraging convergent lines of enquiry, and this tactic is relevant during data collection. A second tactic is to establish a *chain of evidence,* also relevant during data collection. The third tactic is to have the draft case study report reviewed by key informants.

The use of multiple source of evidence is also called triangulation. According to Denzin (1989) triangulation has been always considered a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation. But, acknowledging that no observations or interpretations are perfectly repeatable, triangulation serves also to clarify the meaning by identifying different ways the phenomenon is been seen.

Denzin (1978) identifies four basic types of triangulation. The first consists in data triangulation which is the use of variety of data sources in a study including persons, times, places, etc. The second is investigator triangulation which consists in the use of several different researchers, evaluators, experts in the field, etc. The third is theory triangulation which consists in the use of multiple perspectives to interpret a single set of data. And the fourth is methodological triangulation which includes the use of multiple methods to study a single problem through observations, interview documents, etc.

Considering that the tactics of multiple sources of evidence and the report reviewed by key informants are available to carry out with this strategy, it is strongly suggested to utilise the strategy of construct validity.

8.3.2 Internal validity

Yin (1994) comments that internal validity is been used in experimental and quasi-experimental research. Although numerous threats to validity have been identified, mainly dealing with spurious effects.

Internal validity is a concern for casual or explanatory case studies, in which an investigator is trying to determine whether event *x* led to event *y*. If the investigator incorrectly concludes that there is a casual relationship between x and y without knowing that some third factor *z* may actually caused y, the research design has failed to deal with some threat to internal validity. Note that this logic is not applicable to descriptive or exploratory studies whether the studies are case studies, surveys or experiments, which are not concerned with making casual statements.

Another concern over internal validity, for case study research, may be extended to the broader problem of making inferences. Basically a case study involves an inference every time an event can not be directly observed. Thus, the investigator will infer that a particular event resulted from some earlier occurrence, based on interview and documentary evidence collected as part of the case study. A research design that has anticipated different questions concerning inference has begun with the overall problem of making inferences and therefore the specific problem of internal validity.

However, the specific tactics for achieving this result are difficult to identify. This is true in doing case studies. Yin (1994) comments that as one set of suggestions such as the analytic tactic of pattern–matching, is one way of addressing internal validity. Another two related tactics are explanation–building and time–series analysis.

Therefore, internal validity can not be utilised because this test has given the greatest attention in experimental and quasi–experimental research.

8.3.3 External validity

According to Yin (1994) the third deals with the problem of knowing whether a study's findings are generalizable beyond the immediate case study. In the simplest example, if a study of a neighbourhood change focused on one neighbourhood, are the results applicable to another neighbourhood? The external validity problem has been a major barrier in doing case studies. Critics typically state that single cases offer a poor basis generalizing. However, such critics are implicitly constraining the situation to survey research, in which a sample, if selected correctly, readily generalizes to a larger universe. This analogy to samples and universes is incorrect with dealing for case studies. This is because survey research relies on statistical generalization, whereas case studies as with experiments rely on analytical generalization. In analytical generalization, the investigator is striving to generalize a particular set of results to some broader theory.

The generalization is not automatic, however. A theory must be tested through replications of the findings in a second or third case study, where the theory has specified that the same results should occur. Once such replication has been made, the result might be accepted for a much larger number of similar case studies, even though further replications have not been performed.

This replication logic is the same that underlines the use of experiments and allows scientists to generalize from one experiment to another.

For the previous reasons, external validation is neither adequate because this test of verification and validation does not intend to generalise from a single case study.

8.3.4 Reliability

The objective of reliability, according to Yin (1994) is to be sure that, if a later investigator followed exactly the same procedures as described by an earlier investigator and conducted the same case study all over again, the later investigator should arrive at the same findings and conclusions. The emphasis is on doing the same case over again, not on replication the results of one case doing another case study. The goal of reliability is to minimise the errors and biases in a study.

One prerequisite for allowing this other investigator to repeat an earlier case study is the need to document the procedures followed in the earlier case. Without such documentation, you can not even repeat your own work, which is another way of dealing with reliability. In the past, case study research procedures have been poorly documented, making external reviewers suspicious of the reliability of the case study. As remedies, the tactics are case study protocol which deals with the documentation in detail and the other tactic is the development of a case study database. The general way of approaching the reliability problem is to make as many steps as operational as possible and to conduct research as if someone were always looking over your shoulder.

Thus, this research does not use reliability because it is not appropriate for the validation of the hypothetical case study.

Therefore, having explained these different tests of verification and validation, it is adequate to emphasis that construct validity is the most viable test due to this chapter which intends to judge the quality of the investigation through multiple source of evidence such as contributions from experts in the field of project finance in concession projects for developing countries. Furthermore, the following paragraphs illustrate the verification and validation methodology to be utilised in this research with the purpose of establishing the quality of this research investigation.

8.4 VERIFICATION AND VALIDATION METHODOLOGY

The most appropriate strategy to verify and validate this research investigation regarding case study research is through construct validity, and according to Yin (1994), an investigator must be sure to cover the following two steps as follows:

1. To select the specific types of changes that are to be studied in relation to the original objectives of the study, and

2. To demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

These two steps are made with the intention of observing the consistency, the clarification of the changes and the identification of the findings of the designed hypothetical concession project.

With the intention to increase construct validity, three tactics were presented before in verification and validation approaches for case study research, one of these is within construct validity, which is multiple source of evidence, this is a sensible approach and most important; available. Furthermore, all research need ways of accuracy and alternative explanations, and this can be achieved by protocols such as triangulation.

Therefore, the verification and validation of this research investigation is done through the method of construct validity combining some types of triangulation throughout an extensive analysis of theory, data collection and contributions by several experts in the field of project finance of infrastructure projects delivered through concession contracts.

8.5 CONSTRUCT VALIDITY

Silverman (1997) points out that in both qualitative and quantitative research, a central dimension of validation involves the correspondence between a theoretical paradigm and the observation made by the research. Construct validity is a term often used in this context. It involves the relation between theoretical concepts and the observations that are supposed to represent those concepts. With the purpose to construct validity, the author uses investigator triangulation through multiple sources of evidence. The verification and validation is presented below.

8.5.1 Verification

According to Ng and Smith (1998) verification consists of the review of the representation, consistency and completeness of the information utilised in this research investigation for the design of the hypothetical concession project which is presented in chapter seven. The verification process of the hypothetical concession project designed in this research investigation has been running simultaneously since the beginning of the collection of information such as government support, concession agreements and contracts containing risks and guarantees and the financial package containing the utilisation of financial instruments such as debt, bonds and equity, and refinancing.

Sheets for data capture were sent to financial directors of companies in the United Kingdom, France, Spain and Mexico requesting information about concession contracts that they undertook in Mexico or Latin America and which were publicised on their web pages. Firms with broad knowledge and experience in concession contracts were contacted with the intention to capture data to build a solid, realistic and credible case study. Some of them replied saying that they had been involved in concession contracts in the early phases but they were not able to give relevant information in order to develop the case study. Biwater International was the only firm that replied in detail.

Biwater International is a major UK constructor and operator of water and sewage treatment plants in the world. This concession project in Mexico was the first wastewater treatment plant to be privately financed; therefore, this option was a reliable guide for the case study. Biwater International also has exposure of many other concession projects all around the world such as in Africa, Asia, Eastern Europe and Latin America, which have similar economic characteristics.

With the intention of reviewing the consistency of the information utilised to construct the case study, verification is also achieved by checking the web pages of the International Finance Corporation, BANOBRAS and Cascal. Information is published regarding the financial strategy and some summarised information of financial engineering such as the financial instruments for funding the project like debt and equity, the structure of the payment mechanism, assignments of revenues stream, assignment of risks, forecasts of exchange rates, inflation rates and interest rates.

Some of the raw information utilised in the case study was provided by key informants such as the managing director and the finance director of the concessionaire or promoter of the

concession project in Puerto Vallarta, Mexico. This was achieved by communications through electronic mail from the author in the United Kingdom to the key informants from the promoter in Mexico. The most relevant data is found in appendix A.

During the process of data gathering, the information collected was received with full trustworthiness and confidence due that the informants are key elements working in Biwater International in the concession project. As a further check, a draft of the case study was sent to Biwater International in Puerto Vallarta, Mexico to be reviewed and verified and which was successfully approved by them. The selection of the key informants was constrained to the executive board of Biwater International because most of this information is private and confidential.

An extensive literature review was also carried out with the purpose to identify the most important elements to consider for the design of the hypothetical concession project which are within the governmental characteristics and support, the concession agreement and contracts and the financial package because that was the only information available and considered relevant to be published and analysed by Biwater International. Therefore, the hypothetical concession project is being influenced by this existing case study already delivered to Puerto Vallarta, Mexico.

Concerning to the host government support and interests Kerf et al. (1998) and Augenblick & Custer (1990) suggest some elements such as political and bureaucratic support; legal and regulatory support; and other important elements suggested are within the macroeconomic indicators such as exchange rates, inflation rate and interest rates. All these elements are suggested with the intention to construct one part of the hypothetical concession project. The information related to the government support and characteristics were verified by experts with an ample experience in the field of concessions projects from Biwater International.

Smith and Merna (1996) suggest an organisational and contractual structure which was adapted in this investigation with the intention to construct this part of the case study. Figure 8.1 shows the key organisations and contracts verified for this research.

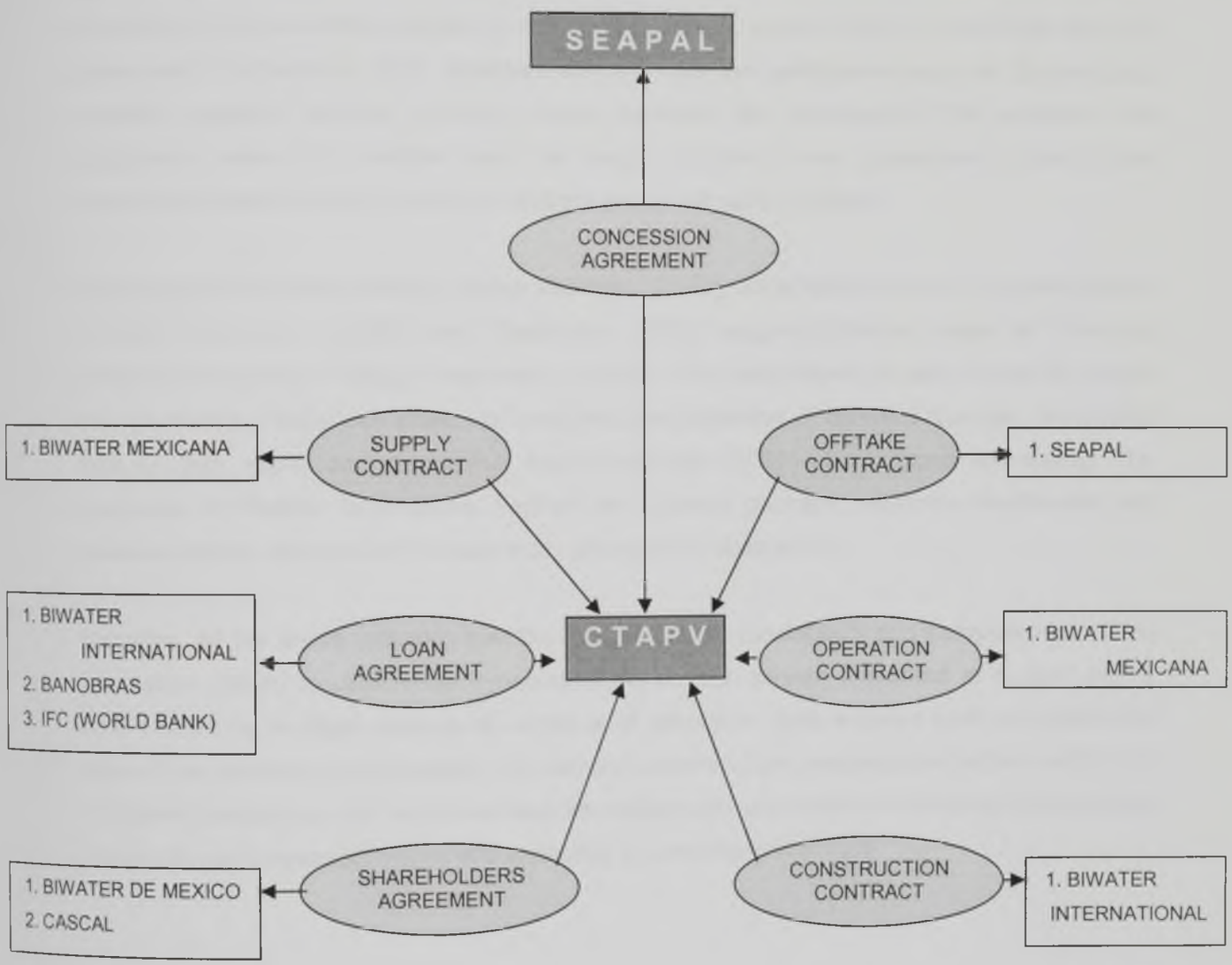

Figure 8.1 The Corporate Structure of the Project
(Source: Biwater International Ltd., 2003)

The information related to the concession agreement and contracts of the case study are found in chapter six. This information was verified by experts with an ample experience in the field of contracts and agreement in concessions projects from Biwater International belonging to the contract administrator department. Some of this information is also found in the web page of

Cascal and Biwater International. According to the executives of Biwater International, Smith and Merna (1996) and Delmon (2000) the most relevant elements included in the concession agreement are the period of the concession, total costs, concession initialisation, concession termination, risk allocation, exclusivity, refinancing, default, safety, inflation, exchange rate and guarantees. Furthermore, other important elements are the participants such as the principal, promoter, supplier, lenders, investors, users, operator and constructor. The contracts and agreements were also verified such as supply contract, loan agreement, shareholders agreement, offtake contract, operation contract and construction contract.

Regarding the financial package, Merna and Njiru (2002), BANOBRAS (2001), the International Finance Corporation (1999) and Yescombe (2002) suggest different ways of financing infrastructure projects through concession contracts. The most important part in order to design the hypothetical concession project is throughout the utilisation of different financial instruments such as debt, equity and mezzanine. Merna and Njiru (2002) also suggest refinancing. The executives of Biwater International verified the financial package, payment mechanism and revenues stream structure of the case study presented in chapter six.

Therefore, all the above indicates that the representation, consistency and completeness of the information utilised to design the hypothetical concession project presented in chapter seven were verified by multiple sources of evidence of secondary data sources such as books and papers from institutional documents. The several authors of this evidence are experts who work in different institutions and who have wide knowledge and experience in financing infrastructure projects through concession contracts especially in developing countries.

8.5.2 Validation

According to Ng and Smith (1998) validation consists in demonstrating and confirming that the hypothetical concession project which is presented in chapter seven has been designed in a reasonable and logical manner and represents a relative solution. With the intention to construct validity; the validation of this research investigation is achieved through different methods of triangulation. The method employed to validate in this research is investigator triangulation which consists in the utilisation of different perspectives of several researchers, evaluators and experts in the field of project finance for concession contracts.

Validation in qualitative research is assessed by subjective perspective from different researchers, evaluators and experts in the field of project finance. Some experts were invited to

express their comments of their understanding, perceptions or point of view of the designed hypothetical concession project generated and presented in chapter seven. Their comments involve some important characteristics concerning the governmental support including political, governmental and bureaucratic support, legal and regulatory support and the stability of the macroeconomic indicators; the concession agreements and contracts containing risks and guarantees; and the financial package containing the utilisation of financial instruments such as debt, bonds and equity, and refinancing. These characteristics are discussed and validated further in this chapter.

A letter, copy in appendix B, was written by the author with the intention of eliciting knowledge and was sent to several researchers, evaluators and experts with extensive experience and exposure in the field of project finance for concession contracts in different countries. These individuals all have wide knowledge of this field and are currently working in development banks, universities and private companies that are at present and have been involved in concession projects. Some of them replied with their comments of their understanding, perception and point of view of the designed hypothetical concession project. Contact was maintained all the time by electronic mail and reinforced by telephone. The following individuals are the experts that replied with their personal comments, (copies in appendix C.)

The financial package was extensively analysed by Mr. Bruno Balvanera who is the Head of the Business Development Support Unit in the European Bank for Reconstruction and Development which is based in London, England. He also has been exposed and has previous personal experience in structuring finance to private and public projects through corporate and project finance in Mexico and Latin America while in several positions in Nacional Financiera and Bancomext which are development banks in Mexico.

An overall and summarised analysis to the overall hypothetical concession projects was made by Mr. Hugh Goldsmith who is a deputy economic advisor in the water sector of the projects directorate of the European Investment Bank in Luxemburg.

The concession agreements and contracts are analysed by Mr. Fernando Diaz who has been acting as contract administrator for many years with extensive experience in Mexico working for Bechtel Corporation in the United States of America.

Since the hypothetical concession project previously presented in chapter seven is a generic model for designing concession projects to Mexico for sewage treatment plants, the characteristics suggested to the concession design are considered fundamental in order to

validate this hypothesis of this research investigation. These characteristics are the governmental support containing political, governmental and bureaucratic support, legal and regulatory support and the stability of the macroeconomic indicators; it also includes the concession agreements and contracts including risk allocation, exclusivity, refinancing, default, inflation, exchange rate and guarantees; and finally it considers the financial package containing the utilisation of financial instruments such as debt, bonds and equity, and the option of refinancing if is needed, it also includes a sensitivity analysis with variations in interest rates and income streams which was made within the financial engineering.

The following arguments are presented with the intention to demonstrate and confirm that was designed a reasonable and sensible hypothetical concession project. These arguments are used with the intention to validate this research investigation. Moreover, these arguments rely in relevant statements assessed by subjective perspective from different researchers, evaluators and experts in the field of project finance of concession contracts of infrastructure projects.

Regarding to the characteristic of governmental support suggested in the hypothetical concession project, this is divided into several elements such as political, governmental and bureaucratic support; legal and regulatory support; and the stability of macroeconomic indicators. These elements are shown in Table 8.1. The names that appear in the right side of the elements indicate that a comment or comments were elicited by that expert with the intention to validate this research investigation and which are discussed in detail.

The elements within governmental and legal support are considered by Mr. Hugh Goldsmith as critical and necessary in the design of concession projects moreover have to be accomplished by the government in order to deliver major infrastructure projects by the private sector throughout the concession contract.

The main argument with reference to the overall government support is that in Mexico different mandates of the government occur every few years and if the mandate in turn adjusts these elements differently to the agreed, the promoter is not willing to undertake those risks. For this reason the promoter is looking for that political, governmental, bureaucratic, legal and regulatory support; and also is looking for other important elements within the economic policy of the country which is the stability of the macroeconomic indicators. Furthermore, Mr. Balvanera expressed great concern within the financial package that is very important to maintain low and stable macroeconomic indicators in the whole period of the concession project as is indicated in Table 8.1.

CHARACTERISTICS OF THE MEXICAN GOVERNMENTAL SUPPORT

Governmental and legal support

Bureaucratic support		Goldsmith
Political support		Goldsmith
Legal support		Goldsmith
Regulatory support		Goldsmith

Macroeconomic indicators

Inflation	Balvanera	
Interest rates	Balvanera	
Exchange rates and currency	Balvanera	

Table 8.1 Governmental Support

With the above, it is demonstrated and confirmed that all the government supports are essential and critical, and that the economic policy of the country of the mandate in turn that were considered in the hypothetical concession project play an important role in the design of concession projects. Therefore, the previous arguments expressed by the experts validate the hypothetical concession project in the characteristic of the governmental supports which have to be respected at least during the whole period of the concession contract.

In relation to the concession agreements and contracts recommended in the hypothetical concession project, this is divided into three different parts such as the concession agreement, agreements and contracts, and the participants as is shown in Table 8.2. The names that appear in the right side of the elements indicate that a comment or comments were elicited by that expert with the intention to validate this research investigation and which are discussed in detail.

Within the concession agreement is found the period of the concession, additional connections, refinancing, default, principal's financial involvement, taxation, expert committee and transfer of the facility. All of these elements are considered essential by the experts in order to carry out with the conception of the hypothetical concession project with the purpose to make a reasonable and sensible design.

CONCESSION AGREEMENTS AND CONTRACTS

Concession agreement

Refinancing	Balvanera		
Default	Balvanera		
Principal's financial involvement	Balvanera		
Taxation	Balvanera		

Agreements and contracts

Supply contract			Diaz
Loan agreement	Balvanera		
Shareholders agreement	Balvanera	Goldsmith	
Offtake contract	Balvanera		Diaz
Operation contract			Diaz
Construction contract	Balvanera		

Table 8.2 Agreements and Contracts

Corresponding to the contracts and agreements of the hypothetical concession project, these include the supply contract, loan agreement, shareholders agreement, offtake contract, operation contract and construction contract. Additionally, Mr. Fernando Diaz, the expert of the concession agreements and contracts suggested including in the supply contract to set up by the promoter a payment bonds or performance bonds in order to protect the promoter to not fail to meet its obligations and to continue supply the principal. And this is with the intention to improve and to make a more reasonable and sensible design. Furthermore, Mr. Bruno Balvanera suggests having an exclusivity agreement for as long as it is needed for lenders and investors to recover their investments, plus a reasonable premium. Although this may be against a pure open market economy and competition, it is absolutely necessary to have this element ensured.

Concerning to the participants, this includes the principal, promoter, supplier, lenders, investors, users, operator and constructor. All of the participants are considered indispensable in the design of a hypothetical concession project. In addition, some of the participants may be added, deleted or subdivided into several different participants if the concession project requires it. Figure 8.1 shows all the participants that play a key role in a concession project.

With reference to the financial package, this is divided in three parts, these are the financial strategy utilising financial instruments and refinancing; the payment mechanism and assignment of revenues stream; and the allocation of risks involving political, construction, operation and maintenance, financial and market risks. These elements are shown in Table 8.3. The names that appear in the right side of the elements indicate that a comment or comments were elicited by that expert with the intention to validate this research investigation and which are discussed in detail.

FINANCIAL PACKAGE

Financial strategy

Debt	Balvanera	Goldsmith
Equity	Balvanera	Goldsmith
Bond mezzanine	Balvanera	
Syndicated mezzanine	Balvanera	
Refinancing	Balvanera	
Inflation	Balvanera	
Interest rates	Balvanera	
Exchange rate	Balvanera	

Payment mechanism & Assignment of revenues stream

Payment mechanism	Balvanera	
Assignment of revenues stream	Balvanera	Goldsmith

Allocation of risks

Political	Balvanera	Goldsmith
Construction	Balvanera	
Operation and maintenance	Balvanera	
Financial	Balvanera	
Market	Balvanera	

Table 8.3 Financial Package

The financial strategy includes the utilisation of financial instruments such as debt, equity and mezzanine finance such as bonds and syndicated financing and also refinancing. Besides, it also considers refinancing for the concession project. With regard to the financial strategy of the hypothetical concession project, Mr. Bruno Balvanera suggests that the overall structure would normally include initial contribution from the promoter of 15 per cent to 20 per cent of the total cost of the project instead of the 25 per cent suggested in the hypothetical concession project. Nevertheless, both are suggestions depending on the specific project conditions and the willingness to undertake the risks of equity from the promoter.

Mr. Balvanera also suggests that syndicated financing to be arranged by developing agencies or several such as BANOBRAS, International Finance Corporation or the Inter-American Development Bank should lead the financial arrangements. Besides, the one agency that will be the arranger of the financing should take from 30 per cent to 40 per cent of the project costs as long term lending and should syndicate the reminder to the market; that could be done by the local banks or the international banks that would like to have a long term exposure to domestic currency generation. Moreover, the terms of the loan should include an overall repayment period of 10 to 13 years with 2 to 3 years of interest only payments, while construction is completed.

Mr. Balvanera also recommended avoiding having a piece of mezzanine finance in the initial structure, not only to keep it as an option to refinance as the market matures, but also after technical completion of the project is achieved. Mr. Balvanera also commented that was necessary to keep in mind that the risks attached to technical completion are quite sever, and it would be better to tackle the mezzanine finance sophisticated market only after completion is approved.

Additionally, the option of refinancing should always be kept open, as the Special Purpose Vehicle or promoter may want to take advantage of improving economic environment or improving project performance. But this flexibility may have a price and lenders may have a pre-payment penalty. Some banks such as the European Bank of Reconstruction and Development tend to apply pre-payment penalties at least for the first two to four years of the project.

Concerning the payment mechanism and assignment of revenues stream, Mr. Balvanera suggested having an exclusivity agreement for as long as it is needed for lenders and investors to recover their investments, plus a reasonable premium. Although this may be against a pure open market economy and competition, it is absolutely necessary to have this element ensured.

Corresponding to the allocation of risks involving political, construction, operation and maintenance, financial and market risks, Mr. Balvanera pointed out that the involvement of the construction company or operator in undertaking their own risks and providing a guarantee is also a key element of the structure as is suggested in the hypothetical concession project. The technical risk of completion and operation should be properly mitigated. It is usual to have strong sponsors behind those risks, and depending on their credit rating and their long term provable success, it would be convenient to ask them for a surety bond.

After the process of validation few concepts were changed and incorporated in the hypothetical concession project such as the addition of a surety bond and changes in percentages of debt and equity. These concepts were incorporated and modified because these issues were advised to be included and modified by the experts of infrastructure projects with private finance in developing countries. The author also investigated the feasibility to incorporate and modify these concepts through a literature review of different existing case studies for infrastructure projects in developing countries.

8.6 SUMMARY

This chapter discussed the verification of the case study presented in chapter six and the validation of the hypothetical concession project presented in this chapter. The verification process demonstrated the representation, consistency and completeness of the case study presented in chapter six. The verification also determined that the case study was constructed and designed correctly.

Validation demonstrated that the hypothetical concession project has been designed in a reasonable and logical manner. The validation presented employed the method of investigator triangulation which consists in eliciting knowledge and different perspectives of several researchers, evaluators and experts in the field of project finance for concession contracts.

CHAPTER NINE

CONCLUSIONS

9.1 INTRODUCTION

This chapter contains the conclusions of this thesis. The chapter also contains a number of recommendations with the intention of enhancing further research work involving public and private participation in infrastructure projects with concession contracts.

This research investigation has been conduced in to infrastructure projects especially in Mexico and is been limited in this context before findings may be applicable and generalised to other developing countries.

9.2 CONCLUSIONS

Objective 1: To review existing practices and problems of financing infrastructure projects with concession contracts in Mexico.

The author found that the Mexican government currently subsidise, finance, design, build and operate most of its infrastructure projects because the Mexican government consider that they should provide these services until recent times; nevertheless, the collection of taxes in Mexico is insufficient to finance and to providing all their infrastructure needs.

Infrastructure projects in Mexico have experienced private finance since 1989 in the transport sector especially in a private toll road concession programme. Some years after its

implementation, in December 1994, this concession programme experienced a series of problems. Some of the main problems were the following:

- Interest rates were high and became unmanageable with the 1994 economic crisis.
- The Mexican financial crisis in December 1994 affected the exchange rate from Mexican peso to US dollar affecting financially all the debts for a number of projects which were holding in US dollars.

Furthermore, most of the problems are emphasised in the lack of investment in infrastructure. Subsequently, the author found evidence of private finance in Mexico for infrastructure projects through concession contracts in water, transport and energy sectors; unfortunately private finance in infrastructure projects in the transport sector partially influenced to the Mexican financial crisis in December 1994 because the government forecast high revenues but the real scenario was a financial deficit. Consequently, private finance for infrastructure projects in Mexico is perceived inadequate to deliver infrastructure projects as a result of the bad experience associated with the financial crises of December 1994. As a result, a good number of these toll projects were retaken by the government through an implementation of a plan, which consisted in refinancing the whole projects through public debt, with the intention of improving their financial situation. Thus, the projects recovered their feasibility following the same strategy of tolling.

The author has found that private finance has also been allocated to the energy sector in Mexico including power generation plants through a scheme called permits and no through the concession contract approach because concessions are not yet legally permitted in the energy sector; nevertheless, these permits work precisely as concessions do and therefore involving private finance.

Thus, previous practices in Mexico have shown that private finance has been utilised to deliver infrastructure projects through concession contracts in all the sectors; nevertheless Mexico has experienced insufficient private finance for their infrastructure projects and also severe financial crisis like the one in December 1994; giving a result that most of the private companies or promoters declared that they were not prepared to undertake exchange rate risks, thus the Mexican government undertook the infrastructure projects in that time. Nonetheless, after few years of the financial crisis, the Mexican economy has been enhancing and is currently prepared to promote and to provide infrastructure projects with private finance through the concession contract approach.

Objective 2: To examine in detail the United Kingdom and international private sector financial methods using the Public–Private Partnerships (PPP) scheme.

The United Kingdom has well structured and mature financial instruments which are nearly utilised in the development of financial packages to deliver infrastructure services. The author found that when an infrastructure project is required and approved by the public sector, they look for the private provision because the private sector provides innovative technology and is more efficient. Nonetheless, in the event that the project is not privately financially viable; the government has to provide some form of supports to reinforce its viability with the purpose of protecting the private financial contribution.

The author found that concession contracts in the UK through the PPP scheme are tailored in order to allocate some financial risks that the promoter is prepared to undertake. Most of these financial risks are design, construction, and operation and maintenance, whereas the public sector undertakes the offtake contract risk and other governmental, political and bureaucratic risks and supports.

Therefore, the author found that the UK financial methods are governmental development proposals that become initiatives tailored to procure infrastructure projects. The author also found that the UK already has one of the most experienced and mature private finance markets and also well developed instruments that are utilised in their financial packages of the concession projects. Therefore, the author considers that developed and developing economies may adapt this practice of proposing initiatives to procure infrastructure projects in order to improve their procurement and provision of their infrastructure projects.

Objective 3: To outline the key role of the government in developing countries with the concession contract approach.

The author found that the Mexican government has encouraged the creation of two major Mexican development banks such as BANOBRAS and NAFINSA with the purpose of increasing financial alternatives and to have more financial markets and instruments available in order to obtain private finance for infrastructure projects.

The Mexican government has legally empowered private finance through concession contracts in most of the sectors of infrastructure projects such as the water sector including wastewater treatment plants; and the transport sector including motorways, tunnels, bridges and railways. Furthermore, the Mexican government has authorized private finance through permits, but no concessions, in the energy sector which includes power generation plants and the oil and gas industry.

Furthermore, the United Kingdom through different governmental programmes such as the Private Finance Initiative (PFI) and the Public and Private Partnerships (PPP) scheme has encouraged the private sector to participate in infrastructure projects. This strongly suggests that governments in developing countries may develop institutional programmes per sector with the purpose of persuading the private sector to deliver infrastructure projects through governmental initiatives such as in the United Kingdom. Even if the participation is purely delivered by the private sector like the PFI scheme or where there is the necessity of some public sector participation like the PPP scheme. Furthermore, governmental support is in fact required by the private sector in order to consider these schemes in developing countries.

Therefore, the Mexican government has been playing a key role in the implementation and promotion of infrastructure projects with private finance. One important role is to keep stabilised its macroeconomic indicators such as inflation and exchange rates. Another significant support is to provide adequate bureaucratic and legal support to the private sector and another essential role is to support and provide development banks to increase the financial markets and instruments. Furthermore, the Mexican government has played a key role awarding, regulating and providing law to permit private finance for infrastructure projects. Finally, the role of the Mexican government may be improved with the implementation of development programmes such as is the Public – Private Partnerships in the United Kingdom which has to the purpose of enhancing their infrastructure development.

Objective 4: To develop a method through the Public – Private Partnerships scheme applicable to Mexico.

The innovative Mexican PPP system developed by the author is an innovative form of concession agreement for Mexico designed to satisfy the specific project purpose and circumstances and also taking into consideration the country's specific economic and legal conditions. Thus, for the first time the author developed an innovative form of concession agreement which is shown in

table 9.1. The novel concession agreement contains key features including concession period, consumers, project supervision, refinancing, taxation, principal's financial assistance, default, additional connections, early recovery of investments, dispute resolution and transfer of the facility.

Furthermore, the author describes the elements presented in the innovative format of concession agreement to Mexico which was designed considering its unique project's characteristics. These characteristics are involved into its unique Mexican legislation, national and international participants in the project, potential contributors for the financial structure and project's viability, the options of the national financial markets as well as some other options of the international markets, the existing national and international financial instruments and principally the specific project's purpose, nature and duration. Moreover all of these characteristics for the specific hypothetical concession project in Mexico are different from any other project' characteristics, circumstances and conditions in the United Kingdom.

The contribution to knowledge of this research investigation relies mainly in the innovative form of concession agreement and its validation involving different experts in project finance in developing countries. The innovative form of concession agreement for Mexico is designed to satisfy the specific project purpose and circumstances and also taking into consideration the country's specific economic and legal conditions. Practices from the UK PPP were considered relating terms and concepts of the concession agreement and contracts.

CONCESSION AGREEMENT

1. **Concession period:** *15 years, with optional extension of 5 years.*
2. **Exclusivity:**

Principal: Off take contract throughout the concession period but not for the extension period.

Other users: Separate off take contract of water treated when they consume above 50 litres per second.

3. **Project supervision:** *Will be supervised by the principal, the promoter and an external committee.*
4. **Refinancing:** *Compulsory refinancing after construction and at year 10, with optional refinancing at year 15.*
5. **Taxation:** *40% from year 13 of the concession period and thereafter.*
6. **Principal's financial assistance:** *In the event that the principal consumes below 800 litres per second, they will provide the complementary funds. These contributions including interests will be reimbursed to the principal at refinancing.*
7. **Default by the promoter:** *The promoter has to provide a surety bond to the principal.*
8. **Additional connections:** *In request by the principal and agreement with the promoter, the latter may design, finance, build and operate additional connections to new users.*
9. **Early recovery of investments:** *If the performance of the concession exceeds the estimated income stream, the economic surplus will be shared between the principal and the promoter.*
10. **Dispute resolution:** *Controversies of technical and economic nature should be resolved by an external expert committee.*
11. **Transfer of the facility:** *All transfer documentation has to be in Spanish. Mexican national personnel have to be trained by the promoter before transfer.*

Table 9.1 The Innovative Form of Concession Agreement to Mexico

Following, table 9.2 presents a comparison of different concepts of the new system and the existing practices.

CONCEPT	NEW SYSTEM	EXISTING PRACTICES
Concession period	It includes a 5 years extension.	It did not include any extension.
Exclusivity	Incorporates new users from the private sector with a minimum consume of 50 litres per second.	It was only the government.
Project supervision	Includes an external expert committee.	It was by the principal and the promoter.
Refinancing	Is obligated at year 10 to reimburse the principal's financial assistance. Is also optional at year 15.	It was always open all the time under the promoter's attractiveness.
Taxation	Is included for the last three years of the concession period and for the extension period.	Was undefined throughout the concession period.
Principal's financial assistance	To reimburse the principal's financial assistance for the service paid and not used to comply with the off take contract.	This concept did not exist.
Default	To provide to the principal a surety bond by the promoter.	This concept was not included.
Additional connections	To connect new major users.	This concept did not exist.
Early recovery of investments	In the event that the promoter obtains more than expected, they will share with the principal the additional profits.	This concept did not exist. All the profits were allocated to the promoter.
Dispute resolution	In the event that they do not reach any resolution nationally, they have to go to international courts.	There was no international mechanism, only with Mexican authorities.
Transfer of the facility	Is included in the concession agreement.	This concept was not expressed in any agreement or contract.

Table 9.2 Comparison of Concepts of the New System and the Existing Practices

For the innovative concession agreement for the Mexican form of PPP; the author proposed a concession period of 15 years including an optional extension period for 5 years under the condition that the promoter has to refinance at year 10. Previous experiences in Mexico have not considered an extension period for waste water treatment plants. The author proposed the extension in the event that the principal has to provide financial assistance in order to complement the estimated income stream caused by low consume of the treated water of the off take contract or by significant fluctuations of exchange rates of foreign currency and inflation rate during the concession period. Furthermore, the author included an extension of 5 years to the promoter with the purpose of incentive the promoter and recovering the principal's financial viability of the concession project.

The author proposed more than one off take contracts for the novel contractual agreement. One to the Principal which has always been done and other off take contracts to independent consumers requiring more than 50 litres per second to treat waste water. The latter separate off take contracts have not been considered in Mexico because the principal carries out all the public works for the public and for independent companies.

Project supervision includes an external expert committee with the purpose of resolving technical and economic difficulties that the concession project may experience throughout the concession period and the extension period. This term has not been included before for water treatment plants because they used to resolve arbitrarily favouring the promoter and without considering the principal. Additionally, the external expert committee not only supervises the project but also clarifies controversies to resolve disputes.

Refinancing is included by the author in this innovative contractual arrangement for the Mexican form of PPP. This is compulsory at year 10 in order to keep the project's viability in the event that the principal has to provide financial assistance in order to complement the estimated income stream caused by low consume of the treated water of the off take contract. Refinancing has to be agreed by the principal and the promoter in the event that the latter provides sufficient information of reducing the total remaining amount of the financial commitments. Moreover, the author proposed to refinance at year 10 through a short term loan provided by a development bank to the principal because is less expensive. Furthermore, the enhancement of the financial package will increase with the five years extension period.

The author proposed for the innovative form of PPP delivered to Mexico to only include taxation at 40 per cent exclusively in the last three years of the concession period. In the event that the

principal and promoter agree the extension, a 40 per cent tax will remain for the extension period. Taxation is unclear determined throughout the concession period whereas the author proposed to this project a specified percentage and in a particular time.

To reimburse the principal's financial assistance was not included in concession agreements. This is proposed by the author in order to pay back this financial assistance to the principal and also stimulate the promoter to return that capital and to make more returns for a longer period.

Default normally is been carried out by presenting the promoter's corporate accounts; nonetheless some promoters have fallen in default, for that reason the author included a surety bond in order to avoid this difficulty.

Additional connections are not stipulated in the concession agreements and normally the principal carry out this works. Thus, the author included this term in order to increase the promoter's financial viability.

Early recovery of investments is exclusively undertaken by the promoter. The author proposed to share this returns for the extension period where there is no off take contract and this is only after the promoter have recovered their expected returns.

Dispute resolutions involve only the sponsors and investor, excluding the principal. Therefore, the author included an external expert committee to clarify controversies and the author also included to go to international courts to resolve any controversy in order to not rely in the sponsors and investors to make the decision favouring the promoter.

The differences from the PPP approaches compared to the new system developed by the author in this thesis relies on that the PPP are governmental schemes especially tailored for the UK to provide infrastructure services considering its own specific legal and economic conditions with the utilisation of private finance whereas the new system is a combination of interrelated sections which contains a number of elements forming a novel approach for providing more efficiently infrastructure projects especially to Mexico considering particular circumstances such as legal and economic conditions with the employments of public and private finance. Some of these elements are utilised in PPP projects in the UK, nevertheless, the author adjusted and selected elements included in the development that are essentially related to satisfy the actual specific project and country conditions contributing with an innovative concession agreement form to Mexico.

The new Mexican concession agreement includes different elements that were designed by the author considering the particular legal and economic conditions especially to deliver the project to Mexico. The novel concession agreement is a combination of public and private participation involving principally the specific project's purpose, nature and duration; the unique Mexican economy and legislation; the involvement of national and international participants; potential contributors for the financial package; the few options in the financial markets and the existing financial instruments. The innovative Mexican concession agreement provides a new format that for the first time combines theory with practice in order to deliver infrastructure projects to Mexico.

The novel system permits the private sector to analyse and to identify their financial participation within the project which they consider reasonable for the sponsors and investors. The promoter complements the financial structure which the principal is not prepared to undertake. Moreover, the principal utilises public resources to deliver an infrastructure project that is not prepare to finance alone and providing acceptable quality.

In addition, the new system provides incentives for a good allocation of risks; it also creates a mechanism to combine public and private resources to ensure the more efficient use of the capital and to adequate returns on investment to the promoter.

Objective 5: To verify and validate the new developed method applicable to Mexico.

Verification and validation is a process of the judgment by different experts in project finance of the quality of the hypothetical Mexican concession project. Several strategies for verification and validation were included such as construct validity, external validity, internal validity and reliability. The most appropriate methodology was "construct validity" because it considered the specific components that the author was interested in including within the governmental characteristics and supports, the concession agreements and contracts and the financial package including refinancing.

The verification process was carried out by executives of Biwater International Ltd. the promoter that provided information to develop the case study. The source of information provided by these executives strengthened the verification process because they have been in the project in Mexico since the conception phase. The system was validated by a number of experts with extensive experience and exposure working in the field of project finance of infrastructure projects in the context of developing countries. These experts were Mr. Balvanera, Mr. Diaz and Mr. Goldsmith

that assessed the hypothetical Mexican concession project expressing their own perceptions, point of view and comments.

The answers were limited to their understanding, perception, point of view, exposure and also to their willingness to answer because they did it without receiving any compensation for their time consumed to analyse the hypothetical concession project. Even though, some of them replied with extensive interest and valuable information that validated the hypothetical concession project.

9.3 RECOMMENDATIONS FOR FURTHER WORK

The recommendations for further research work are shown below with the intention of enhancing further research involving private sector participation with concession contracts for developing economies.

In order to reinforce the generalisation of this research investigation, it is necessary to do more case studies in the area of water treatment plants in Mexico or also in developing countries with the intention of doing more replications through different analysis regarding the arrangements within the concession agreement.

Further research would be very valuable in the are of research to attempt the execution of this waste water treatment plant as is proposed in this research investigation with the purpose of observing and analysing its performance in all aspects of the concession agreements and contracts including concession period, refinancing, exchange rates, guarantees and taxation; moreover, it would be also very important to analyse some aspects of the financial package performance such as the payment mechanism, refinancing, taxation and the off-take contract.

Additional research may be done in the financial package considering different income streams to analyse the feasibility of different projects in Mexico and developing countries inclusive. In the same manner, research may be carried out in evaluating different interest rates for several financial instruments for the same projects with the intention to find better and more economic financial instruments to deliver the project at a less expensive cost.

Finally, complementary investigation may be beneficial in the exploration of more International Investment Authorities or Regional Investments Houses with the purpose of reviewing more

financial markets and also the possibility of finding and analysing their current and successful financial instruments that may be implemented as well in the provision of infrastructure projects.

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APPENDIXES

APPENDIX A

BOOT Sewage Treatment Project – Puerto Vallarta, Jalisco, Mexico

History.

In 1991/1992 Biwater International was part of a government trade mission to Mexico looking for business opportunities. During this mission contact was made with CNA and other government departments and they put Biwater in touch with the authorities in Puerto Vallarta. The water authority in Puerto Vallarta, SEAPAL (Sistema de agua potable y alcantarillado de Puerto Vallarta) and the state government of Jalisco were planning to improve the sewage treatment facilities in the city as the rapid growth in tourism had outstripped existing plants (one primary treatment plant in the city centre with its outfall to the sea at the side of the Sheraton Hotel, and one 170 l/s activated sludge plant near the airport). The authorities recognised the need to give good sewage treatment and prevent pollution of Banderas Bay, in the Pacific Ocean, if Puerto Vallarta was to grow into a major international holiday resort.

Biwater along with other companies was asked by the state authorities to submit a proposal for sewage treatment improvements and this was done. The proposal submitted was the construction of a major new sewage treatment plant (750 l/s) on the outskirts of the city. The other proposals were also considered by the authorities. However, when the likely costs were known the authorities realised that they could not finance the project so the companies who had submitted the proposals were then asked who could provide finance and how this could be done. Biwater was the only company that could offer some form of financing. The proposal put forward was a Build, Own, Operate and Transfer, BOOT, scheme which involved Biwater taking the responsibility (and risk) for the financing, design, construction and operation of the plant in return for a monthly tariff. The contract is not a concession but is a "Prestación de Servicios". Thus the Puerto Vallarta plant was built and it was the world's first BOOT sewage treatment plant.

The contract was signed in 1992 and after a 2 year construction phase the plant began operation 13 February 1995, significantly immediately after the peso devaluation in January 1995.

Since 1995 Puerto Vallarta has grown and has moved from the fourth placed resort in Mexico to the second (Cancun is first) and part of this growth can be attributed to its none polluted ocean. The plant in Puerto Vallarta is acknowledged as the best plant in Mexico and probably Latin America and the effluent it produces is of a very high quality and far exceeds the Mexican and International quality standards. Our client; SEAPAL, has just been awarded a certificate of quality by CNA for human contact with the effluent (in other words you can swim in it) and this is the only one ever granted in Mexico.

Initially the company which held the contract was Biwater International, a major constructor and operator of water and sewage treatment plants. About four years ago Biwater formed a joint venture with the Dutch utilities group, Nuon. This joint venture, called Cascal, was for the concession side of the business only, Biwater continuing as a separate construction company. The existing contract in Puerto Vallarta passed to the new company, Cascal.

Contract.

As previously stated the type of contract is BOOT (it is important to note that in this contract we are the actual owners of the plant until its transfer). The contract we have with SEAPAL is "Prestacion de Servicios" i.e. We simply provide the service of treating sewage. The contract period is 15 years and the cost of the plant was USD 33.2 million.

A special purpose Mexican company, Compañía Tratadora de Aguas Negras de Puerto Vallarta SA de CV (CTAPV), was formed and this company has the contract with SEAPAL and is the owner of the plant. It also is the company with the loans. The plant was financed using a debt to equity ratio of 3:1. Loans were obtained from the International Finance Corporation, IFC, USD 5 million senior loan and USD 2.2 million subordinate loan and from Banobras approx. USD 8 million but in pesos. The original intention was to sell equity in CTAPV and we were on the point of signing with one of the major Mexican banks when they pulled out at the last minute, citing exchange rate risk as a great concern. This was in December 1994 just before the peso crisis/devaluation (obviously had done their homework or had some inside information). Hence, Biwater was forced into becoming a lender to the project and an inter- company loan of USD 10 million was obtained. Hence, Biwater became the biggest lender to the project. The loans were only finalised at the very end of the construction phase so the whole plant was actually built with money from Biwater and the loans when disbursed was used to pay back this money.

Obviously, the banks required some form of guarantee and this was in the form of a continuous, revolving line of credit guaranteed with federal tax funds payable to the State of Jalisco. The whole financial structure of the contract is managed through a fideicomiso (trust) set up between CTAPV and SEAPAL. This fideicomiso is operated by Banobras (separate from the lending arm of the bank). The monthly tariff payment made by SEAPAL is paid directly to the fideicomiso. This must be received by the 25th. of each month (tariff is paid one month in arrears) If the payment is not made by the due date, the fideicomiso automatically opens the continuous line of the credit on the 26th. day and pays the invoiced amount (the tariff payment) into the CTAPV account. There is a financial penalty on SEAPAL for the use of this line of credit. It has been used twice in the first two years of the contract when inflation was extremely high and SEAPAL hadn't got their finances sorted out.

The fideicomiso has a strict order of priorities for payments from the CTAPV account managed by it (all the income of CTAPV is paid into the fideicomiso). This order is as follows:

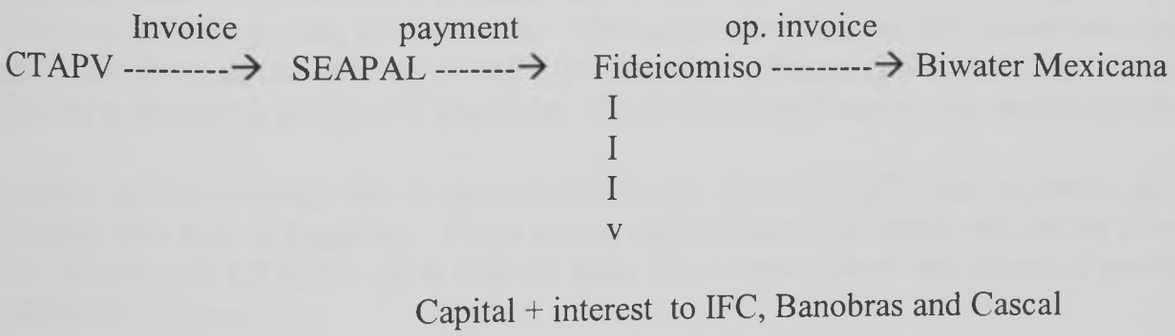
1. Operational costs.
2. Taxes
3. Fideicomiso fees
4. To 8. Payment of capital and interest on the various loans.
5. Create a 6 month buffer account equal to 6 months commitments. (This has never been achieved, owing to debt repayment, hence the following priorities have never been reached)

It gets up to about number 16 before any profit or dividend can be paid. (note that CTAPV does not control any part of its funds. Although it actually makes the tax payments etc. the funds have to be requested from the fideicomiso and supported by the corresponding documentation.

As the loans are paid off the amount of money available in the fideicomiso increases and CTAPV should start to generate profit in year 12 of the contract. This type of investment is long term.

The plant is operated by another Cascal company, Biwater Mexicana SA de CV. (the old name has never been changed as the legal costs in Mexico to change the company name are extremely high). The operation is done under a strict contract between CTAPV and B. Mexicana. The invoice for operation from Mexicana is sent to the fideicomiso (one month in arrears) and it is paid (highest priority) on the 26th. of the month. Mexicana pays for all operation and maintenance of the plant.

The fideicomiso is set up mainly to protect the lenders. It has a technical committee which meets once per year (unless there is a need for some special meeting eg. change from Biwater to Cascal). The committee has 5 members, one from each lender, IFC, Banobras and Cascal (previously Biwater International). These have voice and vote and one each from SEAPAL and CTAPV with voice but no vote.



The contract is said to be a "take or pay" type. SEAPAL have to pay at present \$3.14 /m^3 for the base flow and there is a credit given of \$0.42 /m^3 for the difference between the base flow and the actual flow treated. This base flow is set out in the contract and there are three phases. (These prices are in pesos).
Phase one – year 1 and 2 base flow 600 l/s.
Phase two – year 3 to year 9 base flow 750 l/s.
Phase three – year 10 to year 15 base flow 1,000 l/s.

Hence the present monthly invoice to SEAPAL is 750 l/s @ \$3.14 /m^3 MINUS the credit for the difference between the base flow and the actual flow treated @\$0.42 /m^3.

The credit is much lower than the base as it is only to reflect the slightly reduce costs in electricity and chemicals for treating less flow. The fixed costs of manpower, financing etc. are not flow related.

The unit prices are based on April 1991 prices and are indexed using the INPC. If the inflation in any month is >1.5% the unit price is indexed immediately. If not the unit price is indexed every 6 months.

The operational fee charged by Biwater Mexicana is a fixed monthly fee MINUS the same credit given by CTAPV to SEAPAL for actual flows lower than the base flow. This monthly fee is indexed in the same way as the CTAPV/SEAPAL unit price.

The contract between CTAPV and SEAPAL covers virtually all eventualities, third party acts, bankruptcy, force majeure etc. and is extremely comprehensive. There are penalties for CTAPV if the effluent quality is outside the contractual limit (no failures in 7.5 years) and limits of volume and influent quality on SEAPAL. There are something like 34 contracts, loans, fideicomiso, operational contract etc. associated with this project. As the investment is theoretically by a Mexican company CTAPV there was no problem of foreign investment issues, no special enabling legislation was required. There are no special grants, tax benefits etc given. CTAPV is treated as any other Mexican company.

From the risk point of view, CTAPV takes all the risk, financial, design, operation etc. there is no guaranteed return on investment. Biwater Mexicana in turn takes the risk on operation and maintenance. SEAPAL only have to send the sewage and pay for the service. At the end of the 15 years the whole plant is transferred to SEAPAL with no extra payment, free of all taxes. However, a common mistake made by people, including SEAPAL and their political masters, is that they are not buying the plant. They are simply paying for a service. Obviously the payment for the service should cover all the costs incurred by CTAPV (construction, financing etc.) but if at the end of the day it doesn't it is CTAPV that loses. SEAPAL do not have to pay anything extra.

As part of the contract and a requirement of the loans CTAPV has to insure against damage and loss of business. There are no requirements for bonds etc. as the plant is the property of CTAPV. If it fails to meet the contract there are financial penalties inside the contract.

APPENDIX B

Dear Mr .....,

Project funding in Mexico

My name is José Valencia and I am involved in a research investigation relating to private sector participation in the provision of infrastructure services in Mexico. I am studying for the degree of PhD at the University of Leeds in the School of Civil Engineering. I am working under the supervision of Professor Nigel J. Smith, who may be contacted for confirmation at the e–mail address below.

I am aware that you have been involved in concession projects. Hence, I am writing to ask if you would provide me your comments of your understanding, perception or point of view of the hypothetical case study that I have generated and which I attach.

Within this process of validation, I would like you to consider from your own perspective and expertise three aspects which are the more important for this hypothetical case study such as a) governmental support; b) concession agreement containing risks and guarantees; and c) financial package containing the utilisation of financial instruments such as debt, bonds and equity, and refinancing.

I look forward to hearing from you. If you have any questions or require any additional information please do not hesitate to contact Professor Smith or myself.

Yours sincerely,

José Valencia
E-mail: cenjlv@leeds.ac.uk

N. J. Smith
E-mail: N.J.Smith@leeds.ac.uk

APPENDIX C

European Bank
for Reconstruction and Development

Jose Valencia
School of Civil Engineering
The University of Leeds
LS2 9JT,
Leeds

5 December 2003

Dear Jose,

I'm writing to you in connection with the "hypothetical concession project" of a water treatment plant in Puerto Vallarta, Mexico, to be financed through a PPP model including long term lenders.

The European Bank for Reconstruction and Development has long standing experience in financing such projects in several of the central European countries. I am currently the Head of Business Development and Knowledge Sharing of the EBRD. Although I have been exposed to many similar cases, I am not as expert in the topic as other colleagues of mine. The opinion and comments presented bellow are done on a personal basis and can not be taken as an Institutional view of the proposed project. Furthermore, I have previous personal experience in structuring private and public projects in Mexico and Latin America while in several positions in Nacional Financiera and Bancomext.

As an overall introduction comment, I would like to say that no definite and unique answer has been found on the way of how to finance under a Private Public Partnership (PPP), projects that are deemed to be supported mainly by governments as they are part of the development responsibilities they hold, but also on the other hand, consumers are prepared to partially pay for them.

This is particularly accentuated in fragile or low income economies where the combination of restricted household disposable income with the swings of political and economical risks, make the long term exposure and financing of the projects pretty difficult, creating that few investors/lenders would be prepared to undertake the project.

The only way to have these projects done is by sharing the risks and the responsibilities between the public and private sector under some sort of PPP. The project that you propose is an example of a possible balance between Public and Private sector. The proposed share of risks is very much in accordance with the most recent practice in that matter. Overall your financial plan and allocation of risks is quite sound, but of course the specific detail of it will be very much dependant on the specifics of the economy of the country, the region and the affordability of the population.

In our experience in Eastern Europe, it is not easy to find mezzanine finance providers, as the markets are quite illiquid or immature with respect this instrument in this area of the world. This might not be the case of Mexico, but still the attractiveness of a specific project underwritten by a municipality will be very much dependant on both, the overall liquidity with of the market with respect that instrument and the specific rating of the municipality. It would be important for your document if you could include some remarks on how sound and sustainable are the finances of the municipality, who in the end will be the first obligor under the purchase agreement. Alternatively you could attach the rating summary issued by any of the rating agencies, either international or domestic.

I can confidently recommend to avoid having a piece of mezzanine finance in the initial structure, but only to keep it as an option to refinance as the market matures, but also after technical completion of the project is achieved. We need to keep in mind that the risks attached to technical completion are quite severe, and it would be better to tackle the mezzanine finance sophisticated market, only after completion is approved.

The one element that will need to be particularly addressed is the long term indexing of the tariff, either to a foreign currency plus inflation or to local currency plus inflation. The most important is to try to get a natural hedge in the way this is addressed: If the bulk of the financing is in US dollars, then the purchase obligation should indexed the US inflation, if the bulk of the financing is raised in Mexican pesos, than national inflation would be ideal.

Of course, the most natural and healthy way, would be to have the whole structure based in Mexican Pesos, in such way the municipality or the obligor under the purchase agreement would be able to have a natural hedge towards their income (municipal taxes and water charges). But this may not be financially convenient at all times as the rates in Mexican Pesos may be higher than US dollars, from time to time. At this very moment and given the relative strong economic performance of Mexico, domestic rates are at comparable levels than the US market, for the first time in decades. It would then be pretty sensible to structure the whole financing in domestic currency.

It is very important, as you correctly point out in your document, to have an exclusivity agreement for as long as it is needed for lenders and investors to recover their investment, plus a reasonable premium. Although this may be against a pure open market economy and competition, it is absolutely necessary to have this element ensured.

The option of refinancing should always be kept open, as the SPV may want to take advantage of improving economic environment or an improving project performance. But, again, this flexibility may have a price and lenders may have a pre-payment penalty. The EBRD tends to apply pre-payment penalties, at least for the first 2-4 years of the project.

The involvement of the construction company and of the operator in undertaking their own risks and providing a guarantee is also a key element of the structure as you have correctly pointed out in your document. The technical risks of completion and operation should be properly mitigated. It is usual to have strong sponsors behind those risks, and depending on their credit rating and their long term provable success, it would be convenient to ask them a surety bond or "fianza de cumplimiento".

With regards the financing strategy, the overall structure would normally include the following elements:

- Initial equity contribution from the sponsors (Construction Company and operator) in the region of 15 to 20% of the total cost of the project.
- Syndication of the financing to be arranged by a developing agency (or several). In my view either Banobras (the national developing agency of municipal credit), the International Finance Corporation (IFC, the private sector arm of the World Bank), or the Interamerican Development Bank, should lead the financing arrangements.
- The one agency that will be the arranger of the financing should take 30 to 45% of the project cost as long term lending and should syndicate the reminder to the market. That could be done to local banks or to international banks that would like to have a long term exposure to domestic currency generation.
- The terms of the loan should include an overall repayment period of 10 to 13 years with 2 to 3 years of interest only payments, while construction is completed
- It would be appropriate to negotiate a combination of the following for the margins: while under construction, and presumably with a risk attached to the completion guarantee, a margin reflecting the credit rating of the entity undertaking that risk. After that a margin with a step down option attached to a combination of performance of the operator, credit rating of the municipality and credit rating of the country.

Jose, the project that you have proposed sounds pretty good from the financing and from the risk sharing point of view. I hope that the few comments above can help to fine tune the structure.

Yours sincerely,

Bruno Balvanera
Head of Business Development
European Bank for
Reconstruction and Development

Dear Mr. Valencia,

It is useful to look at financing and contractual structures and conduct simulations of the kind you include. The difficulty I have is that risk analysis is about specific cases, never about hypothetical ones. Unfortunately, many financial analysts & Banks just look at the simulation results of spreadsheet cash flow models and believe them. The big uncertainty is in the uncertainties assigned to each possible risk event ... and of course all the events which you forgot to think about. It also depends on actors and their motivation ... in short, the real world.

Risks are project specific, promoter specific, sector specific and country specific. That's why experts are paid for their qualitative judgment in assessing them. Moreover risks are subjective - one person's loss is another's gain. There are several failed PPP's where the contractor did very nicely thank you.

In theory, every project we are presented with is wonderful - just ask the promoter. In reality, the relative importance of currency devaluation, inflation, macro instability, construction, counterparty, demand, and operational performance risks vary in each case.

It is possible to try to develop more generic "models" for specific cases, such as all toll motorways in Mexico ... but such a model probably wouldn't translate well to Mozambique. So your case remains hypothetical - case studies are most useful when they are real.

As to your specific questions:

a) Governmental support - this is always critical for major infra projects ... but Governments change every few years, in fact about the time it takes to build a PPP ... so its the risk that support changes that matters.

b) Concession agreement containing risks and guarantees; - all concessions contain risks, that's the nature of the real world -guarantees are regulated by Banks and other financiers because they are not equity risk takers - exactly what is on offer and needed depends on the specific case.

c) Financial package containing the utilisation of financial instruments such as debt, bonds and equity, and refinancing. - depends what the market and IFI's will take. One year a PPP can be fully financed by Bonds with low equity, the next year IFI involvement is required with senior debt, more equity etc. This is not a static situation.

Which is more important? It depends. With a sovereign guarantee (such as Enron had for its Dabhol power plant in India), in theory you don't need to worry about all those risks, but in practice.

So, I'd strongly suggest you move beyond the hypothetical. Best of luck with your research.

Hugh Goldsmith

PS You may be interested in:

http://europa.eu.int/comm/regional_policy/sources/docgener/guides/ppp_en.pdf

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Dear Mr. Valencia,

Finally I have read your hypothetical concession project. I could not read it all because it is slightly complicated, extensive and general. My area of knowledge and experience is procurement and contractual. Nevertheless my comments are the following:

4.1.8. Insurance

I do not understand "There are some points that may be insured…" What points are you talking about? I would state that insurance is a key factor. If the company is not self - insured there are many things such as large or sophisticated equipment that require to be insured.

4.2 Supply contract

There will be multiple suppliers not only one. These contracts are important because the suppliers or subcontractors will not continue providing their services otherwise.

What about setting a Payment Bonds and Performance Bonds? I do not know if this is done in Mexico. I would think so, so that the Principal would be protected should a subcontractor fail to meet its obligations.

4.5 Off take contract

You mentioned a periodical price here that is explained further in the payment mechanism section but when I went to that section I could not find the tie - in.

4.6 Operation contract

I was confused with this section because I could not understand clearly what "it" is or who he is.

I hope you can understand my comments. And remember that these comments are for large infrastructure projects and each one is developed in different form in every country.

Suerte! Good luck in you research!

Fernando Diaz
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Procurement Compliance Specialist
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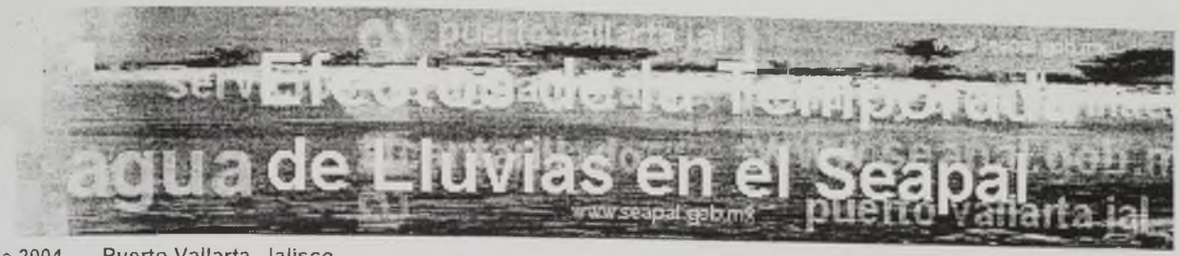
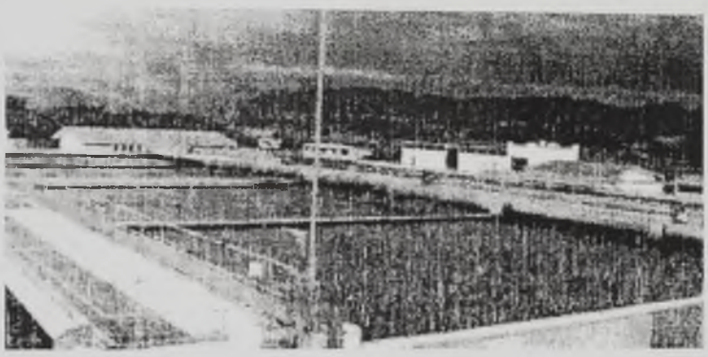
APPENDIX D



Viernes, 28 de Mayo de 2004 Puerto Vallarta, Jalisco

Atención a Usuarios
Avisos a la Comunidad
Infraestructura
Cultura del Agua
Noticias
Quienes Somos
Indicadores de Gestión

Efectos de las lluvias sobre el tratamiento de Aguas Residuales.



Aspectos negativos:

- Tratamiento innecesario de las aguas pluviales que ingresan a la Planta mezcladas con las aguas netamente residuales, con el consiguiente incremento en los pagos por el tratamiento que el Organismo debe hacer a la empresa operadora CTAPV.

Las siguientes cifras promedio del año 1999 ilustran lo anterior:

Concepto	Mar	Abr	May	Jun	Jul	Ago	Sept
Produc. teórica de Agua Residual	540	543	543	543	533	534	550
Agua Residual Real tratada	607	558	524	646	975	865	1286
Infiltración estimada de Agua Pluvial y Freática.	67	15	19	103	442	331	736

** Estas cifras son expresadas en litros por segundo*

Aspectos Positivos:

- En este caso no se observa ningún aspecto positivo en el efecto de las lluvias sobre el tratamiento de aguas.

Regresar

[Atención a Usuarios] [Avisos a la comunidad] [Infraestructura]
[Cultura del Agua] [Noticias] [Quienes Somos] [Indicadores]