

**RISKS ASSOCIATED WITH INFRASTRUCTURE PROJECT
FINANCE IN DEVELOPING COUNTRIES - THE CASE OF
ZAMBIA.**

By

Bruno .N. Mweemba

Submitted in fulfilment of the requirements for the Master of Philosophy in
Development Finance (MPhil) to be awarded at the Nelson Mandela
Metropolitan University (NMMU), Eastern Cape, South Africa.

Supervisor: Prof Stefano Gatti (Bocconi, Italy)

Co-Supervisor: Prof Hendrik Lloyd (NMMU, South Africa)

December 2014

© 2014 Bruno N Mweemba

ABSTRACT

Since the enactment of the Public Private Partnership (PPP) Act of 2009, there has not been a single successful PPP transaction entered into between the Government of Zambia and any private sector entity under the PPP Act of 2009 (Zambia Development Agency, 2014: 7). According to the Zambia Development Agency (2014:7), 75% of the PPPs that were entered into by the government of Zambia prior to the promulgation of the PPP Act of 2009 were canceled. These include: the Kasumbalesa Border Post, Mpulungu Harbour and Railways Systems of Zambia with an exception of the 65 year concession of the Luburma Market (popularly known as Kamwala Market). These cancellations of PPP concessions coupled with revelations in the Zambian Parliament that concession documentation for the Luburma market which is the only surviving PPP had since gone missing, this led to the research problem statement with an assertion that risks associated with infrastructure project finance are endemic in Zambia. In seeking to explore the validity of this assertion, three research objectives guided the study, namely: assessing Zambia's general infrastructure project finance and PPP framework in comparison to theoretical normative criteria and selected country experiences; identifying and rating risks through a questionnaire; and proposing an ideal project finance risk management model which can be used as a reference by sponsors in Zambia as they design and structure infrastructure project finance deals.

On a scale of 1-5 which was guided by the overall risk score outlined in the study, the average mean score ranking for all the 40 risks under investigation was found to be 3.25. This indicates that the sentiments among respondents is that risks associated with infrastructure project finance in Zambia are average and not endemic as was affirmed in the problem statement. Despite this 'comforting' statistical result, the little progress in terms of earmarked infrastructure PPP deals coupled with deal cancellations as outlined above may be an indication that even the average risks appear to impede on the development of project finance and PPPs in Zambia. There is therefore an urgent need for Government and other relevant stakeholders to begin paying attention to some of the risks discussed in this study especially those with a mean score ranking in excess of 3.50 (high risk). The study in chapter 9 provides recommendations which are grouped under four key headings: addressing the environment for PPPs; providing capacity to procuring entities; paying attention to critical success factors for project development; as well as exploring a variety of possible credit enhancement mechanisms such as guarantees as a way of wooing project investors and improving the bankability of planned infrastructure deals.

The Government of Zambia is further advised to avoid using 'political feasibility' as the core investment criteria in the infrastructure agenda for the country. The study encourages that conventional benchmarks which are a mix of technical soundness, economic viability, environmental and social sustainability, financial/commercial viability as well as market readiness remain the core guiding principle in the project identification process. This will be the only way to avoid developing "white elephants" that may perpetually be a burden to the treasury and tax payers.

DECLARATION

In accordance with the examination rule G4.6.3, I, *Bruno N Mweemba*, Student # *s213500337*, hereby declare that the treatise for the Mphil in Development Finance to be awarded is my own work and that it has not previously been submitted for assessment or completion for any postgraduate qualification to another University or for another qualification.

Name : Bruno N Mweemba

Signature :

Student ID : S213500337

Date : 16th March 2015

To my boys, Bruno Jnr and Silukena Mweemba.

ACKNOWLEDGEMENTS

Thanks go to the many people that I interacted with on the journey to carry out this research - they are too numerous to both itemise and mention individually. A special thanks needs also to go to the following people:

Supervisors: Professor Stefano Gatti (Bocconi University-Milan, Italy), firstly for accepting to be my supervisor; I am humbled and grateful. His immense experience in the field of project finance coupled with pointers to the relevant literature and the general feedback was exceptional. Prof Hendrik Lloyd (NMMU, Port Elizabeth, South Africa), as Head of the Mphil Programme at NMMU, I felt humbled and privileged to be under his guidance. His meticulous review of this treatise report did a great deal in refining my research writing skills.

My Lecturer: Dr Sharon MacPherson, the 'goddess of project finance', for introducing me to the world of project finance at a time when corporate finance was all that flooded my brains. Her personality, professional exposure and depth of knowledge in the subject matter was inspiring.

Family: My wife Precious for being a sweet and understanding companion, our kids, the two Tonga bulls-Bruno Jnr and Silukena for being useful distractors, daddy loves you boys.

Colleagues at work: My Executive Director and staff at Indaba Agricultural Policy Research Institute (IAPRI) for understanding and tolerating me when I was seeking advice.

Respondents: A million thanks to those too for responding to my survey.

Above all, glory to the almighty God for the life and energy given to slice and dice the mounds of literature to make this study a reality.

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ADSCR	Annual Debt Service Cover Ratio
AFDB	African Development Bank
BEE	Black Economic Empowerment
CEC	Copperbelt Energy Corporation
DBSA	Development Bank of Southern Africa
EAZ	Economics Association of Zambia
ECA	Export Credit Agencies
EPC	Engineering, Procurement, and Construction
IFC	International Finance Corporation
IRR	Internal Rate of Return
LLCR	Loan Life Cover Ratio
OECD	Organisation for Economic Cooperation and Development
PFI	Public Finance Initiatives
PICI	Presidential Infrastructure Championship Initiative
PIDA	Programme for Infrastructure Development in Africa
PLCR	Project Life Cover Ratio
PPP	Public Private Partnerships
PPPIAF	Public-Private Infrastructure Advisory Facility
PSC	Public Sector Comparator
SA	South Africa
SPV	Special Purpose Vehicle

VFM	Value for Money
ZAMTEL	Zambia Telecommunications Company
ZDA	Zambia Development Agency
ZESCO	Zambia Electricity Supply Corporation
ZPPA	Zambia Public Procurement Authority

TABLE OF CONTENTS

ABSTRACT	II
DECLARATION.....	III
ACKNOWLEDGEMENTS	V
LIST OF ABBREVIATIONS	VI
TABLE OF CONTENTS	VIII
LIST OF TABLES.....	XIV
LIST OF FIGURES	XV
CHAPTER 1 THE PROBLEM STATEMENT AND ITS SETTING	1
1.1 INTRODUCTION	1
1.2 OVERVIEW	2
1.3 THE RESEARCH PROBLEM STATEMENT AND JUSTIFICATION.....	2
1.4 RESEARCH QUESTIONS.....	5
1.5 RESEARCH OBJECTIVES.....	6
1.6 SIGNIFICANCE OF THE STUDY	7
1.7 SUMMARY AND OUTLINE OF THE TREATISE	8
CHAPTER 2 NUANCES OF PROJECT FINANCE AND ITS GLOBAL PERFORMANCE.....	9
2.1 INTRODUCTION	9
2.2 DEFINITION OF KEY RESEARCH CONCEPTS AND TERMINOLOGIES.....	9
2.2.1 <i>Definition of Risk</i>	9
2.2.2 <i>Project finance</i>	11
2.2.3 <i>Public Private Partnerships (PPPs)</i>	13
2.2.4 <i>Public Finance Initiatives (PFIs)</i>	14
2.2.5 <i>Project Bankability</i>	14
2.2.6 <i>Value for Money (VfM)</i>	15
2.3 KEY PLAYERS IN PROJECT FINANCE TRANSACTIONS.....	16

2.3.1	<i>The Host Government</i>	17
2.3.2	<i>Project Sponsors</i>	18
2.3.3	<i>Contractors, Suppliers and Customers</i>	19
2.3.4	<i>Lenders</i>	19
2.3.5	<i>The Project Company</i>	19
2.3.6	<i>Multilateral Development Institutions</i>	20
2.3.7	<i>Insurance Firms</i>	20
2.4	THE MARKET FOR PROJECT FINANCE.....	20
2.4.1	<i>Deals Log</i>	21
2.4.2	<i>Advisors and Arrangers</i>	24
2.5	KEY ISSUES IN PROJECT FINANCE	26
2.5.1	<i>Cost, Duration and Risk</i>	26
2.5.2	<i>Effect on Debt Stock of a Country</i>	27
2.6	SUMMARY	27
	CHAPTER 3 INFRASTRUCTURE PPP FRAMEWORKS	28
3.1	INTRODUCTION	28
3.2	INFRASTRUCTURE PPP FRAMEWORKS-WORLD BANK	28
3.2.1	<i>Policy Framework</i>	28
3.2.2	<i>Legal Framework</i>	29
3.2.3	<i>Investment Framework</i>	29
3.2.4	<i>Operating / Implementation Framework</i>	29
3.3	PROJECT FINANCE AND PPP FRAMEWORKS IN PRACTICE	30
3.3.1	<i>South Africa (SA)'s PPP Performance</i>	30
3.3.2	<i>India's PPP Performance</i>	32
3.4	SUMMARY	33

CHAPTER 4 PROJECT RISK IDENTIFICATION AND ASSESSMENT	34
4.1 INTRODUCTION	34
4.2 OVERVIEW OF GLOBAL INFRASTRUCTURE FINANCING RISKS	34
4.3 RISK MANAGEMENT PROCESS	36
4.4 RISK CLASSIFICATIONS	38
4.5 RISK IDENTIFICATION	40
4.5.1 <i>Phase 1 - Project Development Risks</i>	41
4.5.2 <i>Phase 2 - Construction and Completion Risks</i>	42
4.5.3 <i>Phase 3 - Operational and Market Risks</i>	43
4.5.4 <i>Phase 4 - Risks Common to all Project Phases</i>	44
4.6 RISK ASSESSMENT/EVALUATION.....	45
4.6.1 <i>Basel Committee on Bank Supervision</i>	48
4.6.2 <i>Islamic Development Bank (IDB)</i>	50
4.6.3 <i>Rating Agencies</i>	52
4.7 SUMMARY	57
CHAPTER 5 PROJECT RISK MITIGATION AND ALLOCATION	58
5.1 INTRODUCTION	58
5.2 RISK MITIGATION TOOLS AND TECHNIQUES	58
5.2.1 <i>Risk Mitigation Mechanism 1 - Contracts</i>	59
5.2.2 <i>Risk Mitigation Mechanism 2 - Trigger Points/Events</i>	61
5.2.3 <i>Risk Mitigation Mechanism 3 - Financing</i>	62
5.2.4 <i>Risk Mitigation Mechanism 4 - Study</i>	62
5.2.5 <i>Risk Mitigation Mechanism 5 - Avoidance/Elimination</i>	63
5.3 RISK ALLOCATION	63
5.4 SUMMARY	65

CHAPTER 6 RESEARCH METHODOLOGY	67
6.1 INTRODUCTION	67
6.2 RESEARCH PHILOSOPHY AND APPROACH.....	68
6.2.1 <i>Research Philosophy</i>	68
6.2.2 <i>Research approach</i>	68
6.3 RESEARCH DESIGN - PURPOSE AND STRATEGIES	69
6.3.1 <i>Research Purpose</i>	69
6.3.2 <i>Research Strategy</i>	69
6.4 DATA COLLECTION AND ANALYSIS PROCEDURES	70
6.4.1 <i>Data Collection-Sources and Methods</i>	70
6.4.2 <i>Sampling Frame and Methods</i>	72
6.4.3 <i>Tools for Data Analysis</i>	72
6.5 TIME HORIZON	73
6.6 CREDIBILITY OF RESEARCH FINDINGS	73
6.6.1 <i>Reliability and Validity of the Research</i>	73
6.6.2 <i>Research Limitations</i>	73
6.7 SUMMARY	74
CHAPTER 7 EMPIRICAL SURVEY RESULTS	75
7.1 INTRODUCTION	75
7.2 QUESTIONNAIRE PART 1: DEMOGRAPHIC INFORMATION ABOUT RESPONDENTS	76
7.2.1 <i>Sector</i>	76
7.2.2 <i>Profession of Respondents</i>	77
7.2.3 <i>Position/Designation</i>	77
7.2.4 <i>Project Finance/ PPP Sub-Sectors</i>	78
7.3 QUESTIONNAIRE PART 2: PROJECT PLANNING AND DEVELOPMENT RISKS	79
7.3.1 <i>Project Development Risks</i>	79
7.3.2 <i>Project Sponsor Risks</i>	80

7.4	QUESTIONNAIRE PART 3: CONSTRUCTION AND COMPLETION RISKS.....	81
7.5	QUESTIONNAIRE PART 4: OPERATIONAL AND MARKET RISKS	81
7.6	QUESTIONNAIRE PART 5: RISKS COMMON TO ALL PROJECT PHASES	82
7.6.1	<i>Regulatory Risks</i>	82
7.6.2	<i>Political Risks</i>	83
7.6.3	<i>Economic and Financial Risks</i>	83
7.6.4	<i>General/Other Risks</i>	84
7.7	QUESTIONNAIRE PART 6: GENERAL THOUGHTS BY RESPONDENTS	84
7.8	SUMMARY	86
	CHAPTER 8 ANALYSIS AND DISCUSSION OF RESULTS	87
8.1	INTRODUCTION	87
8.2	RESEARCH QUESTION 1: HOW DOES ZAMBIA’S INFRASTRUCTURE PROJECT FINANCE AND PPP FRAMEWORK COMPARE WITH THEORETICAL NORMATIVE CRITERIA AS WELL AS OTHER DEVELOPING COUNTRIES’ POLICY FRAMEWORKS IN PRACTICE?.....	87
8.2.1	<i>PPP Policy Rationale</i>	87
8.2.2	<i>Legal Framework</i>	90
8.2.3	<i>Investment Framework</i>	90
8.2.4	<i>Operating and Implementation Framework</i>	93
8.3	RESEARCH QUESTION 2: WHAT IS THE SEVERITY OF INFRASTRUCTURE PROJECT FINANCE RISKS IN ZAMBIA?	94
8.3.1	<i>Analysis of Overall Results</i>	94
8.3.2	<i>Comparison of Risk Rankings between the Private and Public Sectors</i>	110
8.3.3	<i>Comparison of Risk Rankings among Professions of Respondents</i>	110
8.4	RESEARCH QUESTION 3: IS THERE AN IDEAL PROJECT FINANCE RISK MANAGEMENT MODEL WHICH CAN BE USED AS A REFERENCE BY SPONSORS IN ZAMBIA AS THEY DESIGN AND STRUCTURE INFRASTRUCTURE PROJECT FINANCE DEALS?.....	112
8.5	SUMMARY	114
	CHAPTER 9 CONCLUSION AND RECOMMENDATIONS	116
9.1	INTRODUCTION	116
9.2	RESEARCH PROBLEM STATEMENT	116
9.3	RESEARCH OBJECTIVES.....	117

9.4	RECOMMENDATIONS TO STAKEHOLDERS.....	117
9.4.1	<i>Recommendation #1: Enabling Environment</i>	118
9.4.2	<i>Recommendation #2: Capacity Building</i>	119
9.4.3	<i>Recommendation #3: Project Development</i>	121
9.4.4	<i>Recommendation 4: Project Financing</i>	121
9.5	SUMMARY	122
	BIBLIOGRAPHY	123
	ANNEXURES	129
	ANNEXURE 1: SURVEY QUESTIONNAIRE	129
	ANNEXURE 2: OVERALL RISK RANKINGS/RATINGS	134
	ANNEXURE 3-OVERALL SEVERITY OF PROJECT FINANCE AND PPP RISKS IN ZAMBIA	136
	ANNEXURE 4: RESULTS OF RISK FACTORS FOR RISK RANKING OF PPP PROJECTS IN ZAMBIA BETWEEN PUBLIC AND PRIVATE SECTORS USING MANN-WHITNEY U TEST.....	139
	ANNEXURE 5: RESULTS OF RISK FACTORS FOR RISK RANKING OF PPP PROJECTS IN ZAMBIA AMONG PROFESSIONS USING KRUSKAL-WALLIS TEST	141

LIST OF TABLES

Table 1.1	Key barriers in Infrastructure space for Africa	3
Table 1.2	Summary of chapters.....	1
Table 2.1	Definitions of project finance.....	11
Table 2.2	Attributes of specialised lending transactions	13
Table 2.3	Top 10 global project finance sponsors 2013	18
Table 2.4	Role of project finance advisors.....	25
Table 4.1	Risk Identification strategies	40
Table 4.2	Project development risks.....	42
Table 4.3	Construction and completion risks	43
Table 4.4	Operational and market risks	43
Table 4.5	Risk common to all project phases	44
Table 4.6	Sponsor risk assessment by the Basel framework.....	49
Table 4.7	IDB's risk assessment framework.....	51
Table 4.8	IDB's financing limits based on project risk profile	51
Table 4.9	S&P's financial risk benchmark scores	54
Table 4.1	Fitch's project finance risk assessment criteria.....	56
Table 5.1	Common contractual arrangements in project finance and PPPs.....	60
Table 6.1	Questionnaire Information.....	71
Table 7.1	Questionnaire Statistics	75
Table 7.2	Mean ranking of project development risks.....	80
Table 7.3	Mean ranking of project sponsor risks	80
Table 7.4	Mean ranking of construction and completion risks	81
Table 7.5	Mean ranking of operational and market risks	82
Table 7.6	Ranking of regulatory risks	82
Table 7.7	Analysis of political risks	83
Table 7.8	Mean ranking of economic and finance risks	84
Table 7.9	Mean ranking of general risks.....	84
Table 8.1	Breakdown of the \$750 Million Eurobond-Zambia	89
Table 8.2	Overall severity of project finance and PPP risks in Zambia.....	94
Table 8.3	Infrastructure spending needs for Sub-Sahara Africa	97
Table 8.4	Project Bankability	102

LIST OF FIGURES

Figure 1.1	Envisaged design of the Kenneth Kaunda International Airport, Lusaka	4
Figure 2.1	Difference between risk and uncertainty	10
Figure 2.2	Key issues in project bankability	15
Figure 2.3	Project finance angel	17
Figure 2.4	2013 Global project finance statistics-full year	21
Figure 2.5	Africa project finance sector analysis for 2012	22
Figure 2.6	Africa infrastructure development index, country scores for 2010	23
Figure 2.7	AIDI sub regional scores, 2000–2010	24
Figure 4.1	Risk management cycle: focus on risk identification and assessment stage	37
Figure 4.2	Project risk categories	40
Figure 4.3	Risk grading-impact and likelihood of occurrence	47
Figure 4.4	S&P's project finance risk management framework	53
Figure 5.1	Risk management cycle: focus on risk allocation and mitigation stage	58
Figure 6.1	Research Onion	67
Figure 7.1	Analysis of results by sector	76
Figure 7.2	Analysis of results by profession	77
Figure 7.3	Analysis of results by designation	78
Figure 7.4	Analysis of results by sub-sectors	79
Figure 7.5	Results on PPP options	85
Figure 8.1	Zambia's PPP Pipeline deals	92
Figure 8.2	The Chirundu Lusaka road	99
Figure 8.3	Cost of borrowing trends in Zambia	103
Figure 8.4	Inflation patterns in Zambia - 2014	104
Figure 8.5	ZMK-USD exchange rate pattern in Zambia for 2014	105
Figure 8.6	Status of 65-Year Concessioned Luburma Market in Lusaka, Zambia	108
Figure 8.7	International Faculty of Finance (IFF)-proposed risk management model	113
Figure 9.1	Strategic PPP action points	118

CHAPTER 1

THE PROBLEM STATEMENT AND ITS SETTING

1.1 Introduction

This research was conducted over a one-year period. The main aim of the research was to profile the risks that are associated with infrastructure project finance in developing countries with Zambia being used as a case study. The research topic stems from the field of infrastructure project finance which has over the years been used as a mechanism to structure and finance large infrastructure investments in a fiscally viable manner. Chapter 1 seeks to provide background information to this treatise report as well as the author's justification and purpose of the study principally in the Zambian context.

Table 1.2 below provides an outline and sequence of the chapters in the treatise beginning with the research overview and research background through to the analysis and recommendations of the study.

Table 1.1 Summary of chapters

CHAPTER	CONTENT
Chapter 1	Introduction and research background
Chapter 2	Nuances of project finance and its global performance
Chapter 3	Infrastructure PPP frameworks
Chapter 4	Risk identification and assessment process
Chapter 5	Risk allocation and mitigation process
Chapter 6	Research methodology
Chapter 7	Empirical survey results
Chapter 8	Analysis and discussion of results
Chapter 9	Conclusion and recommendations

1.2 Overview

The fundamental role that infrastructure development plays in stimulating and sustaining regional economic growth and competitiveness is widely acknowledged in most scholarly and institutional reports. For example, the global competitiveness report of 2010-2011 presented at the 2010 World Economic Forum ranked infrastructure as number two contribution to a country's competitiveness (World Economic Forum, 2010,4). The report highlights that extensive and efficient infrastructure is critical for ensuring the effective functioning of the economy as it determines the location of economic activities and the kinds of activities or sectors that can develop in a particular economy. The report further underscores the potential that infrastructure development has in contributing to the reduction of the effect of distance between regions, integrating the national market and connecting it at low cost to markets in other countries (World Economic Forum, 2010:10)

It is also widely acknowledged in most scholarly writings that the quality and extensiveness of infrastructure networks significantly impact economic growth and affect income inequalities and poverty in a variety of ways. Hence well-developed infrastructure investments are one of the prerequisites for the access of less-developed economies to core economic activities and services. Given that Africa is the least integrated continent physically and economically, the emergence of the various infrastructure programmes notably the Presidential Infrastructure Championship Initiative (PICI) and more recently the Programme for Infrastructure Development in Africa (PIDA) is a testimony of the prominence of the infrastructure agenda for Africa (PIDA, 2014). These programmes are quite timely more so now that it has been realized that infrastructure inefficiencies are costing the African continent billions of dollars annually, and stunting the continent's GDP growth by an estimate of 2% every year (PIDA, 2014).

As noted by Gatti (2009:xxv), project finance has been gaining global financing market share especially as a vehicle for channeling development capital to emerging markets such as sub Saharan Africa. In this realm, the mode of procurement for most of the current and envisaged infrastructure projects is through project finance in the form of Public-Private Partnerships (PPPs) which are contractual or legal relationships between the public and private sector entities aimed at improving and/or expanding infrastructure services.

1.3 The Research Problem Statement and Justification

The research problem statement for this study affirms that risks that are associated with infrastructure project finance are endemic in Zambia thereby impeding on the country's ability to design, structure, and finance public infrastructure projects in a fiscally viable manner. For both the public and the private sector, the benefits of using project finance as a financing mechanism for large infrastructure investments have been well documented over the years. Yet, as observed by Esty (2004:6), despite the many years of

using project finance in structuring, designing and financing infrastructure projects, many of the largest projects have encountered financial distress in one form or another. This aspect is further confirmed by Delmon (2011:3) where he states that the financing modality presents its own challenges which in most cases are prevalent in developing countries such as Zambia. Some of the observed challenges for most developing countries include lack of firm policy foundations and long-term political commitment, little or no resources deliberately set aside for project development, no appropriate policies, institutions and processes.

The concept note to the Board of Directors of the African Development Bank towards the establishment of the \$3 billion Africa50 Infrastructure Fund equally identifies a number of challenges towards the various infrastructure development plans for the continent. The concept note (African Development Bank, 2014:3) indicates that while there is clearly a strong demand for infrastructure projects in Africa, a number of barriers manifest themselves during the project cycle as demonstrated in table 1.2 below.

Table 1.2 Key barriers in Infrastructure space for Africa

Barrier	Comment on Barrier
Lack of Well-Prepared Projects	Political, regulatory and institutional bottlenecks mean that there is a lack of well-prepared projects. This results in delays and high costs, which lowers returns on investment and undermines investor confidence.
Lack of Public Resources	Some important infrastructure investments are not able to achieve full commercial viability. For certain projects, there is a case for public-sector contributions with private-sector delivery, requiring government resources
Lack of Early Risk-Takers	Project development, particularly at an early stage, is risky. The early stages of project preparation require willing and skilled risk-takers. Early investors are largely absent in Africa due to the high levels of perceived risk.
Lack of “Smart Capital”	Most equity providers maintain a risk-averse approach to African projects. As a result, many projects are delayed or unable to reach financial close. Often the need is for early commitment of equity to provide greater funding certainty to developers.
Lack of Transaction Advisors	In many cases both governments and investors do not have access to highly qualified transaction advisors for different reasons. These lead to sub-optimal project structures and delays in implementation.

Source: (African Development Bank, 2014:3)

In the case of Zambia, as of the treatise report date, since the enactment of the PPP Act of 2009, there has not been a single successful PPP transaction entered into between the Government of Zambia and any private sector entity under the PPP Act of 2009 (Zambia Development Agency, 2014:7). However, the Government of Zambia has had four project finance transactions in the form of PPPs before the promulgation of the PPP Act of 2009. According to the Zambia Development Agency (2014:7) three of these contracts have since been cancelled by Government (Kasumbalesa Border Post, Mpulungu Harbour and Railways Systems of Zambia) except for the 65 year concession of the Luburma market with the rest having been reverted to the state. This translates into 75% deal cancellations demonstrating that indeed risks are endemic in Zambia as far as PPPs are concerned. The Zambia Development Agency (2014:8) states that much as the reasons for all these project cancellations may vary, the absence of a legal and regulatory framework as well as lack of a PPP institutional framework at the time could have led to these situations.

Other examples that demonstrate that infrastructure financing risks are indeed endemic in Zambia include the country's main international airport, the Kenneth Kaunda International Airport (KKIA), where several attempts have in the past been made to procure a consortium of investors to develop and expand the international airport in Lusaka. For example, in July of 2011, the then Finance Minister signed an agreement on behalf of the Government of Zambia with Turkish firm Guris Holding to upgrade the Lusaka International Airport (Lusaka Times , 2011). However, this deal never materialised with some stakeholders pointing to issues of non-transparency in the bid processes as well as weak co-ordination amongst the key players across Government. The latest attempt to award a contract appeared to have made progress going by the late President of Zambia, Mr Michael .C. Sata, having commissioned the \$360 million project on 6 November 2013 to design and build the airport under a construction contract awarded to China Jiangxi Corporation (Times of Zambia, 2014). Figure 1.1 below shows the envisaged design of the new KKIA.

Figure 1.1 Envisaged design of the Kenneth Kaunda International Airport, Lusaka



Source: QFM Radio website (2013)

However, despite the high expectations from citizens, nothing other than the foundation stone has been built at the KKIA and graders, earth-moving machines have been completely withdrawn from the site on grounds of the 'bickering' between the Chinese contractors and the local partners over payments (Post Newspaper, 2015). According to the PostNewspaper report of 23rd February of 2015 under the headline "Bickering stalls the Kenneth Kaunda International works", the project has now stalled indefinitely despite the initial payment by the Ministry of Finance amounting US\$25 Million.

The rationale for project selection as well as the willingness and capacity to commission feasibility studies prior to undertaking any public infrastructure investments have been other topical infrastructure issues in Zambia. In a number of professional public forums such as those organised by the Economics Association of Zambia (EAZ), stakeholders have cited projects such as the Mongu stadium as one of such uneconomic projects. The origins of such sentiments is that the earmarked project to be built in Western Province of Zambia will be constructed in a region that does not have any competitive sports nor any material economic activities to provide some level of assurance that such a facility will be managed in a fiscally viable manner. Such infrastructure is neither economically nor is financially feasible hence the several concerns by citizens that decisions to invest now being driven by political intuitiveness which the researcher coined as 'political feasibility'.

The African Development Bank indicates that the issues highlighted above in table 1.1 have contributed to the failure of most infrastructure transactions hence the need to overcome these barriers in order to increase the number of projects reaching commercial viability and bankability. While it is important that infrastructure projects contribute to a country's welfare, it is equally important to ensure that they are financially viable, that recurrent costs are met and that the distribution of costs and benefits are acceptable to the country (World Bank Institute, 2001:9).

The problem statement for this study which affirms that risks for infrastructure project finance are endemic in Zambia thus stems from some of the observations highlighted above. These point to the likelihood that infrastructure project finance risks are indeed endemic in Zambia thereby justifying the research problem and the need for this study.

1.4 Research Questions

Having elaborated on the research problem statement above, a number of questions do arise. What really are the main issues contributing to all these cancellations of PPP concessions in Zambia? Why has Zambia failed to record any successful PPP transaction post the enactment of the PPP Act of 2009 when compared to other developing countries such as South Africa, India and Nigeria. etc.? Given these conundrums, below are the main research questions:

Research question 1:

How does Zambia's infrastructure project finance and PPP framework compare with theoretical normative criteria as well as other developing countries' policy frameworks in practice?

Research question 2:

What is the severity of infrastructure project finance risks in Zambia (namely: project development, construction, operational and risks common to all project phases)?

Research question 3:

Is there an ideal project finance risk management model which can be used as a reference by sponsors in Zambia as they design and structure infrastructure project finance deals?

1.5 Research Objectives

The main objective of this study was to assess the different forms of risk in infrastructure project finance that impede or constrain private financing of both public and private infrastructure in developing countries with Zambia as a case study. The research identified the various risks and the related mitigation instruments that could potentially help project sponsors and other stakeholders in their quest to structure successful and feasible infrastructure transactions. The ultimate aim of the research was that it may contribute to Africa and Zambia specifically in structuring its public infrastructure investments in a much more fiscally viable manner by beginning to mitigate on the various forms of risks that have over the years impeded on the infrastructure project finance agenda. In particular, the study was guided by the following objectives which resonate from the research questions above:

Research objective 1:

To assess Zambia's general infrastructure project finance and PPP framework in comparison to some theoretical normative criteria as well as against other developing countries' policy frameworks in practice.

Research objective 2:

To identify and rate risks that impede on the effective delivery of infrastructure project finance in Zambia.

Research Objective 3:

To propose an ideal project finance risk management model which can be used as a reference by sponsors in Zambia as they design and structure infrastructure project finance deals.

1.6 Significance of the Study

In the book, *'Project Financing,'* Fabozzi, Henry and Nahlik (2012:5) outline that the best way for project sponsors to learn how well to design and finance an infrastructure project is to be able to critically review some common causes of project failures and identify critical success factors as documented by scholars and practitioners in the project finance arena. This is best done through the literature review of the foundations of project finance theory and relating the theory to real life practices and norms as documented in project finance case studies. Specifically related to issues of risk management in infrastructure project finance, Irimia-Diéguez & Alfalla-Luque, (2014:1), acknowledge that despite the high relevance of risk management in the success of megaprojects, it remains one of the least developed research issues.

In reference to the communique of the recently held 'Infrastructure Project Financing Africa Conference' held from the 3rd to 5th of March 2014 in Cape Town, it was evident that whilst some countries have made strides in reaching financial closure ¹on a number of deals, some countries have very little or nothing tangible going on in the project finance and PPP markets. Countries such as Nigeria, South Africa and Kenya were reported to have some promising pipeline projects. As of March 2014, Nigeria was reported to have eight pipeline PPPs among them being the Ekiti State Teaching Hospital, Ibaka Deep Sea Port, Lekki-Epe international airport whilst Kenya and South Africa had four and three pipeline projects, respectively (Infrastructure Journal, 2014).

While other countries are posting such impressive results, countries like Zambia are still struggling to record success in even a single PPP project post the enactment of the PPP Act of 2009 (Zambia Development Agency, 2014). Even other infrastructure projects that are being procured through the traditional mechanisms including joint ventures have had a fair share of planning, procurement and implementation hiccups as outlined in chapter 8. Hence, this study may be of value to highlight some of the key impediments that could explain why Zambia has had such a rutted PPP agenda.

Against such a gloomy background for Zambia, this research is premised to identify the key risks that have impeded on the effective delivery of infrastructure project finance in the country with a view to improve the deal count and quality of deal structuring techniques.

¹ Financial close occurs when all the project and financing agreements have been signed and all the required conditions contained in them have been met. It enables funds (e.g. loans, equity, grants) to start flowing so that project implementation can actually start (The Epic PPP Guide, 2012).

1.7 Summary and Outline of the Treatise

Chapter 1 provided the background information on the need to de-risk Africa if the infrastructure finance agenda is to be a reality. The chapter also outlined the problem statement anchored on the risk profile of infrastructure investments in Zambia followed by the research objectives and questions that guided the research.

The focus for chapter 2 is on the nuances and fundamentals of project finance including the project finance lifecycle which provides the framework for chapters 3 and 4 whose focus is mainly on the risk management process: risk identification, risk assessment, risk allocation and risk mitigation.

CHAPTER 2

NUANCES OF PROJECT FINANCE AND ITS GLOBAL PERFORMANCE

2.1 Introduction

Chapter 2 begins by providing definitions of various key concepts in the project finance discourse. Unlike chapters 3 and 4 whose purpose is largely that of reviewing and summarising current literature in project finance risk management, this chapter must be seen as one that seeks to lay the foundation of the study. Though the thrust of the research is on risk management in infrastructure project finance, this chapter was deliberately 'crafted' to address some of the typical research pitfalls where it is assumed that a reader already understands the subject area. This usually ends up creating a knowledge gap, hence a deliberate attempt is made in this chapter to highlight some of the nuances of project finance to bridge the potential knowledge gap that may exist especially for novices in the trade. The researcher is aware that this may possibly be construed as a collection of what is already known by experienced project finance practitioners.

The global market for project finance is briefly explored in this chapter mainly through the presentation of the latest statistical performance of project finance in terms of deal size, financing sources and key sectors. The chapter ends with an exposition of some of the perceived negative issues that characterise the practice of project finance which sponsors must be wary of whenever they choose to structure an infrastructure project finance deal.

2.2 Definition of key Research Concepts and Terminologies

In the quest to ensure that there is a common understanding of the concepts that drove this research, the following key concepts are defined upfront: risk, project finance (PF), public-private partnerships (PPP), public finance Initiatives (PFI), project bankability and value for money (VfM).

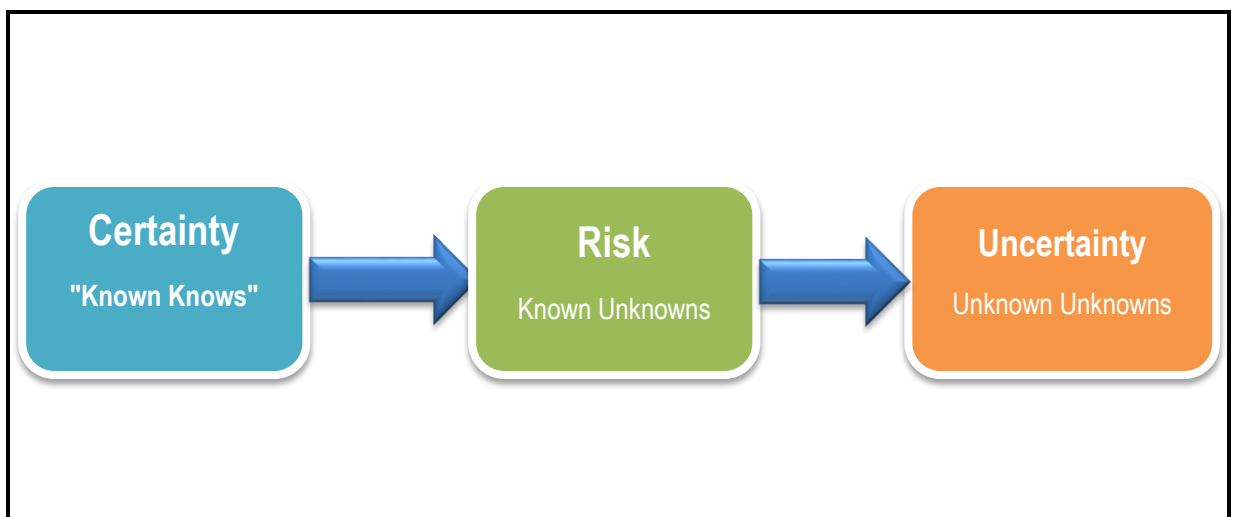
2.2.1 Definition of Risk

Most literature in project finance tends to take an assumption that the reader understands the definition of risk. The researcher noted a common approach by most of the literature in project finance risk discourse which delves straight into the technicalities of the risk management processes without defining risk. This approach can be seen from the risk chapters of some of the notable literature sources in project finance such as Yescombe (2014) in chapters 9-11, Finnerty (2013) in chapter 14, as well as Gatti (2009) in chapter 3. The common approach by these scholars/practitioners is to begin the risk management

discourse with an outline of the strategies that a Special Purpose Vehicle (SPV) needs to follow to manage project risks without necessarily defining risk. Other sources of literature have made an attempt in offering an exposition of various definitions of risk which in the researchers's viewpoint could possibly be an ideal starting point for any risk management discussion. For example, Tinsley (2000:67) acknowledges that there are various meanings of risk which could include uncertainty, statistical chance, probability of loss, dispersion of actual from expected, hazards, and chance of bad consequences.

Divergent views on the definition of risk can also be noted from some writers on risk notably Dr David Hillson who is a partner at the Risk Doctor and Partners Consulting firm in London. In one of his articles entitled '*When Risk is Not a Risk*', Hillson emphasises that 'risk' should not be confused with 'uncertainty' though the two are related. His definition of risk therefore is that it is 'an uncertainty that matters', and it matters because it can affect one or more objectives (Hillson, 2004: 6). A more complete definition of risk according to Hillson is that risk is "an uncertainty that if it occurs could affect one or more objectives". This recognises the fact that there are other uncertainties that are irrelevant in terms of the project objectives, and these should be excluded from the risk process. Other sources of literature such as the ADB's handbook for risk analysis of projects (Asian Development Bank, 2002:10-11) provides further clarity to Dr David Hillson's definition of risk by stating that risk should be seen as a quantity subject to empirical measurement, while uncertainty is a non-quantifiable type as illustrated in Figure 2.1 below.

Figure 2.1 Difference between risk and uncertainty



Source: Adapted from the Asian Development Bank (2002:10)

Generally, from the literature consulted, there appears to be some homogeneity in the definition of risk in project finance though somewhat at variance from one another. Some of the examples in the diversity of risk definitions include Hoffman (2008: 27) who defines risk as being an uncertainty in regard to cost, loss or damage whereas Tinsley (2000:67) defines risk as any factor which will change the expected or

projected project cash flows. Interestingly, Tinsley (2000: 67) indicates that risk in the context of project finance should be seen as being both positive or negative contrarily to most literature on the subject matter which usually portrays risk as being only those negative issues that would impede on the achievement of project objectives. Whilst this study acknowledged the diversity in the definition of risk, this study was more inclined to Tinsley’s definition as stated above based on its simplicity.

2.2.2 Project finance

Project finance has over the years proved to be one of the innovative techniques in bridging the resource constraints faced by most governments in financing large developmental infrastructure investments (Gatti, 2009:34). An analysis carried out on 90 countries from 1991 to 2005 by Kleimeier and Versteeg (2008:4) found project finance to be beneficial to a country’s economic growth in that it facilitates the flow of international capital thereby compensating for any lack of local liquidity. The results also indicated that due to the unique and complex contractual structure that characterises project finance, this often leads to better investment management and governance which are most often problematic issues in most emerging economies. As documented by a number of writers on the subject matter, the definitions of project finance are quite diverse.

The heterogeneity in the definitions of project finance is noted from the following sources of literature: Bing, Akintoye, Edwards & Hardcastle (2005), Davis (2003), EPEC (2014), Esty (2004), Fabozzi *et al.* (2012, Finnerty (2013) and Gatti (2009). Table 2.1 provides an exposition of some of the definitions of project finance by Esty (2004), Gatti (2009) and Hoffman (2008).

Table 2.1 Definitions of project finance

Author	Definition of project finance
Esty (2004:24)	“Project Finance is the creation of a legally independent project company financed with non-recourse debt (and equity from one or more sponsors) for the purpose of financing a single purpose, industrial asset”.
Gatti (2009:2)	“ Project finance is a structured financing of a specific economic entity, the SPV, or special purpose vehicle, also known as the project company-created by sponsors using equity or mezzanine debt and for which the lender considers cash flows as being the primary source of loan reimbursement, whereas assets represent only collateral”
Hoffman (2008:4)	“ Project finance refers to a non-recourse or limited recourse financing structure in which debt, equity, and credit enhancement are combined for the construction and operation, or

the refinancing , of a particular facility in a capital-intensive industry, in which lenders base credit appraisals on the projected revenues from the operation of the facility, rather than the general assets or the credit history of the sponsor of the facility, and rely on the assets of the facility, including any revenue-producing contracts and other cash flow generated by the facility, as collateral for the debt”

Source: *Various as indicated in the table under ‘author’.*

Yescombe (2011:113) and Finnerty (2013:2) clarify the confusion between the terms ‘project finance’ and ‘financing projects’. Yescombe (2011:113) states that the two are not the same because projects may be financed in many different ways such as usage of public sector debt, using public sector procurement instead of PPPs or alternatively through post-construction take-out, public sector debt funding or through joint venture PPPs. Finnerty (2013:2) on the other hand indicates that the term *project financing* is widely misused and perhaps even more widely misunderstood hence his approach is that it is important to understand what the term does not mean. He indicates that project financing is not a means of raising funds to finance a project that is so weak economically that it may not be able to service its own debt or provide an acceptable rate of return to equity investors. What this entails is that it is not a means of financing projects that may not be financed in the traditional or conventional way. Hence, the key in a project finance deal is careful financial engineering to allocate the risks and rewards among the involved parties in a manner that is acceptable by all participating stakeholders.

The Bank for International Settlements (BIS) classifies project finance as being one form of specialised lending. The Bank encourages financial institutions to classify exposures under five categories which include corporate, retail, sovereign, bank, and equity exposures. Within the corporate asset class, five sub classes of lending are identified as being ‘Specialised lending transactions’. These include project finance, object finance, commodities finance, income producing real estates as well as high volatility commercial real estate. Though the definitions of these five asset sub classes may differ, the Basel Committee report on Capital Measurement and Capital Standards (2001) indicates that such specialised lending possess some distinct characteristics both in legal and economic form when differentiated from corporate finance transactions as profiled in Table 2.2.

Table 2.2 Attributes of specialised lending transactions

Attribute	Explanations/Notes
Financing Vehicle	Single purpose, the borrowing entity is usually a special purpose entity which is created specifically to finance and or operate the physical asset.
Basis for credit evaluation	Focus for credit analysis is on project assets, cash flows and contractual arrangements as opposed to the historical size of the balance sheet.
Dividend policy	Fixed dividend policy, immediate pay-out; no reinvestment allowed unlike in corporate finance where Corporate Management makes decisions autonomous from investors and creditors
Size and tenure of financing	Usually requires critical mass through syndication for very long term tenures i.e. 10-65 years
Repayment of the loan	Lenders rely on future cash flow projected to be generated by the project to service the loan
Cost of capital	The cost of capital is relatively higher than in corporate finance due to the complexity of deal structuring as well as the inherent risk

Source: Bank for International Settlements (2001) and *the Project finance teaching note- Wharton School (1996:6)*

2.2.3 Public Private Partnerships (PPPs)

For most countries, PPP has been the buzz word such that most of the PPP policies rarely bring project finance in context. Just like the definitions of project finance, definitions of PPPs are quite diverse as documented by various multilateral and regional banks, national PPP frameworks and scholarly articles. An example of a holistic definition of PPPs is provided below:

“A PPP is a long term contract (a ‘PPP contract’) between a public sector party and a private sector party for the design, construction, financing, and operation of public infrastructure (the ‘facility’) by the private sector party, with payments over the life of the PPP Contract to the private sector party for the use of the facility, made either by the public sector party, also known as PFI (Private financing initiative), or by the general public as users of the facility; and the facility remaining in public sector ownership, or reverting to the public sector ownership at the end of the PPP Contract” Yescombe (2011:3).

Most literature on project finance hardly clarifies the relationship that exists between project finance and public private partnerships (PPPs) yet the two are in essence very similar concepts. Having critically scrutinised the various definitions of project finance and PPPs, the researcher concluded that PPPs are financed using project finance or non-recourse techniques, hence can be dubbed as a subset of project finance. The researcher further concluded that one of the major differences between project finance and PPPs is that with the latter concept; one of the main project sponsors is a public sector entity whereas in the case of a purely project finance transaction, a transaction may involve only private sector parties without the government being a key partner.

2.2.4 Public Finance Initiatives (PFIs)

PFIs are a method of providing funds for major capital investments where private firms are contracted to finance, build and operate public projects which once constructed are then leased to the public and the government authority makes payments to the private company (Yescombe, 2011:9). Akintoye, Beck and Hardcastle (2003:10) indicate that the United Kingdom was one of the original initiators of this financing mechanism which is reported to have been implemented in 1992 as a strategy for providing high quality services. The main use was to fund major public works projects such as schools, prisons, hospitals and infrastructure. Instead of funding these projects up front from tax receipts, private firms constructed them and then made their money back through long-term (25+ years) repayments, plus interest, from the government. Thus, the government did not have to outlay a large sum of money at once to fund a large project.

Just like PPPs, PFIs are also seen to improve on-time project completion and the transfer of some of the risks associated with constructing and maintaining infrastructure projects from the public sector to the private sector. The initiative has, however, come under public scrutiny more on the basis that the interest and principal payments that are associated with PFIs are a burden to future tax payers. This was further made worse by revelations in the early 2000s that the Government of Britain was spending more on PFI projects than they would cost under the traditional procurement methodology (Akintoye et al., 2003:10).

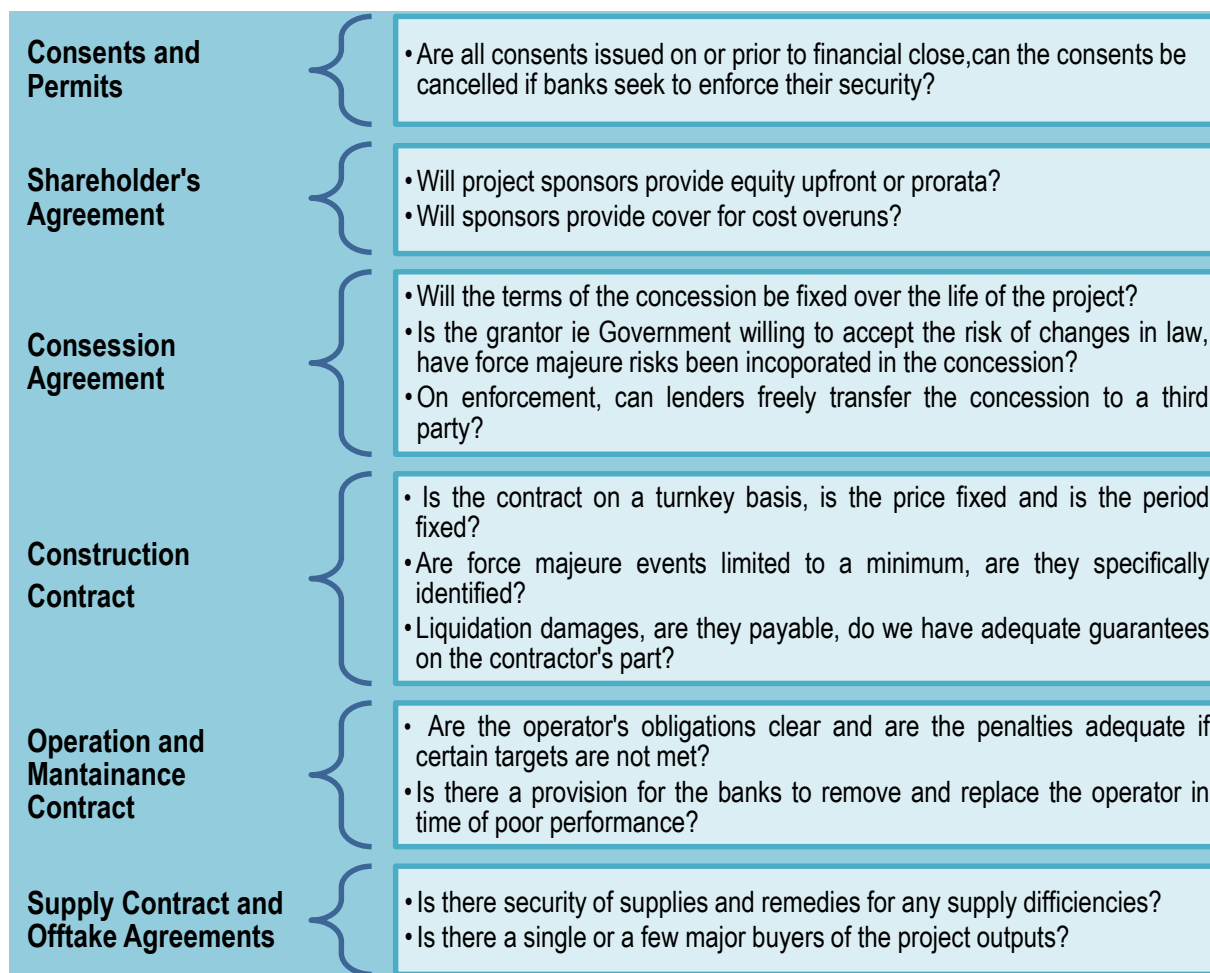
2.2.5 Project Bankability

Given the prominence of the concept of 'Bankability' in project finance literature, the researcher felt compelled to elaborate on this concept. As indicated by Vinter (1997:155), bankability is as it sounds, the acceptability or otherwise of a project's structure as the basis of a project financing. Given that the larger proportion of finances for project finance deals is debt as evidenced by the 2013 project finance league tables, it is prudent to assess how bankable the project is. Various sources of empirical research in corporate finance indicates that debt is a cheaper source of funding than equity hence in the quest to

maximise the debt component of the project capital structure, the deal must be seen to be acceptable in the 'eyes' of would be creditors.

As was highlighted earlier, lending to projects structured as PPPs is on project finance or limited recourse basis which basically looks to the future cash flows of the project as the principle source of security. Hence lenders tend to take a much more stronger interest in the performance of the project on which the future repayments of the loan depend. Vinter (1997:155-172) outlines a couple of issues that must be looked at for a project finance deal to be dubbed bankable. See Figure 2.3 for project bankability issues.

Figure 2.2 Key issues in project bankability



Source: Adapted and summarised from Vinter (1997:155-172)

2.2.6 Value for Money (VfM)

Another topical concept in infrastructure project finance discourse is Value for Money (VfM). In the earlier stages of the project, a pre-feasibility study is undertaken to assess if the project is technically, legally, financially and economically feasible. Having determined that the new project is economically justified, there is need for the public sector to decide whether the PPP route is the right one. According to

Yescombe (2011:25) this stage demands for answers to the following questions : Does a PPP offer good VfM when compared to the public sector procurement?, Is the project being procured as a PPP in a way which offers good VfM?

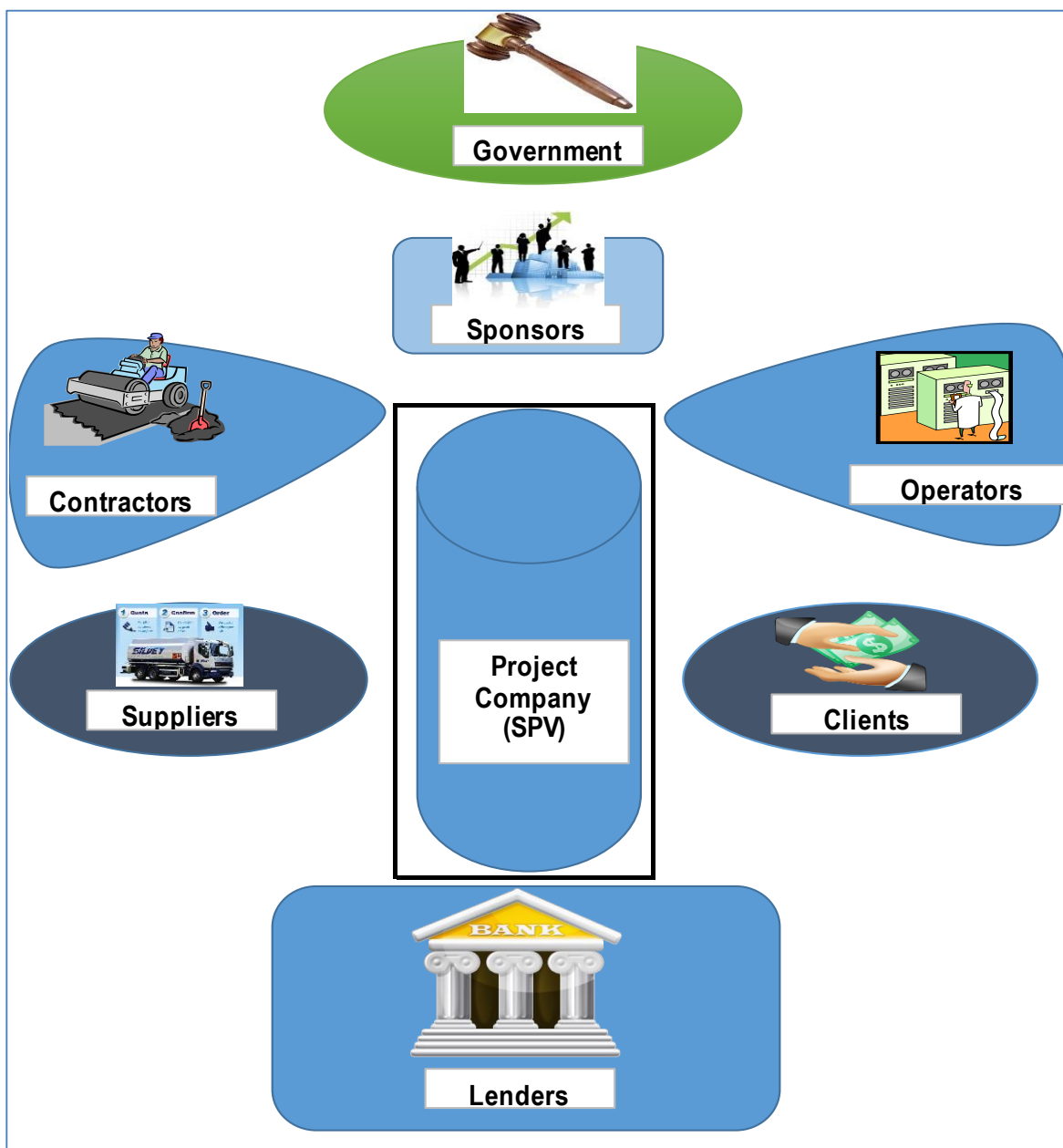
In responding to these questions, Yescombe (2011:25) indicates that a PPP project is dubbed to be of value for money if the project results in a net positive gain to society which is greater than what it could be achieved through alternative public sector procurement route. This is achieved through the development of a Public Sector Comparator (PSC). The PSC is thus an assumption of what the NPV cost of the project would have been, had it been acquired through a conventional public sector procurement, which is then compared with the NPV cost of the PPP (Yescombe, 2011). Though the public sector comparator is a very good benchmark for the public sector in ascertaining whether the PPP route is better than traditional procurement, Yescombe (2011) indicates that developing a PSC poses a few challenges such as cost comparison, the discount rate to use, adjustments for risk transfer between the two procurement methods as well as tax issues given that the public sector may not be legally compelled to pay certain taxes if the traditional procurement route is used.

2.3 Key Players in Project Finance Transactions

During the life cycle of a project finance transaction, there are a number of project stakeholders/parties who get involved. In investigating the kind of project participants involved in a typical project finance transaction, the researcher was intrigued by the prototypical structure, developed by Thomas J Pyle published in the Wharton School project finance teaching note, in which he calls the participants 'project finance angel' as is depicted in Figure 2.3 (The University of Pennsylvania Wharton School, 1996,9). The reasoning behind this analogy is as follows: The crown of the angel is the government; the head is the project sponsor; the contractors and operators serve as wings of the project; the project company (SPV) is the body; the suppliers and customers represent the arms; and the banks are the angel's feet (The University of Pennsylvania Wharton School, 1996,8). It must be noted that there are other key parties to a project finance transaction such as legal and financial advisors who may exit once the financing is in place while others such as the technical advisors and construction companies carry on with the project during the construction phase through to commissioning.

Vinter (1997:1) indicates that one of the key challenges in the project structuring process is the art of reconciling the different objectives of the various players in a project finance deal at negotiation stage. This entails that a good understanding and appreciation of what each party's objectives are at inception is an essential pre-requisite to any sensible project negotiation.

Figure 2.3 Project finance angel



Source: Adapted from the project finance teaching note - (Wharton School, 1996:6)

The following sub-sections provide objectives of some of the key project finance participants which if not well managed, may be sources of risk for a project (Vinter,1997,1).

2.3.1 The Host Government

The main aim for a host government to be part of a project finance (usually through a PPP and PFI) deal is to provide a public good to the citizens. This is usually done on the basis of non-excludability and non-rivalry, two key tenets of public economics. Most of the large infrastructure projects in developing countries, such as roads, power plants, railways, are commissioned by the public sector. Vinter (1997,1) outlines that some of the key objectives of the Government in a project finance or PPP deal include: the

need to achieve better value for money than would be the case if the government procured the project in its conventional manner; to bring back the project into public ownership once the private sector has recouped its investment returns; and to institute adequate safeguards to ensure that the project is operated properly in public interest.

Other key objectives include the reduction or elimination of the need for government to use its own funds or borrowed funds to finance infrastructure investments as well as to generally transfer risk from the public sector to the private sector (Vinter, 1997:1). One of the key talking points is usually the government's quest that the project operate in the interest of the public which may entail lower tariffs affordable to the public but may not be financially adequate for the private sector operator to yield an adequate return of equity. Hence there is need for some form of compromise if both parties are to be satisfied (Vinter, 1997:1).

2.3.2 Project Sponsors

The active investors in a project finance deal are usually referred to as 'project sponsors' meaning that their role is one of promotion, development, and management of the project (Yescombe, 2014:30). Table 2.3 shows the top 10 global project finance sponsors as at December 2013 (Infrastructure Journal, 2014).

Table 2.3 Top 10 global project finance sponsors 2013

Rank	Company	Country of origin	Total US\$ m	Transactions	Market Share (%)
1	Inpex	Australia	13,714.00	1	5.17
2	Saudi Aramco	Saudi Arabia	12,911.39	3	4.87
3	Cheniere Energy Partners, L.P.	USA	8,650.00	2	3.26
4	Total	France	7,714.84	3	2.91
5	Dow Chemical Group	USA	7,036.96	2	2.66
6	Dangote Group	Nigeria	6,150.00	1	2.32
7	Oger Telecom	UAE	4,751.12	1	1.79
8	IFM Investors	Australia	3,417.14	6	1.29
9	Macquarie	Australia	3,371.75	7	1.27
10	Seadrill	United Kingdom	3,200.00	2	1.21
	TOTALS:		US\$ 70,917.20	28	27%

Source: Infrastructure Journal, 2014 (Online)

One of the key issues that project lenders want to be comfortable with as they carry out a due diligence of the project finance deal, is the experience of the sponsors, their ability to inject equity, as well as their

financial ability to support the project if it runs into difficulties (Mills, 2013:5). Among the private sector project finance sponsors, Gatti (2009:4) and Yescombe (2014:31) identifies construction contractors, equipment suppliers as well as fuel and input suppliers as one of the key project sponsors for various commercial reasons.

2.3.3 Contractors, Suppliers and Customers

Other private sector project finance participants include the suppliers of materials for the project, the contractors responsible for designing and building the project and the customers of the project. Contractors, suppliers and product buyers are private sector entities which by their nature operate on capitalist principles hence the preponderant objective of their involvement in a project finance deal to make profits (Yescombe, 2014:32). This revelation by Yescombe should be a matter that must be appreciated by the public sector as they go in partnership with the private sector.

2.3.4 Lenders

Most financial institutions fall into the category of passive investors in a project (Yescombe, 2014:32). They come in to participate usually at the financial close stage when the active project finance sponsors have completed the project development stages. This group is led by commercial banks who have over the years been the primary source of funds for project financing. In arranging large finance needs for project finance, banks most often form syndicates to sell down their commercial interests which besides the profit motive also cushion them from default risk (Yescombe, 2014:32).

Other players include the capital markets which have seen the active participation of institutional investors such as investment funds specialising in project finance, life insurance and pension funds. These markets may be prepared to inject equity into the project company. Development Finance Institutions such as the Development Bank of Southern Africa (DBSA), International Finance Corporation (IFC) and African Development Bank (AFDB) are examples of these markets. Other players worth mentioning in this category are Export Credit Agencies (ECAs) who support most projects in the import of project equipment from suppliers.

2.3.5 The Project Company

The project company which in most project finance literature is referred to as the 'Special Purpose Vehicle (SPV)' is a single purpose entity that is created solely for the purpose of executing the project (Yescombe, 2014:40). This can be deemed as the nerve centre of the project given its key mandate of coordinating the other key stakeholders of the project including government, private sector sponsors and lenders. The SPV is in most cases, the borrower of the funds for the project on a limited or non-recourse basis with

projected cash flows of the project as the primary source of cash flows for the servicing of the finance costs.

Much as the SPV is usually an incorporated Limited Liability Company, there are other forms of “vehicles” through which project finance can be executed. Vinter (1997:63-87) outlines various forms of project finance vehicles coupled with the pros and cons for each type of project vehicle. For example, unincorporated joint ventures, as well as general partnerships are possible project finance vehicles yet they both share the drawback of not enjoying the ‘fruits’ that come with the concept of the veil of incorporation where the project company is treated as a separate legal persona under the English commercial law (Vinter,1997:65-88). Other more superior forms of project finance vehicles include limited partnerships, companies limited by guarantee as well as unlimited companies. Under the European Law, other forms of project finance vehicles such as European Economic Interest Grouping (EEIG) as well as the European Company-the Societas Europea or SE do exist though Vinter (1997:88) classifies these as more theoretical forms of project finance vehicles given that they are rarely used in practice.

2.3.6 Multilateral Development Institutions

Some projects - particularly in developing countries - are co-financed by the World Bank or its investment bank division, the International Finance Corporation, or regional development banks such as the African Development Bank, European Bank for Reconstruction and Development, the Asian Development Banks etc. Multilateral development institutions such as these especially MIGA are able to ensure the bankability of a project by providing commercial banks with a degree of protection against political risks, such as the failure of a government to make agreed payments or provide the necessary regulatory approvals (PPIAF, 2009)

2.3.7 Insurance Firms

Insurance firms are vital to an infrastructure project. If there is a catastrophe affecting the project which in most project finance discourse is called ‘force majeure or act of God’, then the sponsors and the lenders will look to the insurers to cover the losses (Gatti, 2009:111). This matter is elaborated more in chapter 4 under risk mitigation instruments.

2.4 The Market for Project Finance

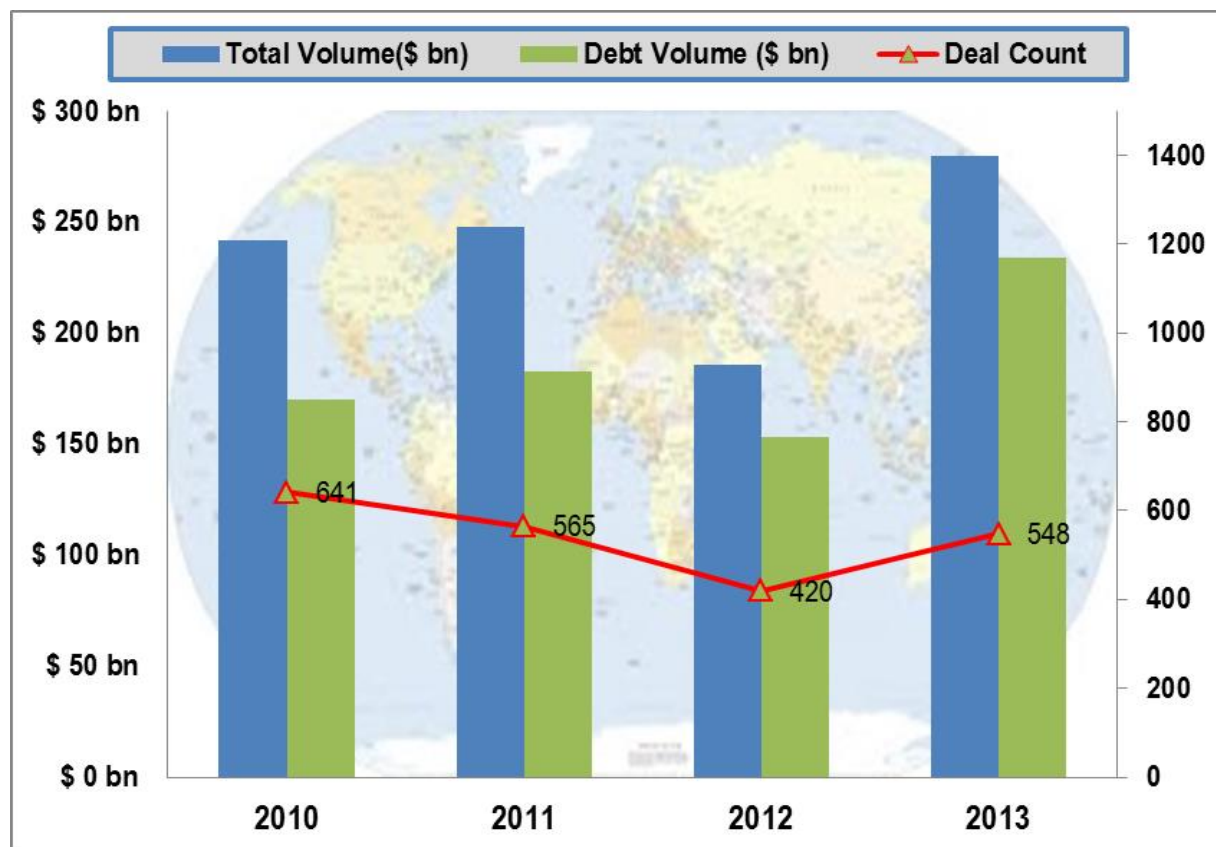
According to the Public Private Infrastructure Advisory Facility of the World Bank (PPIAF, 2011), project finance is the most common funding structure accounting for more than 70% of projects and 70% of investments in large infrastructure projects. This is evidenced by the success by which some of the notable infrastructure projects have been built globally using project finance techniques (Esty, 2001:1).

These include the \$4 billion Chad-Cameroon pipeline, the \$6 billion Iridium global satellite project, and the \$1.4 billion Mozal Aluminium project in Mozambique. As of 2001, globally the total financing was in the range of \$220 billion of capital expenditure (Esty, 2001:23) with current financing as of 2013 being in the range of \$280 billion. As observed by World Bank, such a share is not surprising given that project finance is commonly used for capital-intensive projects with relatively transparent cash flows, two features that are common among infrastructure projects.

2.4.1 Deals Log

The total project finance market as of December 2013 recorded 548 deals amounting to \$280 billion out of which \$234 billion was the debt volume translating into a debt to equity ratio of 84% to 16% (Infrastructure Journal, 2014). This translated into a 30% increase from 2012 in terms of deal count. The movements from 2012 to 2013 also saw an increase both in terms of total capital investments (debt plus equity) as well as debt capital investments which recorded 51% and 53% increases respectively as depicted in Figure 2.3 below.

Figure 2.4 2013 Global project finance statistics-full year



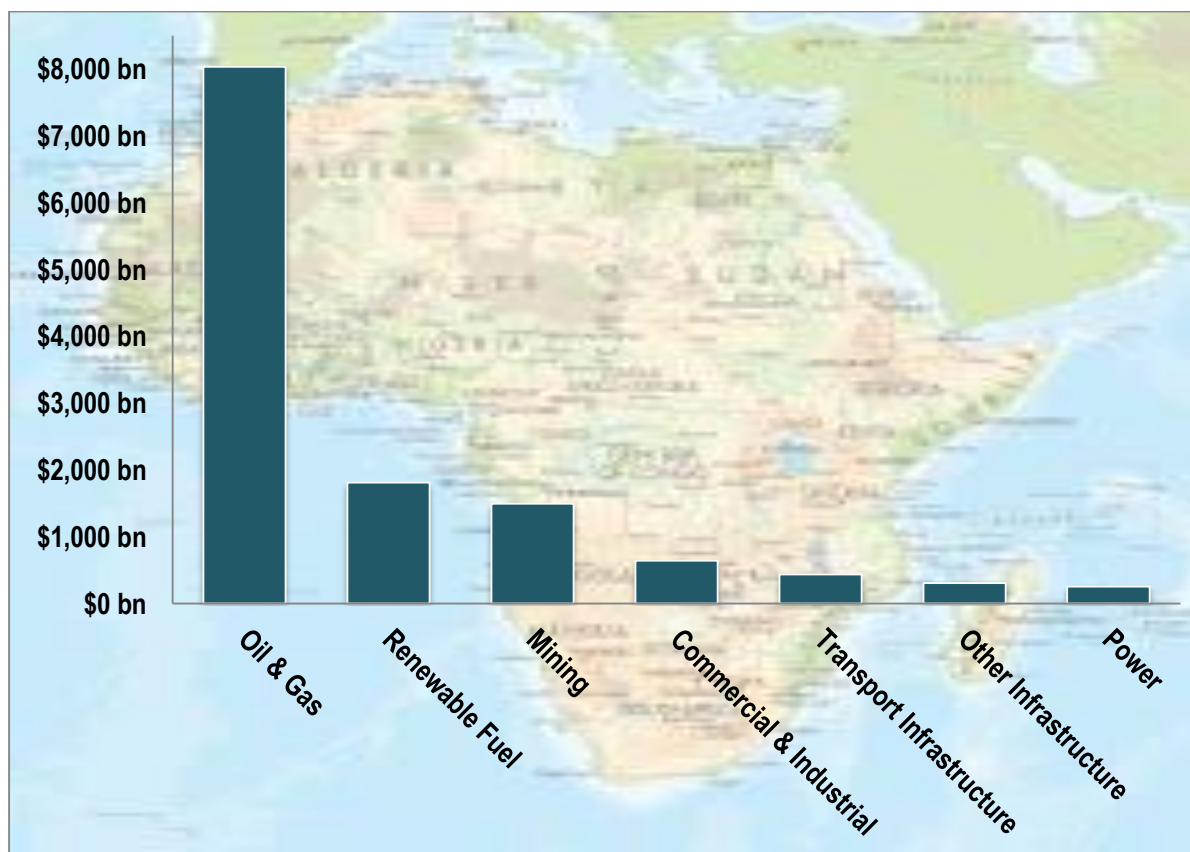
Source: Figure derived from the Infrastructure Journal - Project Finance Review (2013:4)

Such statistics are a manifestation that project finance could be on a resurgence following the slump during the 2008 financial crisis with subsequent years having been characterized by a lack of bank liquidity. Over the years, liquidity has certainly improved going by the recorded statistics and some project finance commentators now see the main hindrance as being the scarcity of viable project pipeline deals. This situation may equally be seen as being outdated going by the 30% increase in project deal count in 2013 statistics (Infrastructure Journal, 2014:4).

According to the infrastructure journal (2014), Australia and the USA remained as the top project finance markets in 2013 which were the same positions they occupied in 2012. Australia alone recorded nearly \$50 billion across all sectors. Saudi Arabia ranked third in terms of deal value having closed the \$19 billion Sadara petrochemical complex financing whereas UK remained the largest global market for social and transport investments. Turkey, Vietnam, Nigeria, Canada, United Arab Emirates and German are the other countries that occupied the top 10 project finance markets on a global scale (Infrastructure Journal, 2014).

In the case of Sub-Saharan Africa project finance market, it can be noted from figure 2.5 below that most deals in 2012 revolved around oil and gas recording \$8,037 billion (IFLR 2013).

Figure 2.5 Africa project finance sector analysis for 2012

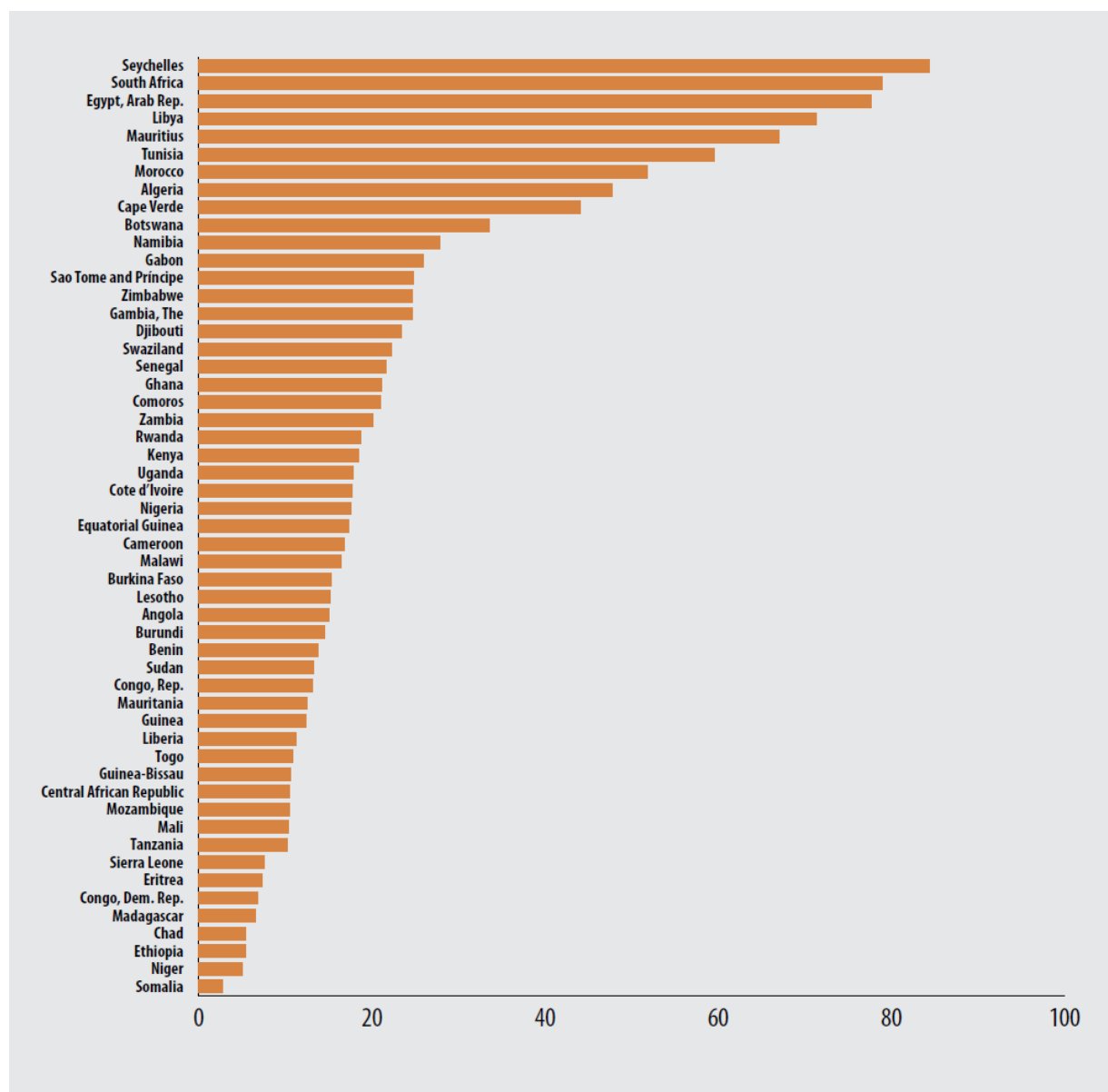


Source: 2012 Sub Saharan Africa Project finance statistical review (IFLR 2013:5)

The project finance market was also characterised by the following activities: renewable energy (\$1,811 billion) mining (\$1,496 billion), commercial and industrial sector (\$642 billion), transport infrastructure (\$437 billion), power (\$254 billion) and other infrastructure (\$307) as depicted in Figure 2.4 (IFLR 2013). Out of the total \$12.98 billion of the project financing in 2012, \$11.48 billion was debt financed through loan syndications which translates into an average debt to equity ratio of 88% to 12 %.(IFLR 2013).

In terms of the general status of infrastructure for the African continent, the Africa infrastructure development index country scores for 2010 confirms that Africa remains the least competitive global region. Figure 2.6 below provides a snapshot of the index scores for African countries.

Figure 2.6 Africa infrastructure development index, country scores for 2010



Source: Africa Development Bank, AIDI Report (2013:5)

Inadequate infrastructure is cited as the third most serious constraint to doing business in the continent, after access to finance and corruption (African Development Bank, 2010:1).

From a regional perspective, North Africa was in the lead in terms of the adequacy and quality of Infrastructure as of December 2010 with East Africa being the least developed region as depicted in Figure 2.7 below. As depicted in Figure 2.5, the top ten countries in terms of the adequacy and quality of infrastructure were Seychelles, South Africa, Egypt, Libya, Mauritius, Tunisia, Morocco, Algeria, Cape Verde and Botswana whereas the least developed countries included countries such as Mali, Chad, Eritrea, Tanzania, Congo DRC, Ethiopia, and Niger.

Figure 2.7 AIDI sub regional scores, 2000–2010



Source: Source: *Africa Development Bank, AIDI Report (2013:11)*

2.4.2 Advisors and Arrangers

Project finance advisors are undoubtedly an integral part of structuring a project finance transaction given the complexity and diversity of infrastructure projects (PPIAF, 2012:83). It is rare that a project team would have all the requisite skills needed to manage the project in question in a satisfactory manner, hence it is advisable that professional advisors be engaged to complement project staff. This could be in the areas of project preparation, procurement and the general management of project. Table 2.4 provides a snapshot of the kind of advisors that a typical PPP project may seek to engage;

Table 2.4 Role of project finance advisors

Advisor	Role
Technical Advisor	Support the development and feasibility of the technical aspects of the project, evaluate and advise on all technical issues.
Financial Advisor	Support the development of the financial aspects of the project's business case i.e. appraisal and financial modelling and liaising with financiers.
Legal Advisor	Backstopping on all legal matters including developing the contract, legal issues in the bid documents, undertake legal due diligence on the bids.
Environmental Advisor	Provide support on all environmental matters i.e. identification of environmental risks and mitigation measures.

Source: *PPPIAF project preparation guide (PPIAF, 2009:48)*

Despite the key role that advisors play, Tinsley (2000:122) provides some caution that there is need to focus more on the quality of the individuals in the team of advisors as opposed to relying on the aura of the firm given that some firms may be too committed to their industry sector or held up with work for large sponsors in a given sector. Tinsley (2000:122) further expresses concern that in industry, there is a tendency for some experts, especially in environmental due diligence, who simply cut-and-paste the report from earlier assignments. Some advisors are said not to be up-to-date with some of the latest trends in the industry hence may be proposing solutions that are at variance with latest developments (Tinsley 2000:122). Professor Paul Collier, an Oxford Professor of Economics best known for his book 'Bottom Billion', also indicated that governments must be wary of the advisors they chose. He indicated that in today's infrastructure finance arena, there is need to have a team of advisors who have a combination of both technical skills as well as the political clout which he calls 'political entrepreneurship' (London School of Economics and Political Science, 2013). Some of the sentiments he echoed in his address is that 'political entrepreneurship' is a key skill if one is to be able to structure a deal amidst political impediments which is a reality in most developing countries. He further stresses that most of the contracted advisors have a narrow form of expertise in the technical aspects and lack insights on how to deal with the political aspects of infrastructure development process. Hence, in most developing economies there is a need for the right balance of skills to increase the chances of project success (London School of Economics and Political Science, 2013).

The project finance league tables provide an analysis of financial, legal and technical advisors. As of June 2014, the top five mandated lead arrangers for project finance included Sumitomo Mitsui Financial

Group (\$3,6 bn), Mitsubishi UFJ Financial Group (\$3.2 bn), Commonwealth Bank of Australia (\$2.7 bn), Australia and New Zealand Banking Group \$2.3 bn) and PNB Paribas (\$2.0 bn) whereas top 5 financial advisors included PNP Paribas (\$17.1 bn), HSBC (\$12.8 bn), National Australia Bank (\$10.6 bn), PWC (\$6.6 bn), and Macquarie (\$4.9 bn) (Infrastructure Journal, 2014). Other notable categories of arrangers include bond arrangers which were globally led by Scotia bank, JP Morgan, Credit Agricole Group, HSBC and Citigroup whereas Allen and Overy led the top five of legal advisors followed by Lathan and Watkins, Clifford Chance, Herbert Smith Freehills and Ashurst. In terms of tech advisors, Mott MacDonald led the top five firms followed by Halcrow, AECOM, Grontmij as well as Steer Davies Gleave (Project Finance International, 2013:5).

2.5 Key Issues in Project Finance

Most of the literature on project finance tends to present the bright side of the finance mechanism without 'forewarning' would-be project sponsors on some of the concerns and criticisms that characterise the financing mechanism. Below is a summary of some of the documented issues of project finance versus public procured infrastructure.

2.5.1 Cost, Duration and Risk

The Africa50 Infrastructure fund concept note reveals that the average project development phase is currently between 7-10 years (African Development Bank, 2014:6). This technically entails that the gestation period for project finance transactions is longer when compared to traditionally procured assets just to reach financial close. This deters sponsors to use this mechanism given that in essence it also postpones the returns for project sponsors to latter years when the project is in operation. A profile of mega-infrastructure projects further confirms that the average gestation period for infrastructure development in Africa is around 7-10 years. As reported by Hoffman (2008:188), risk allocation tensions exist between the lender and sponsor regarding the degree of recourse for the loan, between the contractor and sponsor concerning the nature of guarantees, and so on, resulting in protracted negotiations and increased costs to compensate third parties for accepting risks. Coupled with the time period to structure a deal, project finance also attracts higher transaction costs along the way more so that a new and independent entity has to be formed to spearhead the project. Project finance deals also tend to be more expensive in terms of loan pricing and related fees though this may not always be the case universally given the varying risk profiles and market conditions (Hoffman, 2008:188).

Another issue that Hoffman (2008:189) raises is the greater level of supervision a lender typically imposes on the SPV which may not always go well with SPV management coupled with the increased lender reporting requirements imposed on the SPV. Hoffman (2008:189) further indicates that forecasting

ceases to be as accurate as the time period in question gets longer given that project finance projects could be for as long as 40 years. This complicates the risk management process. Among the various risk mitigation instruments, one also sees an increased level of insurance coverage which comes at huge costs.

2.5.2 Effect on Debt Stock of a Country

A key drawback that has been documented in literature and practice, is the interest and principle repayments associated with project finance (especially under a PFI's) due to the burden that arises to future taxpayers. In addition, the arrangements sometimes include not only construction, but also ongoing maintenance once the projects are complete, which further increases these projects' future cost and tax burden. In the United Kingdom in the 2000s, a scandal surrounding PFIs revealed the government was spending significantly more on these projects than they were worth, to the benefit of the private firms running them and to the taxpayer's detriment (Investopedia, 1999). Hence, there is a public outcry in certain circles that have labelled project finance (especially PPPs and PFIs) as an accounting gimmick aimed at reducing the appearance of public-sector borrowing (Bing et al., 2005)

2.6 Summary

The chapter has provided an all-rounder picture of some of the key issues that characterise project finance and its subsets notably PPPs and PFIs. Key definitions of concepts and terminologies widely used in the project finance discourse were provided as well as an outline of the key project participants. The chapter also provided an extract of the current project finance market ending with a 'dosage' of some of the key issues that come with the financing mechanism as documented by various sources of literature.

The next three chapters carry on with literature review beginning with an appreciation of what amounts to an ideal project finance and PPP framework (chapter 3) followed by chapters 4 and 5 which provide - an account of the risk management process as synthesised from various sources of literature.

CHAPTER 3 INFRASTRUCTURE PPP FRAMEWORKS

3.1 Introduction

Research question 1 sought to assess Zambia's infrastructure project finance and PPP frameworks when compared to selected theoretical and practical benchmarks. In the quest to answer this research question, the World Bank project preparation guide titled 'Attracting Investors to African Public Private Partnerships' was used as a benchmark for this chapter supported by policy as well as operational frameworks of selected developing countries to have a feel of how these frameworks work in practice.

3.2 Infrastructure PPP Frameworks-World Bank

The World Bank, Infrastructure Consortium for Africa (ICA) and the Public-Private Infrastructure Advisory Facility (PPIAF) proposes that a complete project finance and PPP framework must have the following sub-frameworks: policy framework, legal framework, investment framework and operating framework as elaborated below.

3.2.1 Policy Framework

A good policy framework is seen to be one that helps both the public and private sectors to understand the core rationale for PPPs and how the public sector goes about making PPPs happen (World Bank & PPIAF, 2011:15). Most academic literature acknowledges that PPPs are difficult to deliver in an unstable policy environment. In this realm, private sector expects to see a PPP policy that clearly identifies the policy rationale for using PPPs; the guidelines that the public sector will use to assess PPP projects; the approval process throughout the process such as project selection, preparation and procurement; as well as the process of resolving disputes (World Bank & PPIAF, 2011:16). The PPP policy is also expected to be clear on how long the bidding process takes, how workable and transparent it is, how the public authority manages the partnership in the long term, and, above all, how committed the government is to the project (PPIAF, 2009:14).

The take home message is that the more transparent the objectives, targets, and consequences of the PPP, the more effective the partnership will be. Hence, the need for: clear evaluation and process mapping which sets out key decision points along the process; time lines; criteria for project selection and eligibility; as well as the principles or criteria for evaluating bids.

3.2.2 Legal Framework

The PPIAF framework as cited above also indicates that private sector investors seeks to see a legal framework that has the ability to ensure the effectiveness of long term PPP contracts which also allows them to charge and collect user fees under a concession PPP (PPIAF, 2009:14). Given the tradition in most developing countries where delivery of services has been a preserve of the state, specific laws may be required to allow the public sector entities to contract with the private sector entities for the delivery of service hitherto provided only by the state (The South African Institute of International Affairs , 2005:34).

Thus, some of the questions that the private sector would want answered are issues related to investor rights especially if the contract is terminated, ability to repatriate profits for overseas investors, lender rights especially their ability to have security over the underlying infrastructure assets which may belong to the public sector at the time as well as to clarity on contract dispute resolutions (PPIAF, 2009:16)

3.2.3 Investment Framework

Like the old adage 'a journey of a thousand miles begins with a single step', PPP programmes in most countries often start with one-off projects that deliver the PPP experience and build confidence in the government's ability to develop other projects later. In the quest to provide a conducive investment framework, there is need for a country to have an infrastructure investment plan driven by top level political commitment. Such an investment plan must be presented carefully and in proper context so that it is not perceived as a wish list of projects which lack credibility and coherence. Such projects, in the project finance technical jargon may be dubbed as being un-bankable (PPIAF, 2009:15).

A good investment framework is one where programme specific sectors are developed given that benefits do arise because of the learning curve arising from replicability for both the costs and the quality of the PPP process for the public and private sector (PPIAF, 2009:15). An excellent example provided is a port project such as the Mpulungu Harbour in Zambia which may only make commercial sense if there is a connecting rail transport infrastructure or some reforms in transit and customs clearance. One of the biggest problems in infrastructure finance for Africa is the lack of a pipeline of high quality projects which would naturally encourage more bids from quality investors (African Development Bank, 2014:5). Given the huge bid costs and the time of bid preparation, it makes sense that there is a pipeline of projects as opposed to having one-off project launches (PPIAF, 2009:15).

3.2.4 Operating / Implementation Framework

Most countries in Africa appear to have a good understanding of the need for a sound policy rationale, strong legal and investment framework but usually investors want assurance that the operating and

implementation framework within government has the capacity to manage the PPP process and that policy makers and other parties involved have a realistic understanding of the complexity of PPP projects (PPIAF, 2009:15-16). One of the key talking points in PPPs is the issue of public procurement authorities' failure to appreciate the significant difference between PPPs and the traditional form of procurement and the implications of the differences for the level of resources, unique skills, new processes and the kind of institutions needed (World Bank & PPIAF, 2011:23)

To ensure that there is consistency and better quality in the manner in which PPPs are managed by the public sector, there is need for a centralised PPP unit well-resourced with requisite skills to offer a centralised support service to the public sector (PPIAF, 2009:17). Beyond this, it is also advisable that ministerial PPP units be established over the years to ensure ownership by the respective public authorities throughout the PPP process as opposed to relying on the centralised PPP unit which may be too inundated with other competing proposals from other public sector entities (PPIAF, 2009:17). Given that municipalities are also key agents of development, capacity building may need to be extended to the local bodies as well.

3.3 Project Finance and PPP Frameworks in Practice

Guided by the 2013 project finance country league tables, below is a sample of some of the policy frameworks and achievements of some of the developing countries that have been heralded to be front runners in infrastructure project finance. The policy frameworks provided below are for South Africa and India. The researcher is aware that from an African perspective, Nigeria was among the top 10 global best performers in project finance posting US8.8 billion worth of infrastructure investments ahead of Canada (US7.6 billion), UAE (US7.2 billion), and German (US6.9 billion). From the league tables as outlined in the Infrastructure Journal, (2014:3), it notes that Nigeria was the only project finance economy in Africa for 2013 ahead of South Africa but data on the latter's policy and investment framework and the deal log was easier to access for analysis purposes.

3.3.1 South Africa (SA)'s PPP Performance

The South African law defines a PPP as “a contract between a public sector institution/municipality and a private party, in which the private party assumes substantial financial, technical and operational risk in the design, financing, building and operation of a project (Republic of South Africa, 1997)”. In April 1997, the South African Cabinet approved the appointment of an inter-departmental task team to develop a package of policy, legislative and institutional reforms. These had the intention of creating an enabling environment for PPPs which saw some pioneering PPP projects being undertaken between 1997 to 2000 by the SA National Roads Agency for the N3 and N4 toll roads. This was carried out by the Departments

of Public Works and Correctional Services for two maximum security prisons; by two municipalities for water services; and by SA National Parks for tourism concessions. Drawing early lessons from these projects and from international experience, a strategic framework for PPPs was endorsed by Cabinet in December 1999, and in April 2000, Treasury Regulations for PPPs were first issued in terms of the Public Finance Management Act (Act 1 of 1999). By mid-2000, with technical assistance funding from USAID, GTZ and DFID, the PPP Unit was established in the National Treasury with five professional staff drawn from both the public and private sectors (Republic of South Africa, 1997)

In terms of the legislative framework, South Africa has at the apex the constitution supported by the following frameworks: Municipal Finance Management Act No. 56 of 2003 (MFMA); the Public Finance Management Act (PFMA); 1999 (Act No. 1 of 1999) (as amended by Act No. 29 of 1999) which is seen as one of the most important pieces of legislation passed by the first democratic government in South Africa; and the labour relations Act of 1995 as well as the preferential procurement policy framework Act (No 5 of 2000). For the governance framework, the PPP governance framework provides for eight guiding modules which include the following: South African regulations for PPPs (module 1); code of good practice for BEE in PPPs (module 2); PPP inception guidelines (module 3); PPP feasibility study (module 4); PPP procurement (module 5); and managing the PPP agreement (module 6) all of which are quite instructive. Other provisions include the accounting treatment for PPPs, case studies for reference, municipal PPP guidelines, PPP tool kit for tourism, standardised PPP provisions and unsolicited PPP bid practice note.

Some of the notable sources of literature on PPPs notably the World Bank and its affiliate-the Public Private Infrastructure Advisory Facility have dedicated chapters in their guidance manuals substantiating the robustness of South Africa's PPP agenda. By way of example, the World Bank & PPIAF (2011:16) indicates that South Africa's Public Finance Management Act regulates and sets out the responsibilities to ensure efficient and effective government financial management. Under this act, Treasury Regulation 16 specifies the required approvals and responsibilities. Detailed guidance, in the form of a PPP manual, has been developed to cover the range of processes involved.

In terms of capacity building, as of February 2013, the National Treasury's PPP Unit comprised of seventeen professional staff who were allocated projects depending upon individual sector expertise and interest across 14 sectors which include health, energy, education, waste water and a total record of 22 signed PPP agreements which include the following: the R870 million Head Office Accommodation for the Department of Trade and Industry (25 year DFBOT concession), the R18.8 million Humansdorp District Hospital in the Eastern Cape (5 years DFO concession), the R553 million Fleet Management PPP for the Eastern Cape Department of Transport (5 years DFO) etc (Republic of South Africa, 1997).

Ironically, despite these milestones and impressive PPP framework going by the deal count and the projects undertaken such as the N4 Toll road and the Gautrain project, a recent report contracted by the Office of the Presidency to Castalia Consortium exposed some PPP challenges faced by South Africa. One of these points to the private sector believing that there are too few PPPs happening in SA in sectors that have limited development impact for the country (Castalia Consortium, 2007:2-6). Other challenges reported include: lack of highest level policy direction, lack of consistent political resolve, policy bias towards traditional public procurement, and more severe problems at municipality level (Castalia Consortium, 2007:2-6). The findings by the Castalia Consortium report could perhaps be vindicated by the 2013/14 reported protests in Gauteng, Johannesburg where masses of Gauteng residents mainly led by the labour movement (COSATU) and other civil society bodies took part in protests against e-tolls. The allegations by the citizens ranged from issues related to there being no viable alternative routes for those that cannot manage to pay, lack of an effective and reliable public transport options, lack of consultation and transparency (OUTA, 2013).

3.3.2 India's PPP Performance

Like South Africa, pundits on PPPs have recently commented that PPPs are becoming increasingly robust and transparent in India something that is confirmed by the World Bank. The country has emerged as one of the leading PPP markets in the world, due to several policy and institutional initiatives taken by the central as well as many state governments. The Government of India has set up a Public Private Partnership Appraisal Committee to streamline appraisal and approval of projects. Transparent and competitive bidding processes have been established. To provide a broader cross-sectoral boost to PPPs, extensive support has been extended through project development funds, viability gap funding, user charge reforms, provision of long term financing and refinancing as well as institutional and individual capacity building. PPPs are now seen as the preferred execution mode in many sectors such as highways, ports and airports. Increasingly, PPPs are being adopted in the urban sector and in social sectors. Over the years an elaborate eco-system for PPPs has developed, including institutions, developers, financiers, equity providers, policies and procedures (Government of India, Ministry of Finance, 2014).

The researcher was somewhat 'enchanted' by the extensiveness of the interactive online PPP toolkit of India which provides a lot of easy-to-use information including templates and sequence of structuring processes aimed at guiding both the public and private sector in the PPP process. The tool kit provides guidance to five sectors namely: ports, solid waste management, state highways, urban transport as well as water and sanitation. For example, the urban transport tool kit provides the PPP background, PPP process from PPP identification, full feasibility and preparation, PPP procurement, and contract

management (Government of India, Ministry of Finance, 2014). Such a toolkit is vital to project sponsors in that it's easily accessible and quite detailed enough to provide novices in the trade with skills on the expected processes.

3.4 Summary

As was stated in the introductory section to Chapter 3, this chapter was meant to provide the theoretical and practical normative criteria for project finance and PPP frameworks. What can be deduced from the chapter is that time and effort must be spent laying the foundations for successful project finance deals especially dealing with the following issues: laying the right foundations by establishing a clear PPP policy rationale, a robust legal framework, an investment framework (including an approval process), and a well organised operating framework. This should be followed by informing potential investors of the existence of these policy and operational frameworks which may ensure that the private sector response is improved when procurements are launched (PPIAF, 2009:13).

The chapter provided a good yardstick against which to benchmark Zambia's project finance and PPP frameworks in response to research question number 1 which sought to ascertain how Zambia's infrastructure project finance and PPP framework compare with theoretical normative criteria as well as other developing countries' policy frameworks in practice.

CHAPTER 4

PROJECT RISK IDENTIFICATION AND ASSESSMENT

4.1 Introduction

Research question 2 sought to assess the severity of infrastructure project finance risks in Zambia. To respond to this question, the researcher needed to have a sound knowledge of the typical risks that characterise project finance both in industry as well as academically which would then guide the structuring of the research instrument as outlined in chapter 6 on Research methodology.

Given the background above, this chapter begins with section 4.2 which provides an overview of the risks that characterise the global infrastructure financing landscape with some deliberate emphasis on Africa being the mother continent for Zambia which was used as a case study for this treatise. Besides the aim of enlightening the reader on the infrastructure financing landscape, the section should also be seen as one that was meant to augment the research problem statement as was highlighted in section 1.2. The main thrust of the chapter should, however, be seen as one that seeks to present some scholarly and industry literature in the risk management process in project finance focusing on the risk identification and assessment processes as documented by academic and institutional scholars.

4.2 Overview of Global Infrastructure Financing Risks

On the global stage, Esty (2004:1-2) in his book *“Modern project finance- A casebook”*, cites some of the classical project finance investments such as the Eurotunnel, EuroDisney, Dabhol, Iridium, etc as some of the projects that have undergone financial distress despite using project finance as a structuring and financing mechanism. For example, the Eurotunnel project, dubbed as the largest project finance company and one of the largest private workout in the history of project finance technically went bankrupt when it announced on 14th September of 1995 that it was suspending payment on its debt amounting to £8.56 billion. As reported by Vilanova (2005:1), this default gave rise to one of the largest financial restructuring ever seen involving a syndicate of 220 Banks. The EuroDisney project in France, which as of 1985 was dubbed as the largest investment in modern France, equally had its own failures ranging from wrong demand assumptions, underestimating the negative attitude among the French on the project as well as other operational errors to an extent that projected ticket prices had at some point to be slashed by a third as a desperate move to improve the attendance. The total cost of building the EuroDisney project ended up being \$5 billion from an initial estimate of \$1 billion due to a number of design and construction changes. Between 1992 and 1994, a combination of reasons led to financial difficulty at Euro

Disney: the US\$4 billion debt posed a huge financial burden on the park, interest rates were double as compared to the estimate, tourist spending was lower because of recession in Europe, half the revenue projected to come from real estate development did not materialise as a result of the collapse of the property market in France, a strong franc made it expensive for visitors and the low attendance eventually fell below the expected annual 10 million for the period.

In the African context, the African Development Bank reports that financing needs for construction and operation of infrastructure in Africa are estimated at \$93 billion per annum, with a current financing gap estimated at \$48 billion per year. Going by the 2010 Africa Infrastructure Development Index, country scores for 2010 as was depicted in figure 2.6, it is evident that the larger portion of the countries in the continent are below the 50% index. In seeking to bridge the financing gap highlighted above, most developing countries have in the recent past turned to the private sector to finance, design, build and operate infrastructure facilities hitherto provided by the public sector (PPIAF, 2009:1).

The linkage between infrastructure and development are well established, including the impact of infrastructure on poverty alleviation, equity, growth and specific development outcomes such as job creation, market access, health and education. Yet despite this understanding of the linkage between infrastructure and development coupled with the impressive global statistics for project finance in bridging the infrastructure gap, the International Finance Corporation (1999:38) observed that the practice of project finance especially in developing countries is tainted with numerous risks. Raising debt or indeed equity capital for infrastructure development and service provision has been a big challenge for developing countries. This is as a result of policy inconsistencies and other country specific risks, construction, technological, supply, operational, legal, regulatory, inflation, market as well as financial risks which have impeded on the financing and delivery of infrastructure investments in a fiscally viable manner.

What this points to is that the biggest obstacle to infrastructure development has been the risk profile of most developing countries coupled with lack of reliable risk mitigation instruments. As observed by Matsukawa and Habeck (2007:vii), risk mitigation instruments facilitate the mobilization of commercial debt and equity capital by transferring risk that private financiers would not be able or willing to take to those third party officials and private institutions that are capable of taking such risks. Ironically, the literature also states that those nations with greatest demand for infrastructure capital coincidentally have a relatively greater amount of uncertainty in their political, regulatory, and economic environments than their counterparts elsewhere in the developed world (Moody's, 1998:1). As observed by Moody's, this then introduces additional layers of risk to an already complicated form of financing landscape.

The problem statement which was highlighted in chapter 1 is further deep-rooted by a number of institutional and academic writings. For example, Sy (2013:5) in his paper “ Financing Africa’s Infrastructure Gap” notes that Africa started 50 years ago with infrastructure comparable to those in Southeast Asia, but now the continent is lagging behind other developing countries. He attributed this to the lack of maintenance and poor investment decisions, especially in the post-independence period where the so-called “bridges to nowhere” and “white elephants” were the order of the day. He further observes that Africa’s infrastructure services, whether for power, water, road freights, mobile telephones or internet services, are twice as expensive as elsewhere. The PPIAF paper by Sheppard, Klaudy and Kumar (2006:4) on one hand cites low creditworthiness, limits of local financial and capital markets and the risk profile of most African countries as key impediments to the continents infrastructure financing agenda. One of the topical issues is the inability by Governments to ‘inject’ equity into public infrastructure projects which scares investors to provide all the needed capital given the risk that characterises Africa as profiled above. An assessment of infrastructure PPP by the South African Institute of International Affairs (2005) revealed a number of issues why Africa has not made huge strides in infrastructure investments especially through the use of PPPs. Some of the issues highlighted in the report include: underestimation of the political opposition to PPPs especially after the privatisation sagas in the earlier 1990s, suppressed prices for infrastructure services in order to make them affordable to citizens, corruption especially in the tendering process, lack of capacity to structure infrastructure investments etc. All that these findings by various literature sources reveal are that risks associated with infrastructure project finance in Africa are indeed endemic thereby further justifying the reaseach.

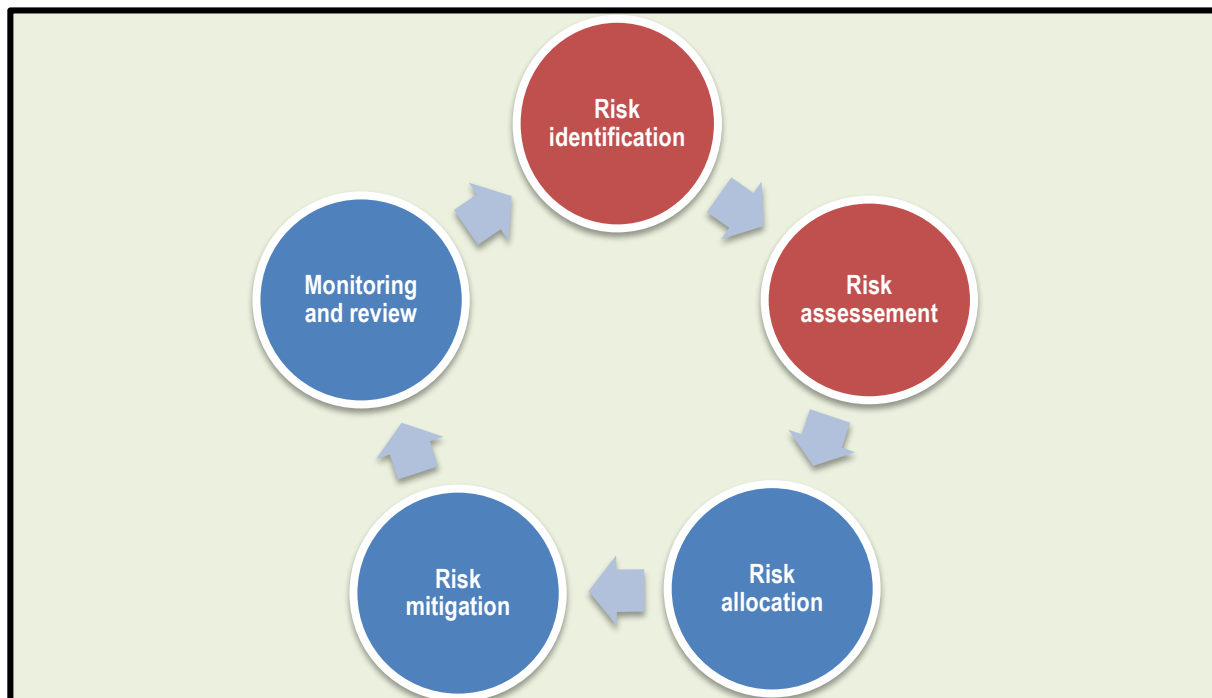
Given this rather mixed status of Africa’s Infrastructure financing efforts, it becomes imperative that the risk mamangement process is re-visited hence the writeup in section 4.3 onwards.

4.3 Risk Management Process

From the various sources of literature which documents the risk management processes, different approaches can be observed. For example Irimia-Diéguez *et al.* (2014:3) proposes that the project finance risk management process is composed of six steps which include : planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, and risk monitoring and control. Other views such as Esty (2004:9) in his book “Modern Project Finance” proposes a four stage risk management process that begins with the broad categorisation of risks under which specific risks are identified. In his approach, he proposes that the second stage would be to assess the risks in terms of their likelihood of occurrence and the possible impact they would have on the project . This process is then followed by the risk mitigation process. The final step is the risk allocation to various parties that are best able to control the risks and that can bear them at least cost. On the last two processes: risk

mitigation and risk allocation, there are variances in the proposed approach by Esty (2001:9) and the International Finance Corporation's proposed framework as the latter proposes that risks must be allocated to different parties before mitigation strategies can be developed. Figure 4.1 provides an example of the risk management process as proposed by the Asian Development Bank which is in sync with the one proposed by the IFC.

Figure 4.1 Risk management cycle: focus on risk identification and assessment stage



Source: *Asian Development Bank (2012:34)*

In this research, the proposed risk management process by Asian Development Bank (2012:34) as depicted above is adopted. The adopted framework outlines five key stages which assumes that a typical project finance transaction consist of a combination of five different but interrelated steps. First, all risks affecting a particular project must be duly identified and understood at an early stage by project participants (risk identification). Second, risks must be quantified and assessed to determine their magnitude (risk assessment). Third, risks must be distributed among the various project participants in a way that is mutually acceptable for them (risk allocation). Fourth, risk reduction techniques must be applied to reduce the overall risk facing project participants to the lowest possible level (risk mitigation/reduction).

The fifth stage (monitoring and review) is also a key process aimed at ensuring that the risk management process is not one off but a continuous process. For the sake of brevity, this study, however, did not have a lengthy and dedicated section to elaborate on risk monitoring and review. Further, though not presented

as a separate step, each participant may individually choose to further reduce its allocated risks through additional risk spreading mechanisms such as political and commercial insurance and derivative instruments (hedging and insurance). As elaborated by Chandra (2009:11), sources of risk could be quite diverse though generally they emanate from within the project (project-specific risks), competitors (competition risk), industry such as technology and regulatory issues (industry specific risk), market risk as well as international risks.

It must be noted that chapter 4 is only focused on the first two stages: risk classification and identification as well as risk assessment whereas chapter 5 will encompass literature related to risk allocation and mitigation processes.

4.4 Risk Classifications

The researcher deduced that most literature on risk management in infrastructure project finance encourages analysing risks by firstly classifying them in broad categories guided by the homogeneity of the activities or following the project lifecycle. The researcher is of the view that this is a much more orderly and systematic way of handling the risk management process to avoid omitting certain risks which could easily be left out if an open brainstorming exercise is adopted without any guide in form of a checklist. Hence this process of risk classification in broad categories should be seen as one that constitutes a basic element in the risk management process. The rationale behind this is that it does not only help in the process of risk identification, but also in the subsequent steps, including how these risks should be managed. From a scan of the literature on risk classifications, it is evident that there is no homogeneity in the risk classifications. One can see various approaches across various individual and institutional writers on the risk management process. However, despite the differences in the risk categories and the relative importance of the particular types of risks across various jurisdictions and sectors, there is considerable commonality among the various types of risk that governments and individual scholars have identified in undertaking PPPs which can be seen from a sample of publicly available literature as summarised below.

In the case of writings by academic and industry scholars in project finance, some of the examples include Gatti (2009:43-75) who is a proponent of risk classification guided by the project phases that a project undergoes through its economic life. These include the construction or pre-construction phase as well as operational or post-completion phase. To cater for risks that may be found in all the project phases, Gatti (2009:44) introduces a third category of risks that encompasses both the pre and post completion stages. Esty (2004:9) on the other hand identifies four general broad categories under which project finance risks can be identified. These risk categories do not necessarily follow the project lifecycle as depicted above but appear to be guided by an intuitive classification based on the general characteristics of a project

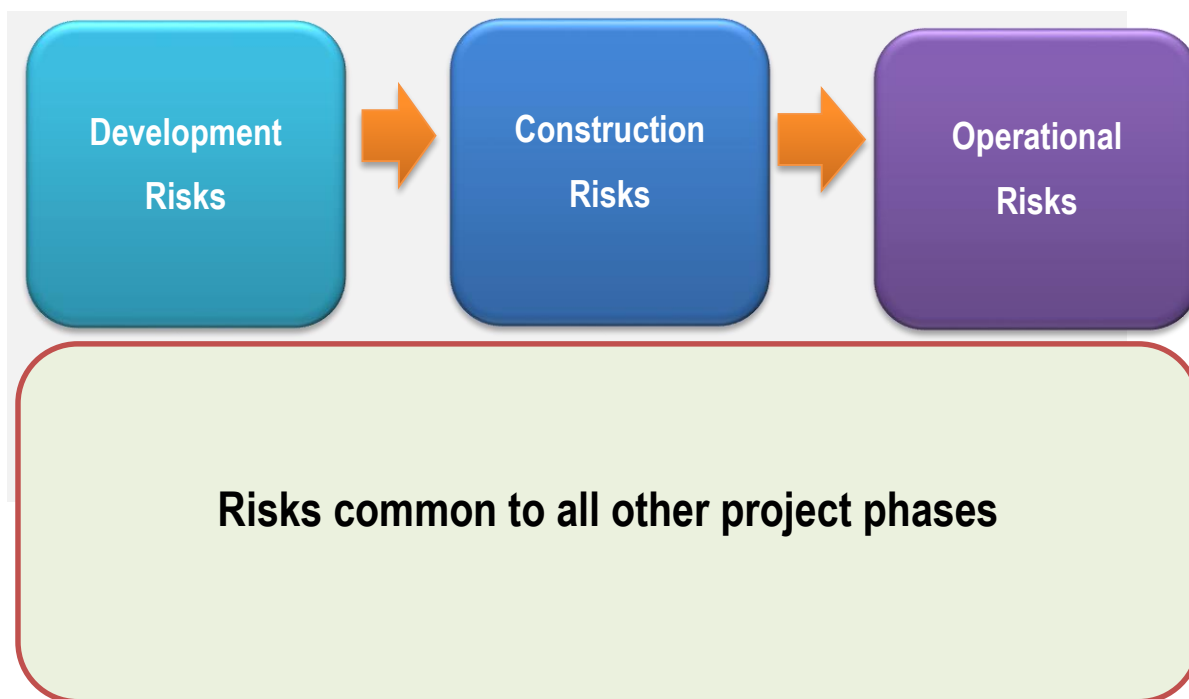
finance deal. These include : completion risks, operating risks, political/sovereign risks as well as financial risks. Other authors such as Bing et al. (2005) have adopted a risk categorisation framework based on the levels of the risk factors of the project which comprise of: macro level risks, meso level risks and micro level risks. The bulk of the scholars and practitioners in project finance appear to embrace a method of risk identification which is based on a risk checklist or catalogue which in most cases has no particular order.

In the case of institutional risk categorisation frameworks which include Government entities and regional development institutions, one generally sees a set of various generic risk categories as a tool to aid the deal structuring process. For example, India's infrastructure guidebook on risk analysis provides for 5 categories which include : private partner selection risks, pre-development risks, financing risks, construction risks and market risks whilst the World Bank, IFC and the PPIAF's risk categorisation framework include : project construction/completion risks, performance risks, market risks, economic risks, political risks, and force majeure risks (PPIAF, 2014). The US Department of Transport in its Guidebook for Risk Assessment in PPPs identifies 18 types of risks across three broad categories (development phase, construction phase and operation phase) similar to Gatti's approach though the latter incorporates the development phase in the pre-construction phase and introduces a category that accounts for risks that may fall under all phases of a project. In the case of the Government of South Africa, Annexure 4 of the PPP manual identifies 24 kinds of risks ranging from availability risks, completion risks, cost overrun risks, design risks, insolvency risk etc in no particular order.

The Queensland Government of Australian in its PPP guidance manual identifies 45 specific risks under 10 broad risks categories. These include site risks, design risks and construction risks, sponsor and financial risks, operating risks, market risks, network and interface risks, industrial relations risks, legislative and government policy, force majeure, and asset ownership risks (Queensland Government-Australia, 2008:92-107).

Though the above analysis is by no means a complete account of the risk categories commonly used in practice, one can see that there are some risk categories that are quite common across the various categories from different viewpoints. For the sake of this study, the researcher sought to analyse risks according to an adapted hybrid version based on the synthesis of the various risk categorisation frameworks from the literature , see Figure 4.2 below.

Figure 4.2 Project risk categories



Source: Adapted from Asian Development Bank (2012,33), Esty (2004:11) , Gatti (2009:44-47), and Yescombe (2014,197-311)

4.5 Risk Identification

Having identified the broad classifications within which risk can be grouped, the next process would naturally be to identify the specific risks within each category which the researcher chose to call as sub-risks. As highlighted above, the classifications and the subsequent identification of specific risks within each category tends to overlap from different view points hence the risk categories as profiled below aim to provide the general outline of risks as synthesised from the generic risk categories identified above .It must be noted that there are various strategies which can be used to identify specific risks for a given project. Chinyio & Fergusson (2003:99-104) identifies 10 strategies as listed below in table 4.1:

Table 4.1 Risk Identification strategies

#	Risk Identification Strategy
1	Risk identification through use of personal and corporate experience
2	Risk identification through safety reviews i.e. routine reviews of previous projects
3	Risk identification through intuitive insights such as a change in law

4	Risk identification through brainstorming
5	Risk identification through site visits
6	Risk identification through the use of organisational charts i.e. checking the adequacy of staff competencies
7	Risk identification through the use of flow charts
8	Risk identification through research, interviews and surveys
9	Risk identification through analysis of assumptions, and
10	Risk identification through consultation of experts.

Source: *Chinyio & Fergusson (2003:99-104)*

The key issue worth noting is that, risk identification is a key stage in the risk management process given the likelihood that if a given risk is not identified in advance, the risk might interfere with the project if it materialised at any time in the life of a project. Some sources of literature such as Mills (2013:4) indicate that after many years of experience, very experienced limited recourse financiers and promoters develop a mental checklist which they can apply to identify risks on a new project once it gets on their desks. This line of thought entails that such experienced practitioners do not necessarily approach the risk identification process in the same manner as prescribed above, but they somehow come to an understanding of what the potential risk areas of the project are and identify the key factors which will drive the project structure and pricing. Much as this may be the reality in practice, the reverse is equally worthy noting, regardless of the experience, new risks can easily emerge and some risks which may have initially been classified as minor may suddenly become key issues in a project hence the need to be very holistic and avoid complacency.

Given the background information above, section 4.5.1 through to 4.5.4 sought to identify the key risks that are common in practice guided by Figure 4.1. This section formed the backbone of the study especially in responding to research question 2 in that the structuring of the research instrument was guided by these sub-sections towards carrying out an assessment of the severity of the various risks as outlined below.

4.5.1 Phase 1 - Project Development Risks

A study commissioned by the Africa Finance Corporation (AFC) in 2011 showed that only 17% of PPP projects announced in Africa reach the implementation stage. One of the major reasons for this lack of

success in PPPs in Africa has been the lack of understanding of how to select and prepare bankable PPP projects coupled with the lack of a clear design and implementation of policy frameworks and at times the lack of sufficient government support or incentives, when required. Given this rather brief introduction, a number of various sources of risk at project identification and structuring stage do arise - some of which are summarised below in Table 4.2.

Table 4.2 Project development risks

Risk categories	Risk explanation
Project selection risks	Risk that project selected for development may not be fiscally and commercially viable No feasibility study undertaken
Sponsor risks	Risk that project sponsors fail to meet the minimum equity injections, Risk that sponsors have no verifiable track record
Procurement risks	Risk that the procurement process is not transparent, a contractor without experience and credit worthiness is procured.

Source: *Adapted from Asian Development Bank (2012,33), Esty (2004:11) , Gatti (2009:44-47), and Yescombe (2014,197-311)*

4.5.2 Phase 2 - Construction and Completion Risks

Construction risks appear to be the most documented risks in any of the infrastructure project finance literature sources though there is varying depth of what it encompasses. Most literature defines construction risk in relation to unanticipated changes and errors in the construction of the project resulting from the improper design or poor investigation. This is consistent with the writings of Ke *et al.*(2011) and Tinsley (2000) though the latter calls this kind of risk as ‘completion risk or development risk’.

To further concretise the understanding of what amounts to construction risks, Gatti (2009:46) provides some examples of construction risks which mainly pertain to: noncompletion or delayed completion due to force majeure, completion with cost overruns, delayed completion as well as completion with performance deficiencies. Though the issues of funding availability is classified under financial risks in other project finance literature, Yescombe (2014:203) classifies funding risk as a construction related risk where insufficiency of funding available to complete the project may force project sponsors to inject further

funds most often through further borrowing to avoid halting the construction. Table 4.3 below provides an exposition of some of the typical construction risks in industry.

Table 4.3 Construction and completion risks

Risk categories	Risk explanation
Land availability risk	Land may not be available for occupation , there could be some encumbrances related to the land hence this has to be resolved by the sponsors before approaching potential project funders
Design risks	The risk that design cannot deliver the services at the required performance or quality standards
Construction risks	The risk that the construction of physical assets is not completed on time, within budget and to specification
Technology risks	The risk that changes in technology result in services being provided using non-optimal technology

Source: *Adapted from Asian Development Bank (2012,33), Esty (2004:11) , Gatti (2009:44-47), and Yescombe (2014,197-311)*

4.5.3 Phase 3 - Operational and Market Risks

Operational risks which are sometimes referred to as post construction risks are risks that arise once the project has been constructed and enters the operational phase. Table 4.4 provides an exposition of some of the risks that are likely to arise during the operational phase.

Table 4.4 Operational and market risks

Risk Categories	Risk Explanation
Market/demand risk	Risk that the demand for a service will vary from that initially projected Risk that the price for a service will vary from that initially projected
Input supply risks	The risk that required inputs may cost more than anticipated Risk that inputs may be of inadequate quality or are unavailable in required quantities.

Maintenance risks	The risk that the constructed asset is not maintained hence reducing the lifespan of the asset
Operator failure risks	The risk that a subcontract operator may fail financially or may fail to provide contracted services to specification

Source: *Adapted from Asian Development Bank (2012,33), Esty (2004:11) , Gatti (2009:44-47), and Yescombe (2014,197-311)*

4.5.4 Phase 4 - Risks Common to all Project Phases

These are risks that may arise at any time of the project phase. Given the diversity in the literature in project finance, some of these risks could arguably be categorised under the project development, project construction or indeed operational phases. Table 4.5 below provides a summary of the common risks that could manifest themselves at any time of the project life.

Table 4.5 Risk common to all project phases

Risk Categories	Risk Explanation
Country/political risk	Risk that there could be the possibility of unforeseeable conduct by the government that materially and adversely affects the expected returns of project sponsors.
Regulatory and compliance risks	Risk that changes in the sector regulatory framework may adversely affect the project.
Economic and financial risks	Where the project outcomes are sensitive to economic and financial influences. For example, where actual inflation, interest rates or exchanges rates differs from assumed rates.
Environmental risks	Risk that the nature of the project has a major impact on its adjacent area and there is a strong likelihood of objection from the general public
Legal risks	Risk that changes in the legal framework may adversely affect the project i.e. project contracts not enforceable, no protection for project sponsors

Source: *Adapted from Asian Development Bank (2012,33), Esty (2004:11) , Gatti (2009:44-47), and Yescombe (2014,197-311)*

4.6 Risk Assessment/Evaluation

Though various sources of literature differentiates the terminologies 'risk assessment' and 'risk evaluation', there is lack of consistency in the use of these terminologies in most risk management literature sources. The online business dictionary defines risk assessment as the identification, evaluation, and estimation of the levels of risks involved in a situation, their comparison against benchmarks or standards, and determination of an acceptable level of risk whereas risk evaluation is defined as the determination of risk management priorities through establishment of qualitative and/or quantitative relationships between benefits and associated risks (Business Dictionary, 2011). Despite this effort to differentiate the two terminologies, most of the literature in risk management does not make this distinction. The common practice is that terminologies of 'risk assessment' and 'risk evaluation' are used interchangeably. This can be noted from Esty (2001:9) in his book 'Modern Project finance' where he uses the terminology risk assessment as being the third stage in the risk management process whereas Chinyio and Fergusson (2003:105) use the terminology risk evaluation to deduce the impact and probability of a given risk on the project. Though this research recognises this diversity in the use of the two terminologies, the terminology 'risk assessment' is used for the sake of consistency.

With that explanation, it must be noted that once the risks have been identified, there is need to deduce the severity of the risks so that project participants can be identified to handle certain specific risks based on their comparative capacity to handle certain risks (Esty, 2004:9-10). Going by Esty's proposed outline of the risk management process, risk identification is then followed by the identification of other risk mitigation instruments (Esty, 2004:9-10). Given that sources of project finance are highly skewed towards debt financing when compared to equity, it is prudent that the risk assessment process is viewed in the 'eyes' of some of the key project participants notably banks, credit agencies, multilateral development finance institutions. Some of the most common approaches to risk assessment include: an objective benchmark where the borrower is compared to a template of objective benchmarks for different risk factors; simulation models which focuses more on the borrower's financial performance simulated over multiple periods with critical inputs altered; stress testing the borrower's financial performance; and judgemental criteria where a bank develops a judgemental criteria and descriptions to distinguish credit quality usually using a weighting scale and a hybrid which is a combination of the other risk assessment approaches (Bank for International Settlements, 2001:17).

The analysis of the severity of risk is usually analysed by looking at the probability of occurrence of a given risk, as well as the impact of that risk if it did materialise. An accurate assessment of the two aspects of probability of occurrence and impact enables project practitioners to decide on a course or courses of action (Chinyio & Fergusson, 2003:105). Depending on the compound result, appropriate measures are then instituted as documented in chapter 5. Chinyio and Fergusson (2003:105-106) further

indicate that the probability of risk occurrence could be seen as a factor of the strength of the party allocated to handle that risk and the kind of support such a party is accorded by the project participants. The weaker the party, coupled with less effective mitigation instruments and little support from other parties may exacerbate the likelihood of a given risk to occur.

Sponsors may be looking at the impact a given risk may have on their equity returns whereas for lenders, theirs may be the impact that a given risk may have on the ability of the project to service debt (Chinyio & Fergusson ,2003:106). Hence sensitivity analysis comes in handy at this juncture to gauge the impact of risk on the pivotal cash flow projections which underpin the quantification of the loan amount, repayment terms of the loans, and the interest rate and margin for the project financing. Figure 4.3 below presents a sample risk assessment framework adapted from Chinyio & Fergusson (2003:106) though in terms of impact they use the low-medium-high category as opposed to the manageable-major-critical category.

Tinsley (2000:67) proposes six strategies that are usually used in risk assessment. These include insurance, statistical mechanisms (probability functions), risk modelling, checklists, contractual mechanisms as well as financing. Chinyio and Fergusson (2003:106-109) on the other hand identifies three main types of risk assessments namely: qualitative (looks at both probability and impact assessed subjectively); semi-quantitative (probability assessed subjectively but impact assessed objectively and full quantitative where both probability and impact are assessed objectively). The guiding principle is that qualitative assessment is employed when uncertainty is prevalent. Naturally, where there is absence of information, subjectivity prevails. A semi-quantitative assessment is employed where the impact of risks can be established fairly accurately. A full quantitative approach is adopted in the event that information is available. Chinyio and Fergusson (2003:108) further outline that some of the workable strategies in assessing risk include: assessing every risk, assessing every risk but model the price via probabilities, assessing the main risks only, benchmarking (use of a template), adjudication in risk evaluation, reactive risks assessment (wait for risks to manifest), pro-active risk assessment, and sensitivity analysis in order to identify the most volatile risks.

Figure 4.3 Risk grading-impact and likelihood of occurrence

		LIKELIHOOD		
		Low	Medium	High
		1	2	3
IMPACT	Manageable 1	1	2	3
	Major 2	2	4	6
	Critical 3	3	6	9

Source: Adapted from (Chinyio & Fergusson, 2003:106)

The researcher observed that most of the academic literature in project finance often provides a reader with a single view of what an ideal project risk assessment framework ought to look like. This may explain why most project finance policies appear to be merely copied from some already developed risk assessment framework without customisation depending on what may be feasible in a given policy environment. Given this literature gap, the researcher in this study deliberately sought to provide the reader with an exposition of the various risk assessment frameworks from different perspectives. Notably, this research aimed at demonstrating the diversity of risk assessment frameworks from various viewpoints which include multilateral institutions, regional banks, and rating agencies. It is hoped that this approach may possibly remedy some common practice where some project finance advisors appear to be one dimensional in their approach. For example, some advisors may merely prescribe the use of a single framework as copied from some institutional guide such as the World Bank without appreciating some merits that could possibly be found in other risk frameworks in practice.

Sections 4.6.1 through to 4.6.3 therefore, provide an exposition of some examples of the risk assessment frameworks from various institutions that are key in the project finance market. It must be noted that risk assessment frameworks from the various project finance participants are quite lengthy, hence only key and salient features of the assessment frameworks are presented below. The frameworks are also diverse, some are purely a scorecard without any simulations, others such as the World Bank use some commercially available packages such as InfRisk whereas other institutions use rating models which are

simulation based. The first risk assessment framework outlined below is that of the Basel Committee focusing on specialised lending transactions. Others include an example of a regional bank (Islamic Development Bank), and rating agencies (Standards and Poors, Moodys, Fitch). It must be noted that the presentation of these risk assessment frameworks is by no means stating that these are the best frameworks in the industry but they are merely provided as good examples for one to appreciate the diversity of risk assessment frameworks in the project finance market.

4.6.1 Basel Committee on Bank Supervision

The Basel Committee on Banking Supervision (BCBS) membership may only be composed of a few Central Bank Governors from some countries mainly from developed countries, but its mandate on banking supervision is worldwide. The Committee provides a forum for regular co-operation on banking supervisory matters with an objective of enhancing and standardising the understanding and practice of supervisory issues in the banking arena thereby improving the quality of banking supervision globally (Bank for International Settlements, 2005).

In a working paper on Internal Ratings for Specialised Lending Exposures which include project finance, the Basel Committee indicates that specialised lending transactions requires a much more robust risk assessment framework than the standard two dimensional framework traditionally used for corporate finance (Bank for International Settlements, 2001). Under corporate finance exposures, risk assessment has traditionally focused on two dimensions: a dimension related to the risk of the borrower's default and another dimension that looks at transaction specific risk factors. In contrast to corporate finance transactions, the risk assessment framework recommended by the Basel Committee for specialised transactions such as project finance is that it places a strong linkage between the risk of the borrower and the transaction itself. In this realm, the Basel Committee recommends that banks should adopt risk assessment frameworks that takes into account both the borrower and transaction specific risk factors (Bank for International Settlements, 2001:15). Further, given the unique nature of specialised lending transactions, the committee proposes that banks must have a specific risk assessment framework for separately rating project finance, commodities finance, object finance, and income producing real estates.

The Basel Committee report on specialised lending is cognisant that institutional risk assessment frameworks vary in their orientation and approach. Annexure 6, 'Supervisory Rating grades for project finance' in the Basel report (Bank for International Settlements, 2005:18) on International Convergency of Capital Measurement and Capital Standards provides for a four-tier risk assessment framework: Strong, Good, Satisfactory and Weak. Key risk categories that the framework focuses on include: financial strength (market conditions, financial ratios, financial structure), political and legal environment (political risks, force majeure, stability of legal and regulatory environment), transaction characteristics

(design and technology, construction risk, completion guarantees, operating risks, offtake risk ,supply risk), strength of sponsor (track record and financial strength) and quality of the security package (assignment of contracts, pledge of assets, lender’s control over cash flows) (Bank for International Settlements, 2001:21). To put into perspective this proposed risk assessment framework, Table 4.6 presents an example of how sponsor risks are assessed using the Basel four- tier risk assessment framework.

Table 4.6 Sponsor risk assessment by the Basel framework

Attribute	Strong	Good	Satisfactory	Weak
Sponsor's track record and financial strength	Strong sponsor with excellent track record and high financial standing	Good sponsor with satisfactory track record and good financial standing	Adequate sponsor with adequate track record and good financial standing	Weak sponsor with no or questionable track record and /or financial weaknesses
Sponsor support (Equity and ownership)	Strong, project is highly strategic for the sponsor(core business with a long term strategy)	Good, project is strategic for the sponsor(core business with a long term strategy)	Acceptable, project is considered important for the sponsor(core business)	Limited, project is not key to the sponsors' long term strategy.

Source: *Bank for International Settlements (2001:21)*

From the researcher’s point of view, the Basel Risk Assessment Framework is quite comprehensive though there is room for ambiguity and subjectivity in the interpretation of some of the qualitative terminologies used in the assessement tool. One notable example is how one could objectively differentiate between the following terminologies aimed at differentiating the quantum of risk : strong, good, acceptable and limited. As observed by the researcher, the construction risk assessment criteria uses terminologies such as ‘substantial’, ‘significant’ and ‘adequate’ which could also be subjective unless accompanied by some elaborate explanatory notes. The framework does further provide an outline on how some quantitative aspects - mainly debt ratios such as the Debt Service Cover Ratios (DSCR) and the Loan Life Cover Ratios (LLCR) can be assessed though it does not provide categorical thresholds against which to benchmark the quantitative score of a given project. This could be perhaps be due to the different projects having different debt ratio thresholds depending on the industry and nature of project and the risk perception by lenders.

In seeking to cure the negative effects of the financial crisis, the Basel Committee has thus moved on from Basel II to Basel III which seeks to further strengthen the global capital and liquidity rules with a goal of promoting a more resilient banking sector (Bank for International Settlements, 2011:1). However, some practitioners have critiqued the proposed enhanced capital requirements on the basis that weaker banks will be crowded out as well as a perception that there could be reduced investor appetite in project finance deals given that dividends are likely to be reduced to allow firms to rebuild capital bases. The deadline for the transition from Basel II to Basel III has, however, been set to 2019 (Bank for International Settlements, 2011).

4.6.2 Islamic Development Bank (IDB)

Multilateral and regional development banks have been key participants in the financing of project finance besides the commercial banks. These institutions, largely seen as products of the Bretton Woods, are seen as part of the global economic and financial governance through which development capital flows and are thus coined as the International Financial Architecture by Sprat (2009:256). Besides the World Bank and the IFC, some of the notable regional banks include the African Development Bank (ADB), the Inter-American Development Bank (IDB), the Islamic Development Bank as well as the Asian Development Bank (AsDB). For the sake of demonstrating how some of the risk assessment frameworks by some of these development banks, the paragraph below outlines how the IDB undertakes project finance risk assessment.

The IDB is a multilateral development financing institution located in Jeddah, Saudi Arabia. One of its key roles is the provision of project finances in the form of what is coined as ordinary capital resources loans (composed of ordinary and technical assistance loans) and also maintains an Islamic solidarity fund for development (ISFD) where loans on soft-terms mainly for poverty reduction projects can be obtained (Islamic Development Bank, 2010). In reference to the project risk management guidelines titled 'Risk Management Guidelines for Project Finance', two key risk categories are identified: project specific risks and project external risks. Technology, construction, operations, counterparty, legal, competition, market, transaction and project financial strength risks are classified as project specific risks whereas regulatory, business, legal, institutional development and force majeure are classified as project external risks (Islamic Development Bank, 2010:7). Unlike the other risk frameworks which have an average of a four-tier risk assessment criteria, the IDB framework has a seven-tier risk framework from A to G. Table 4.7 below provides a summary of how the IDB assessment framework is implemented.

Table 4.7 IDB's risk assessment framework

Risk category	Description	Risk assessment explanation/guide
Category A	Excellent	Highest degree of safety and repayment ability: (ie Excellent financial strength, excellent market conditions with proven technology, very low external risks (political, legal and force majeure), very strong Government support, solid contractual structures with low counterparty risks and excellent and fully comprehensive security package and covenants, excellent track record and financial strength of the contractor and operator)
Category G	Weak	Lowest degree of safety and repayments ability -the Project with significant unmitigated risks: (ie Weak financial ratios below average, DSCR below 1, low demand with unclear or negative long term outlook, high exposure to political, force majeure and legal environment, contracts not enforceable with weak security and covenant package, sponsor's financial standing very weak, corporate governance not available coupled with a poor track record of a contractor who also may have a weak financial status)

Source: *Islamic Development Bank (2010:16)*

According to IDB's risk assessment framework, projects categorised from A to F are acceptable for financing by the IDB Group up to the maximum limit as outlined in Table 4.8 but subject to the risk mitigation and enhancements.

Table 4.8 IDB's financing limits based on project risk profile

Risk Category	Maximum exposure in absolute amount (Mn)	Maximum exposure as a % of total project costs	Max exposure as a % of IDB-OCR or affiliates equity	Period of financing
Category A	80	35%	5%	20 Years
Category B	70	30%	4%	20 Years
Category C	60	25%	3%	18 Years
Category D	40	20%	2%	16 Years
Category E	30	15%	1%	12 Years

Category F	20	10%	0.5%	10 Years
Category G	Not eligible for funding			

Source: *Islamic Development Bank (2010:23)*

Like other risk frameworks thus far presented, the risk framework by the Islamic Development Bank is quite robust enough to guide project sponsors on what issues lenders look for as they assess risks using the seven-tier risk assessment grades. It may, however, be seen to be too much for someone to objectively assign the right risk category from category A through to category G hence there is need for more guidance to minimise subjectivity in the assessment process.

4.6.3 Rating Agencies

Rating agencies are one of the key parties in the infrastructure project finance market in that they provide comprehensive information on the solvency of a counterpart to investors and lenders who include holders of bonds or shares (Thompson, 2012:1). Though there are quite a number of rating agencies globally, the top three global rating agencies include Moodys, Standard and Poors (S&P), as well as Fitch IBCA Duff and Phelps (“Fitch”) though S&P and Moodys command 80% of the market share (Smith & Walter, 2001:4). In assessing risk, rating agencies have a similar approach to those of international commercial banks though there are some areas of difference such as methodology, deal pricing and covenants (Tinsley, 2000:111). Below are snapshots of project finance risk assessment frameworks for the key rating agencies .

4.6.3.1 Standard and Poor’s (S&P)

The S&P Project Finance Ratings Guide analyse project finance risk beginning with the identification and assessment of project level risks which are intrinsic to the project’s business and industry in which the project operates (Standard & Poor's, 2001:19). The framework employs six key steps at this stage: evaluating project operational and financing contracts, assessing the technology and construction of the project, analysing the competitive position of the project in a given market, determining counterparty risk, appraising the project’s legal structure and evaluating the cash flow and financial risks that may affect forecasted results (Standard & Poor's, 2001:19). Figure 4.4 below provides the outline of the framework used by S&P

Figure 4.4 S&P's project finance risk management framework



Source: *Standard & Poor's (2001:20)*

As depicted in Figure 4.4 above, sovereign risks are second on the S&P risk assessment framework premised on the rationale that sovereign rating of a country acts as a constraint given the industry perception that the project's ability to acquire the hard currency it may require for construction and debt servicing may be affected by policies of the host government (Standard & Poor's, 2001:28). Institutional risk on the other hand focuses on assessing the conduciveness of the business and legal environment whereas force majeure risk assessment seeks to anticipate for any physical damage to the project assets (Standard & Poor's, 2001:28).

This matter is discussed in the next chapter, however, S&P matters of credit enhancements are linked to the general risk assessment framework as depicted in Figure 4.4

Like the rest of the risk assessment frameworks covered in this research, S&P's risk framework also employs the risk score methodology though it has a ten-tier structure, namely: risk score 1 to risk score 10 with 1 being very good and score 10 being the least score, see Table 4.9 for details.

Table 4.9 S&P's financial risk benchmark scores

Score/rating	Project characteristics
Risk score 2	Project model to strongly reflect the project documentation
	Minimum DSCR exceeds 4.0x
	Average DSCR exceeds 6.0x
	Project insensitive to interest, inflation, and foreign exchange risks
	Excellent financial flexibility
Risk score 10	Financial model conflicts with project documentation
	Minimum DSCR exceeds 1.0x
	Average DSCR exceeds 1.1x to 1.5x
	Interest, inflation, and /or foreign exchange changes significantly affecting the DSCR.
	No financial flexibility

Source: *Standard & Poors (2001:29)*

4.6.3.2 Moody's

Moody's risk assessment framework as outlined in this chapter was referenced from Moody's online research ratings for project finance (1998) and the Global Credit Research Guide (2011,1-12). Like other rating criteria, Moody's ratings are opinions of the relative credit risk of the financial obligations which are expressed on a 21-category rating scale which ranges from Aaa to C (Moody's, 2011). Given the diversity of the various financial products across various sectors, the risk rating methodologies published by Moody's sets out sector specific rating approaches which include: PFIs/PPP/P3 projects, power generation projects, operational toll roads, operational airports, and a general project finance risk rating methodology (Moody's, 2011). The rating criteria adresses structural risks and the adequacy of the risk mitigants dependent on the transaction type and the intended financing structure. Specific to the construction phase, the risk assessment framework of Moody's evaluates project complexity, contractual arrangements, liquidity considerations as well as start-up risks. In the case of credit quality, the focus is on off-takers, alternative sources of cash flows, technology risks as well as other operating and business factors that may impede on project delivery (Moody's, 2011).

Four key risk categories are evident in the manner Moody's carries out its risk assessment. Under project risks, the key question is: will the project, as defined, generate sufficient cash flows to meet its obligations? The issues that are looked at include: having a clear definition of the project scope, reasonableness and thoroughness of the project assumptions, market factors such as demand, competition, pricing and cost structures (Moody's, 2011).

The second category of risks that are defined in the Moody's project finance risk assessment framework focus on construction and start up risks. Under this risk category, the key question is: How likely is the project to be completed on time and within budget? In answering this question, key issues that are looked at are the experience of contractor and the project complexity, regulatory political, legal, and currency risks (Moody's, 2011). The other aspect deals with the market factors such as labour, materials, force majeure and so on. Structural risks form the third risk category where the question seeks to ascertain whether the financing structure of the transaction is sound or appropriate. Structural enhancements and protections are quite key in this realm including matters relating to the contractual provisions and definitions, such as one regarding the force majeure as well as the existence of and strength of covenants, conditions, representations, and warranties (Moody's , 1998).

The final category looks at operating risks which seeks to ascertain if the project can withstand volatility in revenue and costs of the project without impacting the debt service capacity. Hence, issues related to alternative sources of cash flows, if revenues are to be disrupted in any way, becomes key (Moody's, 2011). According to Moody's framework, the other key operational risk is whether the technology being used has been proven or is on trial. Matters such as ascertaining if, at all, any credible economic and demographic forecasts were undertaken is also a key issue in the risk assessment process (Moody's, 2011:9).

In terms of the scoring criteria, Moody's has a four-tier risk scoring criteria: above average, average, below average, and 'is not suitable for modelling' with some differentiation on whether the project is a building project or a civil engineering project.

4.6.3.3 Fitch

Unlike S&P's 10-tier risk assessment framework, Fitch's project finance risk assessment criteria has a three-tier framework: stronger, midrange and weaker (FitchRatings, 2012:4). Fitch's infrastructure and project finance master criteria is used when rating debt instruments where repayment is dependant upon cash flows from the construction, and operation of a stand-alone project or infrastructure facility, including those that may encompass several project assets in different locations (FitchRatings, 2012:3). One of the qualifying characteristics for such a transaction is that the assets and operation of the project should be

within a project vehicle or achieve an equivalent segregation of project cash flows such as a separate enterprise fund within a government entity in either case referred to as a single-purpose project in the rating criteria (FitchRatings, 2012:3).

Fitch's rating criteria for infrastructure and project finance mainly covers the following risks: ownership and sponsor risks, project vehicle and status, legal and regulatory risks, expert report risks, completion risk, cost structure risks, delay risk, contractual risks, technology risks, operation risks supply risks, revenue risks, early termination risks, macro risks, debt service and counterpart risks and refinancing risks (FitchRatings, 2012:1). Each of these risks is assessed using the three-tier framework. Table 4.10 is an example of how sponsor risks are assessed under the Fitch ratings criteria for infrastructure project finance.

Table 4.10 Fitch's project finance risk assessment criteria

Project sponsor attributes	Stronger attributes	Midrange attributes	Weaker attributes
Ownership	Minimum ownership and change of control covenants through the debt life; long term business model; strong financial capacity	Minimum ownership and change of control covenants in key risk phases; ownership via intermediate holding company;	Three or more owner sponsors without previous successful cooperation; no majority/controlling owner/sponsor, weak or no minimum ownership and change of control covenants; multilayer ownership structure
Other sponsor attributes	Market leading "trade" owner/sponsor; deep experience of similar projects; history of support for investments; essential public service sponsored by central government	Experienced financial and trade owner/sponsors; midrange financial strength; active municipal or government sponsor, government commitment in national strategic projects	Weak financial strength; inexperienced or minor trade or financial sponsors; borrowed/leveraged equity; no contract tendering; non-essential public service with minority small municipal sponsor; speculative or short term business model

Source: Fitch ratings (2012:4)

4.7 Summary

As was stated in the introductory part of this chapter, chapter 4 was meant to guide the reader through the risk management process beginning with risk classification (section 4.4), identification (section 4.5) and assessment of risks (section 4.6). These sections of chapter 4 provided guidance on the various kinds of risks as documented by academicians and industry practitioners. Chapter 4 as outlined above was then used as a blue print for the development of the survey instrument which was then administered in Zambia as the case study for this research. Section 4.7 gave an account of the risk assessment frameworks that exist in industry; these include regional development banks and ratings agencies.

Chapter 5 highlights the last parts of the risk management framework focusing on the risk allocation and mitigation strategies.

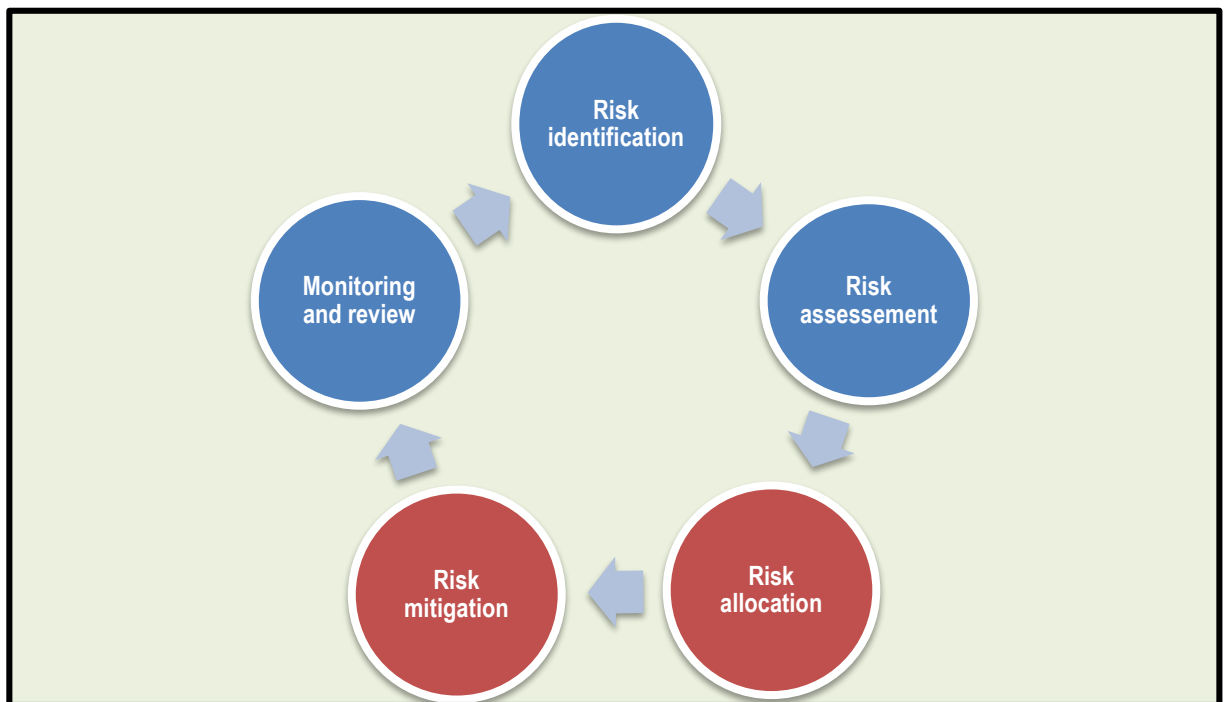
CHAPTER 5

PROJECT RISK MITIGATION AND ALLOCATION

5.1 Introduction

Research question 3 sought to explore risk mitigation measures for infrastructure project finance risks and possibly propose an ideal risk management model that could be used as a reference point in Zambia. In seeking to respond to this research question, chapter 5 predominantly explores the various risk mitigation measures and risk allocation principles as documented in industry. Given that chapter 4 covered the first two steps in the risk management cycle as depicted in Figure 4.1, this chapter seeks to focus its attention on the risk mitigation and risk allocation processes (red circles) as depicted in Figure 5.1 below.

Figure 5.1 Risk management cycle: focus on risk allocation and mitigation stage



Source: *Asian Development Bank (2012:34)*

5.2 Risk Mitigation Tools and Techniques

Risk mitigation has been a topical issue in various scholarly literature, as well as institutional guidelines. What one sees in the literature sources is that there is some homogeneity in the risk mitigation strategies that are proposed though minor differences exist especially in the use of terminologies as well as the availability of some tools in a given jurisdiction.

Some of the researchers demonstrating the diversity and homogeneity in the proposed risk mitigation strategies includes Tinsley (2000:89) who proposes a structured approach that categorises risk mitigation mechanisms in the following categories: contractual, use of trigger events, financing, studies, statistical models, risk modelling, and checklists. Tinsley (2000:89) is however not a proponent of phrases such as 'risk mitigation' or 'risk allocation' as they tend to give an impression that the risk in question has been settled and from that moment forward one may not have to worry further about it.

Chinyio and Fergusson (2003:114-116), on the other hand, propose four generic risk mitigation strategies namely: risk elimination, risk reduction, risk transference, and risk retention. In their research on risk mitigation instruments for infrastructure financing, Matsukawa and Habeck (2007:xi) centered on financial risk mitigation instruments primarily focused on those instruments that are offered by multilateral and bilateral official agencies aimed at transferring certain defined risks from the project financiers to creditworthy third parties (guarantors and insurers) that have better capacity to manage such risks. These include instruments such as credit guarantees, export credit guarantees or insurance, and political risk guarantees or insurance. The researcher also noted that certain risks are defined differently by various writers. One such example is where Chinyio and Fergusson (2003:114) uses the terminology 'risk elimination' whereas Tinsley (2000:89) uses the terminology 'risk avoidance'.

As stated in the introductory paragraph, sections 5.2.1 through to section 5.2.5 presents a summary of the various risk mitigation strategies which are employed in industry and also guided the researcher in responding to research question 3. Despite the diversity of risk classifications by different practitioners, the researcher sought to largely adopt a combination of risk classifications as profiled by *Tinsley (2000:131-256)*, *Yescombe (2014:103-127)* and *(Hoffman, 2008:164-242)*

5.2.1 Risk Mitigation Mechanism 1 - Contracts

Contracts are a key risk mitigation instrument in that they bind project participants into doing some specific tasks that are core to the project success as agreed (Tinsley, 2000:89). Table 5.1 seeks to provide a summary of some of the common contracts in project finance that aims at curing various risks.

Table 5.1 Common contractual arrangements in project finance and PPPs

Risk being mitigated	Contract type	Notes
Construction risk	Construction contracts	<p>Engineering contract: Contract for professional assistance in project design, bidding, reviews and administration of the works (Rarely used as a stand-alone contract).</p> <p>Procurement contract: Contract for orderly procurement of works and supplies for the project (rarely used as a standalone contract).</p> <p>Construction contract: Contractor agrees to provide all construction-related services, including construction supervision, labour and management, construction facilities, tools and supplies, site investigation and field engineering.</p> <p>Engineering, Procurement and Construction (EPC) contract: Combines the three contracts outlined above within a fixed construction price, fixed construction schedule, and pre-defined project performance.</p>
Syndication risk	Contract/commitment letter for full underwriting	<p>Full underwriting contract: A single bank or lead arranger agrees to underwrite the whole of the deal based on agreed terms and conditions for possible syndication later.</p> <p>Club underwriting: A club of banks agree to underwrite and not to syndicate for that moment.</p>
Operational risk	Operations and maintenance (OM) contracts	<p>Technology aspects: O&M contract may include a clause compelling the technology contractor to add process and technology improvements that become available during the project ,warranty and quality assurance on performance and availability, and technology guarantee</p> <p>Management aspects: O&M contract to provide for reward or incentives for good management or punishment for bad management. Contract to provide for access to specialist personnel. Labour (union) and training contracts to be drawn to provide a platform for negotiations and dispute resolution.</p>
Supply risk	Supply contracts	<p>Requirements contract: SPV agrees to sell and deliver all the buyer's requirements of a specified goods, and the buyer promises to refrain from buying comparable goods from any other supplier.</p> <p>Take or pay contract: Offtaker of the project outputs agrees to make payments to the SPV for capacity to produce whether or not the SPV actually</p>

		<p>generates the goods or services at the off-taker's request. The obligation is unconditional.</p> <p>Take and pay contract: Off-taker of the project outputs agrees to take and pay for the SPV's outputs or to pay the SPV if outputs are not taken as if it did take the output. Buyer only obligated to pay if the SPV has actually produced and delivered the product or service.</p> <p>Output contract: The SPV promises not to sell specified goods to any other customer, and the buyer promises to accept and pay for all the goods that the SPV produces for sale.</p>
Foreign exchange risks	Derivative contracts	These could include forward agreements for buying or selling of forex, futures, options as well as currency swaps
Interest rate risk	Various contractual structures	Use of swap contracts.
Legal risk	Tripartite contract/agreement	Agreements between the financier (bank), the borrower (SPV), and the Government providing recourse to the financiers in case of any adverse change of laws such as step in rights.
Political risks	Concession agreement	<p>Concession contract : The agreement may include provisions where the Government guarantees currency convertibility and transfer as well as waiving sovereign immunity,</p> <p>Co-financing agreement: Done mainly with regional banks who have political clout in developing countries where risks may exist i.e. with World Bank (IFC), ADB, AFDB, EBRD etc.</p>

Sources: *Tinsley (2000:131-256)* , *Yescombe (2014:103-127)* and *(Hoffman:2008,164-242)*

The key issues that must be looked at is that contracts, as outlined above, must be entered into with counter-parties who are creditworthy, hence the credit strength of the counterpart is a key issue during due diligence.

5.2.2 Risk Mitigation Mechanism 2 - Trigger Points/Events

As an addition to the contracts and agreements outlined in section 5.2.1 above, certain risks are managed by way of fusing in some clauses that spell out triggers or events to signal the materialisation

of certain risks. What this entails is that if a certain trigger point or event happens, some specific actions must take place as a way of managing risks (Tinsley, 2000:89). Some of the common trigger structures in project finance include shifts in the loan payment mechanisms, prepayments, prior dividend distributions and equity kickers (Tinsley, 2000:89). Tinsley further indicates that in the case of high-technology risk, some of the trigger structures would include use of backups onsite to minimise the cash flow foregone during any downturn caused by the sensitive technology. Business interruption insurance as well as technology insurance are some of the trigger structures that may need to be arranged to mitigate the technology risk (Tinsley, 2000:207)

5.2.3 Risk Mitigation Mechanism 3 - Financing

One of the risks that may affect the project is a lack of adequate funding for the project which may materialise at construction or project operations stage. In the quest to mitigate for construction and market risk, standby facilities are usually arranged upfront to cover any such funding deficiencies (Tinsley, 2000:109). Financial models play a key role in this realm to see how a certain event might affect the project cash flows and the tolerance for time and the amount of limited recourse funding that may be needed to remedy the risk. Some of the most common structures include use of dividend reserves, subordinated debt which may help sponsors to remove surplus cash flows in the early years which are characteristically unprofitable as well as the use of convertible debt or IPOs which allows the project to enjoy the high leverage than can be attained with project finance with lower interest costs (Tinsley, 2000:89).

5.2.4 Risk Mitigation Mechanism 4 - Study

Gatti (2009:62) differentiates between those projects that have a wholesale clientele (such as energy projects) and those that have retail clientele (such as toll roads and telecoms). With the latter category where an offtake contract may not be practical, the project financier can only rely on specific studies or market projections of the clientele growth. To manage market risk, forecasting is the immediate solution though Tinsley (2000:146) advises that this must be undertaken more often and not once. Macroeconomic data trends, charting as well as cycle analysis, are some of the forecasting techniques used. In the case of foreign exchange, studies could include exchange rate forecasts by specialist consulting firms (Tinsley, 2000:110).

Tinsley (2000:90), however, cautions that studies are highly numerate and are far from being reliable given the major failures almost everywhere. He states that most of the mass-transit studies in particular appear to be compiled in 'dreamland' hence traffic revenue forecasts should be relied upon with care. Suggestions to cure or cushion against the impact of such risks include having a talk with the study team

to assess their level of confidence (at least 90%), seeking an independent review as well as undertaking site visits at different times to assess the situation. In the case of traffic studies, it may be preferred that a helicopter ride is undertaken at different times of the week to have an intuitive assessment of the traffic projections in the report (Tinsley, 2000:125). This can be quite expensive but may be the only solution to vet the study reports. For risks that may be associated with high-technology use, there could be need to ensure that the same is certified by a highly reputable consulting team.

5.2.5 Risk Mitigation Mechanism 5 - Avoidance/Elimination

Chinyio and Fergusson (2003:114) state that actions to avoid the risk can involve the complete elimination of the risk at hand including drastic measures such as a client refusing to proceed with the project. The transfer of a given risk by the project to another party is a way of avoiding such a risk falling on the SPV, if it materialised. Hence structures are instituted in advance to avoid some risks falling on the project such as insurance. In the case of foreign exchange risks, some of the avoidance mechanisms include natural hedging for revenues, operational expenses and loan currencies (Tinsley, 2000:112).

5.3 Risk Allocation

At the pinnacle of the risk management process, it is imperative that stakeholders clearly understand which risks are at play, how they will be mitigated and by whom (Government of India, Ministry of Finance, 2014:57). A common practice in the industry to achieve this is by presenting risks in a matrix which clearly shows the role that each project participant will play in mitigating the various risks identified as outlined below in Figure 5.2.

Table 5.2 Pre and post completion project risk matrix

	Pre-Completion Phase		Post-Completion Phase		
	Technological , Planning or Design Risk	Construction Risk	Operational Risk	Supply Risk	Demand Risk
SPV	Sponsors Guarantees to lenders				
Contractor	Included in the construction agreement	Fixed Price Contract	Turnkey Agreement (first test)		
Technology Supplier					
Operator			Penalty Payments and removal of operator (later tests)		
Buyers					Take-or-Pay Contract
Suppliers				Put-or-Pay or Throughput contract	
Export Credit Agencies					
Banks				Endorsement credit to back supplier's loans	Endorsement credit to back buyer's loans
Insurance Companies		Insurance policies	Insurance Policies		
Independent Engineering Companies	Assessment on the technological validity		Certification of later testing		

Source: Gatti (2009:74)

In the case of the risks that may be found in both the pre-and post-construction phases of a project Gatti, (2009:74) proposes the following risk matrix as depicted in Figure 5.3.

Table 5.3 Risk common to all project phases

	Risks found in both Pre & Post Construction Phase						
	Exchange Risks	Interest Rate Risks	Inflation Risk	Environmenta I Risk	Regulatory Risks	Political Risks	Country Risks
SPV	Currency Matching						
Contractor					Limited to obtaining building permits		
Technology Supplier							
Operator							
Buyers			Establishing pre-agreed inflation adjustments				
Suppliers			Establishing pre-agreed inflation adjustments				
Export Credit Agencies						Credit Insurance	Credit Insurance
Banks	Derivative products and coverage instruments	Derivative products					
Insurance Companies				Insurance Policies			Insurance Policies
Independent Engineering Companies							

Source: Gatti (2009:74)

As pointed out by Gatti (2009:75), one of the fundamental aspects of the risk matrix is that it is used by lenders prior to providing any funding to the SPV to assess the risk sharing mechanisms. The common rule of thumb is that the lesser the risks that the SPV is allocated, the lower the perception of risk by lenders which may also lower the cost of debt and potentially increase the debt/equity ratio.

5.4 Summary

As outlined in chapters 4 and 5, risk is a crucial factor in project finance since it is responsible for unexpected changes in the ability of the project to repay loans, service debt and dividends to shareholders. The capital structure of most project finance transactions does vary from 70% to as high as 90% debt to equity ratio. Unlike the traditional corporate finance where banks lend mainly based on the value of the company's assets, project finance sponsors including funders solely look to the cash flows of the project as the only source of security. Hence, if risks are left unmanaged, this may result in cash flow difficulties which in the long run may trigger default. In this realm Yescombe (2014:242) emphasises that risk transfer and sharing is the heart of structuring a project finance transaction - a point that further justifies the importance of this research topic.

Chapter 5 did provide a menu from which to respond to research question 3 which sought to explore possibilities for an ideal risk management model which can be used as a reference model for practitioners in Zambia. Sections 5.2.1 through to section 5.2.5 did explore how contracts, trigger events, financing mechanisms, studies as well as avoidance strategies can be used to mitigate various forms of risk that may manifest in a project.

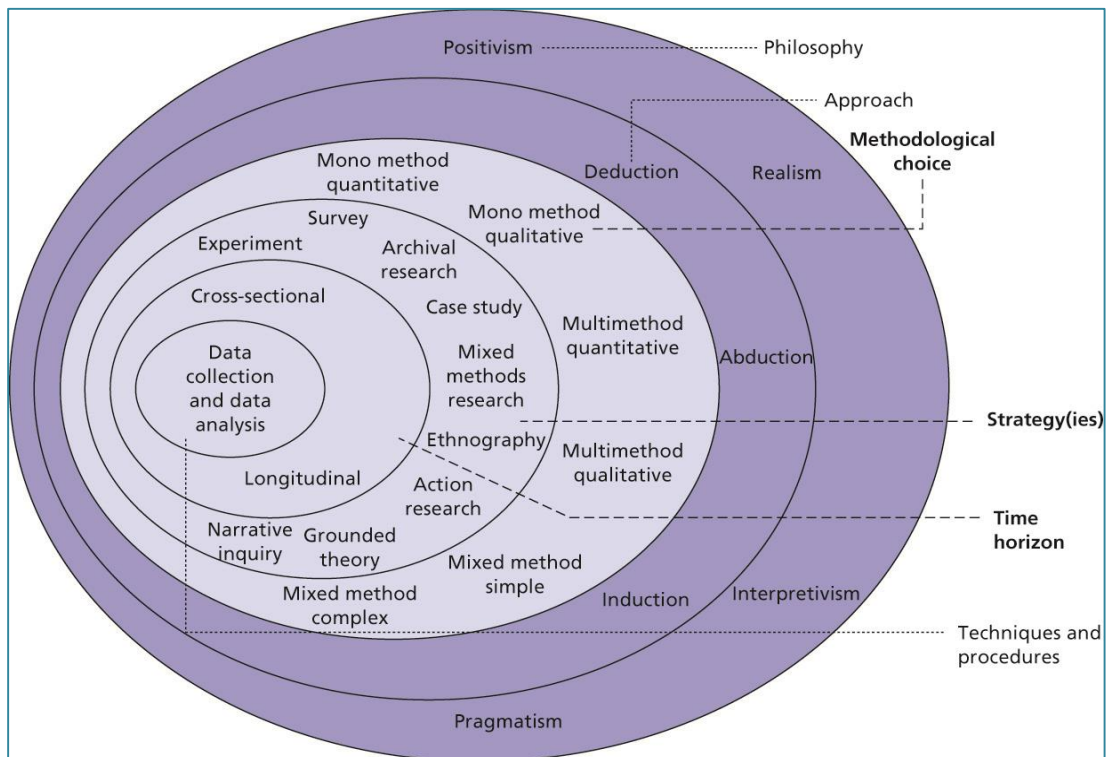
Following on from chapter 5, is the research methodology which is covered in chapter 6. Chapter 7 provides the analysis that was deduced from the empirical survey and from other data sources. This is followed by chapters 8 and 9 which provide the summary, recommendations and conclusion for the study, respectively.

CHAPTER 6 RESEARCH METHODOLOGY

6.1 Introduction

This chapter presents the methodology which guided the research process for this treatise. The chapter largely drew from and was guided by the literature as outlined in the preceding chapters. For example, chapter 2 provided the nuances of project finance and PPPs focusing on key project participants as well as presenting some of the latest statistics on project finance whereas chapter 3 presented some ideal PPP frameworks to help to respond to research question 1. Chapter 4's thrust was on risk identification and assessment mainly to respond to research question 2 dealing with the identification and assessment of project finance related risks in Zambia. Chapter 5 then provided an exposition of the various risk mitigation measures that could possibly be employed in practice to manage the risks that would be identified during the empirical study. The flow of the sections within chapter 6 from research philosophy to research approach and research strategies was guided by Saunders, Lewis and Thornhill (2009:107) in what they call the 'research onion' as depicted in Figure 6.1.

Figure 6.1 Research Onion



Source: *Research Methods for Business Students* (Saunders et al., 2009:106-250)

6.2 Research Philosophy and Approach

This section outlines the research philosophy and approach that was employed in undertaking this research.

6.2.1 Research Philosophy

Saunders *et al.* (2009:107) outlines that research philosophy relates to the development of knowledge and the nature of that knowledge. These philosophies include positivism, realism, interpretivism and pragmatism. These philosophical orientations provide guidance on the research strategies and methods to be used for a given research. Mkansi and Acheampong (2012:1) indicates that the relevance of these philosophies have been a major source of dilemma to research students on how to employ them. Guided by Mkansi and Acheampong (2012:133) and Saunders *et al.* (2009:119), the researcher was compelled to interpret this study as having a pragmatic philosophical orientation on the following basis: the study did not limit the researcher from using a single point of view but was cognisant that there are multiple realities that could explain the status quo of Zambia's PPP market. Hence, the research questions were key drivers of the research approach, as outlined below.

6.2.2 Research approach

In terms of the research approach, Saunders *et al.* (2009:124) indicate that a researcher can adopt the deductive approach, in which one would develop a theory and hypothesise and design a research strategy to test the hypothesis, or the inductive approach, in which one would collect data and develop theory as a result of the data analysis.

In the case of this dissertation, a mix of deductive and inductive approaches were adopted more so that it is seen as being perfectly possible, acceptable and advantageous (Saunders *et al.* 2009:127). This was achieved by first developing the theory around the objectives of the research and presented in a cursory manner as part of the literature review in chapters 3 (PPP frameworks), chapter 4 (risk identification and assessment) and chapter 5 (risk allocation and mitigation). This was a deliberate move aimed at providing a systematic structure in the manner in which the research questions would be answered hence each research question was mapped to a specific literature chapter as a way of generating some theory. The findings from the empirical study were further analysed after which some theory was developed from the findings with a view to test the theory under the literature review as regards its practice and applicability in the real world context.

The broader review of existing literature and other secondary data sources established the existing body of knowledge regarding infrastructure project finance globally and in Zambia. Notable sources of literature

included books, journal articles, academic papers, official reports, and government policy, such as legislation and subordinate legislation, official publications and other policy documents, newspaper articles, unpublished research and other applicable published material. The literature search was undertaken by the researcher to inform and educate himself about the existing literature and theory on the research topic. In reference to objective number 1, part of the normative criteria which was used as a yardstick included references to project finance in practice as documented in case studies. Some of the notable sources of case study information included Davis (2003) and Esty (2001).

As reflected in the references list, the sources of literature also include, but are not limited to, individual as well as institutional practitioners in the field of project finance. Notable institutional references included World Bank, IFC, AfDB, ADB, Institute for Public Private Partnerships, and PPIAF. Individual writers on project finance who were heavily referenced included Chandra, Davis, Fabozzi, Finnerty, Gatti, Hoffman, Vinter, and Yescombe. The online library for the Nelson Mandela Metropolitan University (NMMU) equally offered a wide array of online data bases from which many of the research outputs in project finance were derived from. These included journals from EBSCOhost, Emerald, JSTOR, Sabinet, and Science Direct.

6.3 Research Design - Purpose and Strategies

As guided by the 'research onion' depicted in Figure 6.1, highlighted the first two layers of the research methodology. The research design seeks to answer the research questions by outlining the research strategy, which will dictate the choice of the data collection methods appropriate for this research. It may thus be seen as a research plan on how the research questions were answered.

6.3.1 Research Purpose

Saunders *et al.* (2009:140) indicate that the purpose for any research may vary, it could either be exploratory (finding out what is happening), descriptive (portraying an accurate profile of persons, events or situations) or indeed explanatory (establishing causal relationship between variables). Given that the purpose for the study was not merely to find out what is currently obtaining in the project finance and PPP market in Zambia (exploratory) but to also draw some conclusions and recommendations from the data, this study deployed both exploratory and descriptive approaches. This combination is what Saunders *et al.* (2009:140) calls 'descripto-explanatory' where descriptions are used as a precursor to explanations.

6.3.2 Research Strategy

Guided by the research onion as outlined by Saunders *et al.* (2009:138), a researcher has at their disposal various research strategies which include: an experiment, a survey, case study, action research, grounded theory, ethnography and archival research. These research strategies can be used for

exploratory, descriptive, and explanatory research as outlined in 6.3.1 (Yin, 2014:23). In undertaking this research, a survey (for research questions 1, 2 and 3) and archival research (consulted PPP administrative records and documents) were employed.

6.4 Data Collection and Analysis Procedures

Section 6.4 seeks to outline the data collection and analysis procedures that were undertaken in this research. Below are the details in sub sections 6.4.1 through to 6.4.3

6.4.1 Data Collection-Sources and Methods

The researcher could either use a single data collection method (mono method) or through the use of more than one method (multiple methods) analysis (Saunders et al., 2009:151). In undertaking this research, a multiple data collection strategy was used as demonstrated below.

Research Objective 1: In seeking to understand the current status quo of Zambia's infrastructure project finance and PPP frameworks, sources of evidence for this included some secondary data sources mainly reports on Zambia's PPP performance i.e. Zambia Development Agency (2014) and Genesis Analytics (Pty) Ltd (2012). In addition in-depth interviews with senior managers at the PPP unit and the Zambia Development Agency were conducted. Having extracted this information, the same was then analysed in comparison to some best practice as documented by academic and industry guidelines of project finance and PPPs which were used as a yardstick for responding to research question 1. The industry guidelines that were used as a benchmark were covered in chapter 3-Infrastructure PPP frameworks. These included the proposed World Bank framework (policy, legal, investment and operational frameworks) and the Asian Development Bank's four PPP pillars (advocacy and capacity development, enabling environment, project development and project financing) though the latter was used more as a benchmark for operational recommendations in chapter 9.

Research Objective 2: In the identification and the subsequent ranking of the severity of risks that impede on the effective delivery of infrastructure project finance in Zambia, the sources of information which informed the design of the questionnaire included literature on project finance risk management as documented in chapter 4-Project Risk Identification and Assessment where 40 risk factors were considered. In addition, interviews and discussions were used. The structured questionnaire was divided into seven parts as outlined in Table 6.1.

Table 6.1 Questionnaire Information

Part	Questionnaire Details
Part 1	Demographic information of respondents
Part 2	Project development risks
Part 3	Project construction and completion risks
Part 4	Operational and market risks
Part 5	Risks common to all projects
Part 6	General thoughts on risk profile of Zambia's project finance market
Part 7	General recommendations

For questions in part 2 to part 5, the measurement scale was a five point Likert scale as summarised below:

- 1 = Very Low risk,
- 2 = Low risk,
- 3 = Average risk,
- 4 = High risk and
- 5 = Very high risk

The questionnaire was shared with the two supervisors for their comments after which it was shared with the statistics department at the Nelson Mandela Metropolitan University (NMMU) for validation. A pilot study was undertaken before carrying out the empirical study. A random sample of respondents from the relevant stakeholders, in the project finance market, completed the questionnaire. The main aim was to check if respondents understood the questionnaire instructions, the meaning of questions, and the meaning of words in the questionnaire.

Research Objective 3: In proposing an ideal risk management model, literature as documented in chapter 5-Project Risk Mitigation and Allocation, was used as a benchmark.

6.4.2 Sampling Frame and Methods

The concept of project finance is global, however, for this treatise the study was mainly premised on Zambia. Owing to the vast geographical spread of the nation, the most logical way to have structured this research could have been to identify just one sector or indeed a specific project as a unit of analysis. However, given the small size of the project finance market in Zambia, both in terms of deal size and deal count, most deals are often centrally structured hence the scope of the study remained national in focus with most key respondents working within the capital city of Zambia, Lusaka.

Given the limitations as outlined above, non-probability sampling techniques were employed in identifying questionnaire respondents. Under normal circumstances where statistics of project finance deals was readily available, probabilistic or representative sampling techniques would have been employed. The questionnaire respondents who were targeted included policy makers in government, advisors, developers/contractors, operators and investors. Questionnaires were distributed electronically as that was the only feasible way given the geographical spread of the respondents. A third of the targeted respondents were consultants who had worked in structuring some of the PPP projects in the country, hence they could only be reached via email given that most of them resided outside the country.

6.4.3 Tools for Data Analysis

The initial data capturing and analysis was done in Sogo Survey though some of the output was later analysed using SPSS. Below is an outline of the data analysis that was done.

6.4.3.1 Descriptive Statistics

Descriptive statistics were used to provide summaries of the data with a view to showing an overall picture of the data set. In this research, the key descriptive statistics that were derived included number (n), frequencies (f), means (ranked means), range, minimum and maximum. Details of how these descriptive statistics were used in data analysis are contained in chapter 7- data analysis.

6.4.3.2 Inferential Statistics

Inferential statistics include parametric statistics (data measured on interval or ratio scale) and non-parametric statistics (uses data that is ordinal) (Struwig & Stead, 2001:160). Given that the data derived was ordinal in nature, non-parametric statistical tests (Mann-Whitney U Test and the Kruskal-Walis Test) were conducted mainly to ascertain if there are any significant relationships that exist between the public and private sector as well as among professions in their risk perceptions.

6.5 Time horizon

Saunders *et al.* (2009:155) indicates that when planning a research, the researcher must be clear on whether the research is a cross-sectional (snapshot at a particular time) or longitudinal (diary perspective). Given the time constraint, the researcher had to take a snapshot of the current status quo of project finance in Zambia using a survey and key informant interviews, hence, the study was cross-sectional in nature.

6.6 Credibility of Research Findings

Sections 6.6.1 through to section 6.5.2 below provides an overview of the efforts made by the researcher in ensuring that the research was reliable, and valid.

6.6.1 Reliability and Validity of the Research

The researcher is confident that the research process and the results thereof are valid and reliable given the following reasons. Once the survey questionnaire was designed, it was shared with supervisors as well as with the statistics department at NMMU for feedback. The feedback received was used in the redesign of the questionnaire and some changes to the questions. A pilot study was undertaken based on the revised questionnaire which also provided insights on the validity of the research instrument.

The other measures put in place included the selection of respondents who had to be people with requisite knowledge about the subject matter with a wide experience within the infrastructure PPP market or at least those that may have had some broad research in the subject matter. There was also anonymity of respondents to questionnaires so that they may freely respond to the survey without fear of the responses being traced back to them. In terms of plagiarism, all data sources were fully recognised/referenced using the Harvard referencing embedded within Microsoft Word 2013. Once the data was collected, it was also sent to the statistics department at NMMU as well as to the supervisors for validity and a reliability check.

6.6.2 Research Limitations

Since the focus of the study was on Zambia, the research findings are thus restricted to Zambia though the results may be subjectively inferred on countries of a similar demographic and economic set up. Further, given the low response rate for the survey, generalisation of the results may also be subject to being challenged though given the 'infancy' of the practice of project finance in Zambia, it may be understood that this was an expected redemption rate.

As noted by Wang, Dulaimi and Aguria (2004:239), risk evaluation is by nature quite a complex subject which is shrouded by uncertainties and vagueness especially in the risk score criteria. Hence, this aspect must be put into perspective by the reader given that administering the same questionnaire to respondents may yield varying results. Further, it must be noted that the questionnaire was structured to ascertain the perceptions on the severity of risk and not the probability of the occurrence of a specific risk.

6.7 Summary

The chapter provided a research methodology framework as guided by the research onion model discussed (Saunders et al., 2009). The chapter did motivate the use of a survey, interviews and secondary data sources as part of the research strategy and did outline the research methods and data collection methods planned to carry out the research. Following on in chapter 7 is the presentation of results derived from the empirical survey followed by chapter 8 which provides the analysis of the data presented in chapter 7.

CHAPTER 7 EMPIRICAL SURVEY RESULTS

7.1 Introduction

The primary focus of chapter 7 is to present the findings of the research. The chapter is divided in a number of sub-sections in line with the format of the questionnaire.

In the quest for brevity and to avoid repetition, results from the empirical survey are presented in a cursory manner mainly in the form of graphs and tables with minimal discussion of results. Part one, section 7.2.1 of chapter 7 presents the demographic information about respondents whereas section 7.2.2 covers the risk ranking questions.

As depicted in Table 7.1, 127 questionnaires were sent out of which 118 were confirmed to be delivered with the balance having bounced. Only 26 were duly completed resulting in a response rate of 22.03%.

Table 7.1 Questionnaire Statistics

Survey Title: Risks associated with infrastructure project finance in Zambia	
Start date:	05-Aug-14
End date:	08-Sep-14
Invitations sent:	127
Delivered:	118
Bounced:	9
Completed responses:	26
Response rate:	22.03%
Incomplete responses:	0
Incomplete responses included in this report:	0

Source: SogoSurvey (2014)

7.2 Questionnaire Part 1: Demographic Information about Respondents

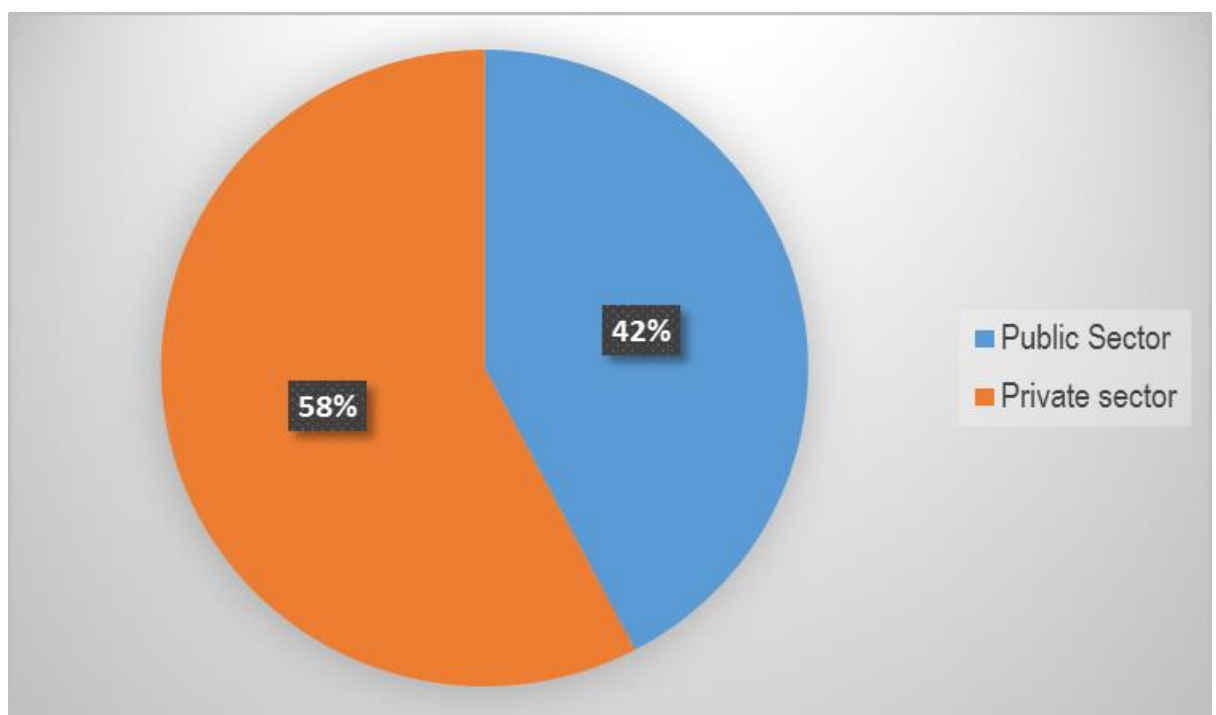
Sections 7.2.1 through to 7.2.4 provides the results for the first section of the questionnaire that sought to extract various information from the respondents such as sectors, profession and designations of respondents.

7.2.1 Sector

In seeking to establish the sectors from which the respondents belonged, the following question was asked in the questionnaire: *“Please indicate which of the following options best describes the sector that you work in”*.

Figure 7.1 provides a summary of the results from the above question where it shows that the private sector respondents were 58% against 42% for the public sector.

Figure 7.1 Analysis of results by sector



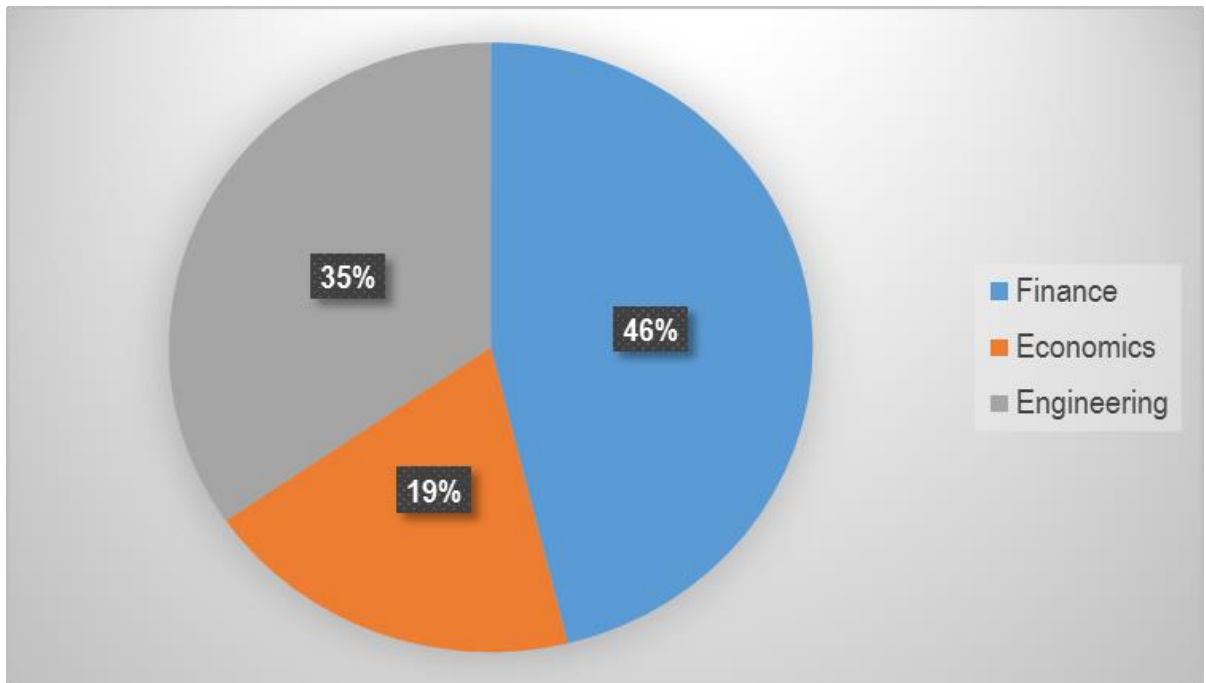
An analysis to ascertain if there is a significant statistical difference between the public and private sectors on the risk rankings of PPP projects in Zambia is analysed in chapter 8 under section 8.3.2.

7.2.2 Profession of Respondents

In seeking to establish the profession of the respondents, the following question was asked in the questionnaire: *“Please indicate which of the following options best describes your profession”*.

Figure 7.2 provides a summary of results from the above question where finance professionals appeared to be the majority at 46%, engineers at 35% whilst the economists were the lowest at 19%.

Figure 7.2 Analysis of results by profession



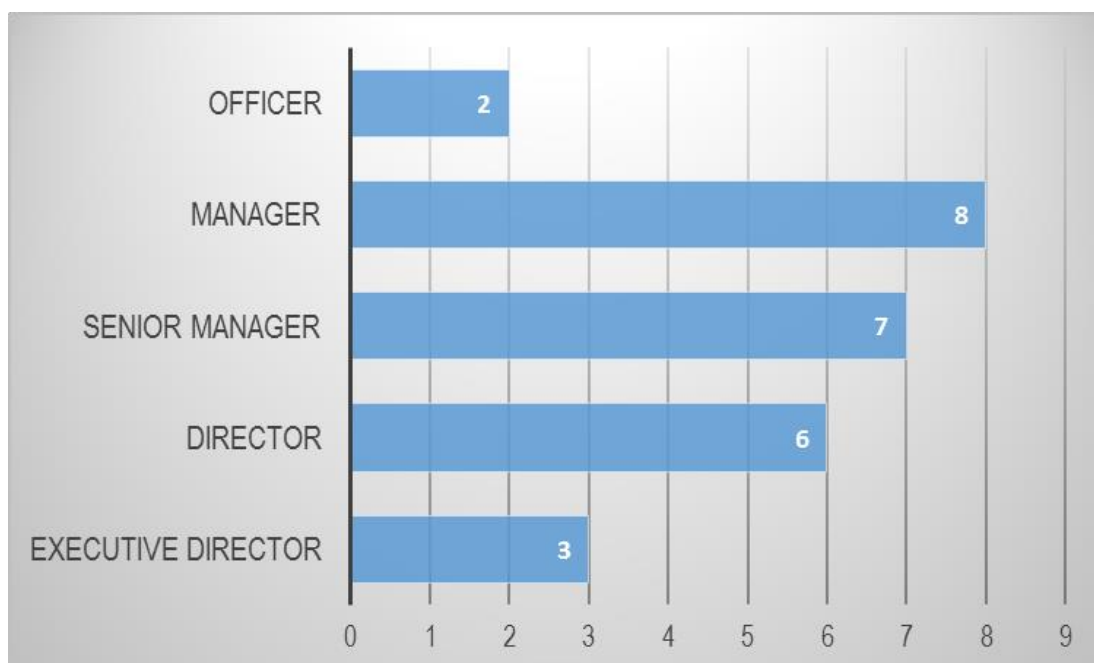
An analysis to ascertain if there was a significant statistical difference among different professions on the risk rankings of PPP projects in Zambia is analysed in chapter 8 under 8.3.3.

7.2.3 Position/Designation

In the quest to establish the seniority of respondents, the following question was asked in the questionnaire: *“Which of the following best describes your position within your organisation?”*

In total seven designations were provided as itemised below. Figure 7.3 provides a summary of results from the above question. As depicted in Figure 7.3, the bulk of the respondents were managers at varying levels thereby providing evidence that despite the low survey response rate at 22.03%, those who responded can be seen to be people whose feedback can be relied upon on assumption that there exists a correlation between seniority and experience of a respondent and the reliability of their feedback.

Figure 7.3 Analysis of results by designation

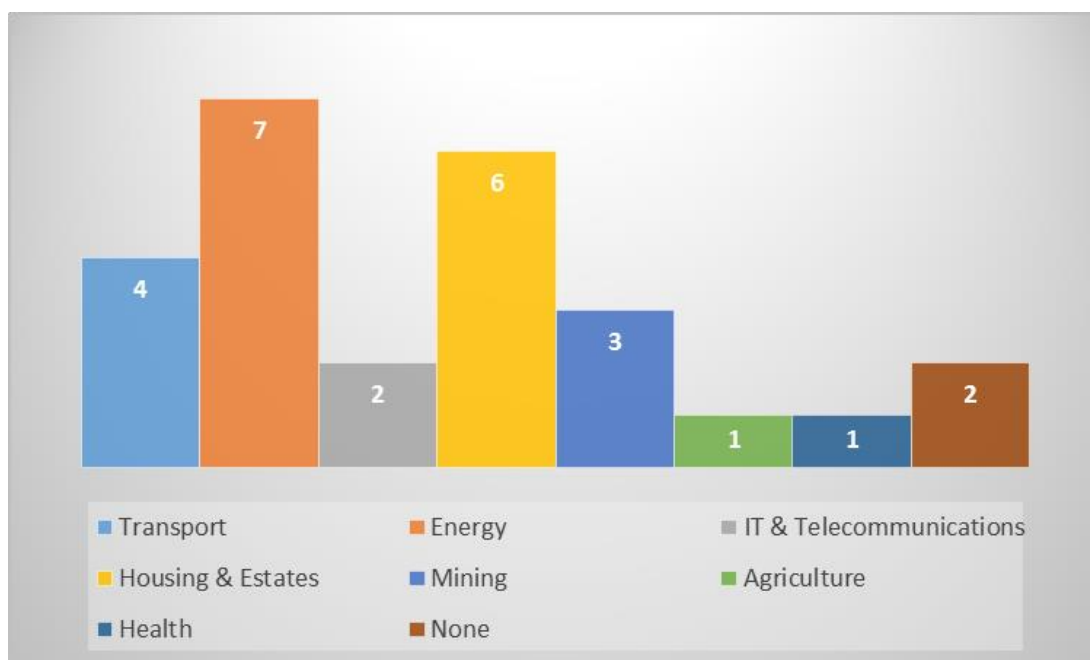


7.2.4 Project Finance/ PPP Sub-Sectors

Question 4 under part 1 of the questionnaire sought to establish the mix of sectors where project finance and PPPs have been undertaken. The graph as depicted in Figure 7.4 shows a diversity of sectors in which the respondents have worked with the energy sector being in the lead whilst agriculture and transport being the lowest.

With the former, it is quite understandably so in that no toll roads exist under any PPP arrangement in Zambia save for the ones currently being operated by the Road Development Agency (RDA) following the enactment of the Tolls Act No. 14 of 2011. The statistics in the energy sector though mainly in hydropower could be explained by the following on-going and planned investments in Zambia: Itezhi Tezhi (120MW), Kafue Gorge (990MW), Kariba North Bank (720MW), Victoria falls (108 (MW), Kafue Gorge lower (750 MW), and Kabompo.

Figure 7.4 Analysis of results by sub-sectors



7.3 Questionnaire Part 2: Project Planning and Development Risks

Based on the literature as presented in chapter 4 specifically as depicted in figure 4.2, the following sections provide the results from the survey for the planning and development risks that were under investigation. Specifically, section 7.3.1 provides the results for project development risks whereas section 7.3.2 provides results for project sponsor risks.

7.3.1 Project Development Risks

In the questionnaire, project development risks were defined as those risks that arise in the project execution process due to poor project selection as well as non-transparent procurement process.

Table 7.2 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the project development risk category.

Table 7.2 Mean ranking of project development risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Project Development Risks			3.42		4
Insufficient coordination between various government agencies	2	5	3.69	1	8
Lack of requisite skills in the Public sector to structure Project finance projects	1	5	3.58	2	12
Procurement process not transparent	2	5	3.46	3	15
Projects are not packaged in a bankable manner (only lists without further information to potential investors)	1	5	3.27	4	22
Lack of support by Ministry of Finance	1	5	3.08	5	26

7.3.2 Project Sponsor Risks

In the questionnaire, project sponsor risks were defined as negative attributes of a project sponsor/Investor which may impede on the access to debt funding from lenders.

Table 7.3 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the project sponsor risk category.

Table 7.3 Mean ranking of project sponsor risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Project Sponsor Risks			3.62		1
Failure to inject adequate equity into the project by local sponsors.	2	5	3.92	1	3
Failure by Sponsors to provide credit enhancement measures as comfort to senior lenders	2	5	3.77	2	6
Lack of experience and track record of prospective local sponsors	1	5	3.65	3	10
No established lender-borrower relationship between the sponsor(s) and the potential lenders	1	5	3.46	4	16
Lack of a Project Management skills and experience among local sponsors.	2	5	3.27	5	23

7.4 Questionnaire Part 3: Construction and Completion Risks

In the questionnaire, construction and completion risks were defined as those risks that would affect the successful completion of the construction of a project on time, on budget and as per specifications envisaged at planning stage.

Table 7.4 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the construction and completion risk category.

Table 7.4 Mean ranking of construction and completion risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Construction and completion Risks			3.54		3
Delayed Project completion leading to time and cost overruns	2	5	4.00	1	2
Lack of experienced local contractors with a good track record for quality project delivery	1	5	3.88	2	5
Risks of contractor insolvency	2	5	3.77	3	7
Project failure to meet performance criteria	2	5	3.38	4	21
Site Risks ie factors having to do with project location such as the availability of project land	1	5	2.65	5	36

7.5 Questionnaire Part 4: Operational and Market Risks

In the questionnaire, operational and market risks were defined as those risks that may affect the quantity and price of the project outputs as well as negative issues related to cost efficiency of the project operations post construction. As noted by Mills (2013:4), the operation phase of a project is very key in that it is expected to secure a steady and predictable cash flow.

Table 7.5 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the operational and market risk category.

Table 7.5 Mean ranking of operational and market risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Operational and Market Risks			3.58		2
Maintenance risk ie most projects do not undergo routine maintenance	2	5	3.92	1	4
Input supply risks ie Increase in input prices	2	5	3.69	2	9
Vandalism Risk ie Non-operational, deliberately caused damages	2	5	3.62	3	11
Shortfall in service quality	2	5	3.46	4	17
Demand Risk ie varying projected user demand in terms of quantity	2	5	3.23	5	25

7.6 Questionnaire Part 5: Risks Common to all Project Phases

This part of the questionnaire sought feedback on risks that may arise at any time of the project phase as outlined in 7.6.1 through to 7.6.4. The results are contained in sections 7.6.1 through to 7.6.4

7.6.1 Regulatory Risks

In the questionnaire, regulatory risk was defined as a risk that a change in laws and regulations will materially impact a security, business, sector or market. The assumptions made were that a change in laws or regulations made by the government or a regulatory body can increase the costs of operating a business, reduce the attractiveness of investment and/or change the competitive landscape.

Table 7.6 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the regulatory risk category.

Table 7.6 Ranking of regulatory risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Regulatory Risks			3.23		6
Approval risks ie delayed issuance of permits and land titles leading to cost overruns /deal cancellations	1	5	3.54	1	13
Weak legal structures to enforce payment of liquidation damages by contractors for risks	2	5	3.46	2	18
Control of prices by Government i.e a cap on tariffs for electricity & water	1	5	3.27	3	24
Unanticipated changes in law ie changes in taxation and foreign Investment laws	2	5	3.04	4	28
Unexpected renegotiations of the basic concession contract	1	5	2.85	5	31

7.6.2 Political Risks

In the questionnaire, political risks were defined as risks that an investment's returns could suffer as a result of political changes or instability in a country. The assumption made was that instability affecting investment returns could stem from a change in government, legislative bodies, other foreign policy makers, or military control. They are sometimes referred to as sovereign, geopolitical or host country risks.

Table 7.7 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the political risk category.

Table 7.7 Analysis of political risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Political Risks			2.42		8
Lack of stability of tenure for key staff in project implementing units	1	5	2.81	1	33
Change of Government resulting in major shifting of Infrastructure development priorities	1	5	2.69	2	35
Expropriation, confiscation and Nationalisation ie Government stepping in to take control of the project	1	5	2.54	3	37
Political Violence	1	4	2.04	4	38
Government's inability to maintain law and order	1	4	2.00	5	39

7.6.3 Economic and Financial Risks

In the questionnaire, financial risks were defined as the possibility that the project's cash flows may prove inadequate to meet financial obligations such as debt servicing and payment of dividends to shareholders. On the other hand, economic risks were defined as the likelihood that macroeconomic conditions like exchange rates, inflation and interest rates may affect the investment in the project.

Table 7.8 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the economic and financial risk category.

Table 7.8 Mean ranking of economic and finance risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
Economic & Financial Risks			3.41		5
Funding Risk ie inadequate or no local financial markets with capacity to fund large infrastructure projects	2	5	4.19	1	1
Foreign exchange risk ie mismatch of the currency of the revenues, operating costs and debt	2	5	3.46	2	19
Interest Rate risk ie the risk that an investment's value will change due to a change in the absolute level of interest rates	2	5	3.46	3	20
Inflation risk ie the uncertainty over the future real value (after inflation) of the investment.	1	5	3.08	4	27
Unclear market entry conditions ie in the power or telecommunication sector	1	5	2.85	5	32

7.6.4 General/Other Risks

In the questionnaire, these were defined as risks that could not directly be classified under any of the other risk categories identified above.

Table 7.9 provides a summary of the results from the above question showing the mean score of the specific risk factor followed by the ranking of each of the risk factors based on the mean score within the 'other' risk category.

Table 7.9 Mean ranking of general risks

Risk Category & Risk Factors	Min	Max	Mean	Rank within Category (Out of 5)	Overall Rank (Out of 40)
General/Other Risks			2.79		7
Corruption	2	5	3.54	1	14
Residual value Risks	1	5	2.96	2	29
Utilities Risks	1	4	2.92	3	30
Technology Risks ie use of outdated or untried technology	1	5	2.81	4	34
Force Majeure risks ie natural disaster	1	3	1.73	5	40

7.7 Questionnaire Part 6: General thoughts by Respondents

In part 6 of the questionnaire, respondents were asked the following question:

“From your experience, what are your general thoughts on the risk profile of Zambia's Infrastructure project finance market? Kindly indicate if there are other risks that may not have been identified in the questionnaire”.

The feedback from respondents is incorporated in the discussions of findings in chapter 8. In seeking to get views from respondents on their views as regards the use of the PPP model to finance infrastructure in Zambia, the following question was also asked

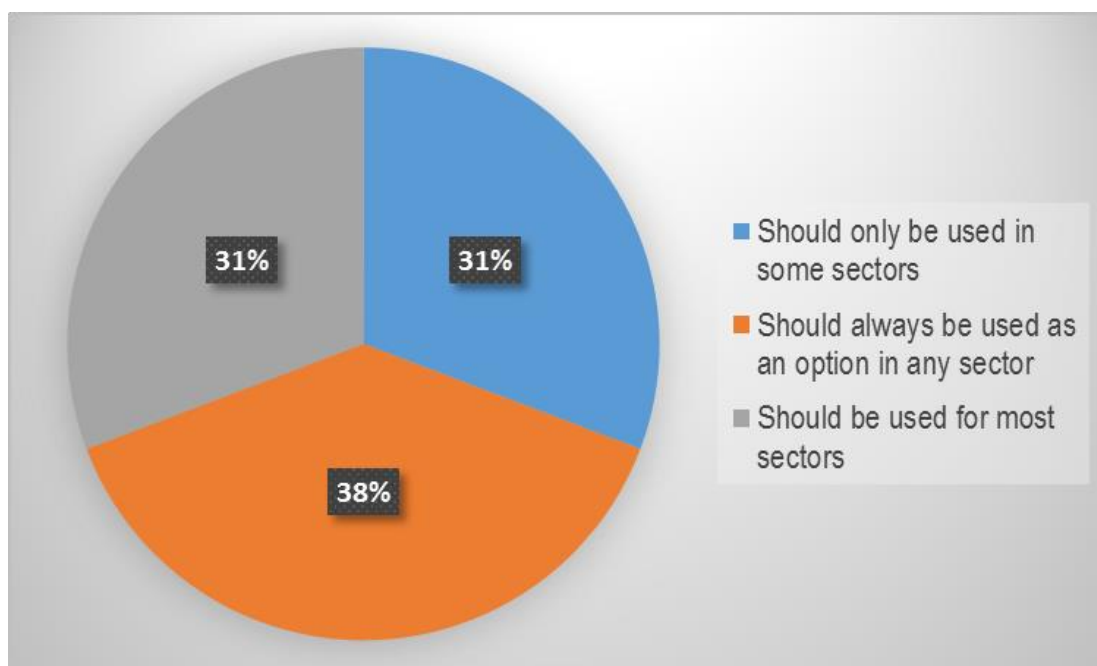
“Given your experiences of Public Private Partnerships in Zambia, what would be your general impression of the use of PPPs in Zambia?”

Three options were provided under this question as follows: should only be used in some sectors, should always be used as an option in any sector and should be used for most sectors. Figure 7.5 provides a summary of the results from the above question showing the percentage of each of the three options provided. In the quest to extract some suggested mitigation measures for the various risks identified in the questionnaire, respondents were further asked the following question;

“Having rated the various risks that affect Zambia's Infrastructure project finance agenda, what are your recommendations in seeking to de-risk the market and improve the deal count, project size and quality of implementation?”

For the sake of brevity, results for this question are also incorporated in the analysis of results in chapter 8.

Figure 7.5 Results on PPP options



From figure 7.5 above, it is apparent that most respondents indicate that PPPs should be used as an option in any sector.

7.8 Summary

Chapter 7 presented the results from the empirical survey in a cursory manner. The first part of the questionnaire detailing the demographic information of respondents was covered in 7.2 followed by results from the Likert scale ranking of various risk categories.

The proceeding chapter provides the statistical and verbatim analysis of results obtained from the empirical survey as well as demonstrating the relevance of the literature as presented in chapters 2, 3, 4 and 5.

CHAPTER 8

ANALYSIS AND DISCUSSION OF RESULTS

8.1 Introduction

The primary focus of chapter 8 was to present the analysis of the findings of the empirical survey presented in chapter 7 whilst incorporating some of the salient project finance literature as outlined in chapters 2, 3, 4 and 5. The chapter is divided into three main sub-sections guided by the three research questions as outlined in chapter 1. This chapter ultimately also provides some insight towards the research problem statement which affirms that risks that are associated with infrastructure project finance are endemic in Zambia, thereby, impeding on the country's ability to design, structure, and finance public infrastructure projects in a fiscally viable manner.

8.2 **Research question 1: How does Zambia's infrastructure project finance and PPP framework compare with theoretical normative criteria as well as other developing countries' policy frameworks in practice?**

In the analysis and discussions under this section, two key sources of literature are predominantly used as collaborative sources of evidence besides the empirical research findings: the first one being 'PPPs in Infrastructure Development in Zambia' (Zambia Development Agency, 2014) as well as the 'Initial Diagnostic of Zambia's PPP Arrangements' (Genesis Analytics Ltd, 2012). Other collaborative sources of literature on Zambia's infrastructure financing were also consulted though they do not specifically discuss project finance and PPPs but merely present the overall status of Zambia's infrastructure in general terms. One such report is the Africa Infrastructure Country Diagnostic Report on Zambia (World Bank, 2010). Below is a sub-thematic analysis of Zambia's PPP frameworks guided by the World Bank PPP framework which was presented in chapter 3.

8.2.1 **PPP Policy Rationale**

Guided by the literature as outlined in chapter 3, a good PPP policy framework is seen to be one that helps both the public and private sectors to understand the core rationale for PPPs and how the public sector goes about making PPPs happen (PPIAF, 2009:13). The following issues were thus explored to ascertain Zambia's PPP framework as benchmarked against some normative criteria.

From the interviews held with staff at the PPP unit and ZDA as well reading through publicly available literature, it is apparent that the government of Zambia have in place the PPP policy and PPP Act No 14 of 2009 which provides policy direction on PPP processes. The PPP policy provide guidance on the vision and PPP rationale, PPP guiding principles, policy objectives and strategies as well as the implementation

framework. The PPP Act No 14 of 2009 on the other hand provides guidance on the establishment of the PPP unit, the mandate of the council and the technical committee, project identification, the procurement process, agreements and dispute resolution procedures (Government of the Republic of Zambia, 2009). A thorough review of the PPP Policy and the PPP Act indicate that they are quite robust and comparable to international standards in terms of policy direction though an iterative process can be noted in the roles and functions of the PPP Council and the PPP Technical Committee which can bring 'red tape' to the PPP process. Other findings such as a lack of regulations to implement the operations of the framework as outlined in the PPP policy could be noted.

From an international perspective, the key drivers for project finance and PPPs are twofold. The first driver is to seek the private sector to design, build, finance and operate infrastructure facilities hitherto provided by the public sector in the process improve service delivery and management of facilities (PPIAF, 2009:2). Secondly, it is the mobilisation of private capital given that public funds as well as donor resources are seen to fall short of the amount required to build adequate and quality infrastructure. From the findings, it appears there was some common understanding of the rationale for PPPs as documented in chapter 3 of the PPP policy when compared with an ideal PPP rationale as outlined by PPIAF (2009) in chapter 3.

The government was clear in that they needed to mobilise capital from the private sector thereby improving delivery of public infrastructure and services. However, given the lack of activity in the PPP market in Zambia as well as the issues behind the cancellations of the PPPs that were under implementation, it appears the key motive then was not necessarily the earnest desire to improve service delivery and quality of infrastructure but to leverage on private capital without a corresponding effort to ensure that the PPP environment was indeed 'ripe' enough to accommodate PPPs. The gestation period to structure a bankable mega project finance deal can be quite lengthy and onerous, but it appears the government at the time did not appreciate this reality hence the 2010/11 period saw an increase in some semblance of PPP projects mainly in the roads sub-sector. As noted by Genesis Analytics Ltd (2012), coincidentally these projects were commissioned just in time for the September 2011 presidential elections which unfortunately was by many circles interpreted as being a move by the then government of the day to show tangible results to the public hence the accelerated project evaluations and execution.

The cancellations of most of these projects after the government of the day lost the elections could be a testimony that some of the projects under the 'formula 1' were marred with procurement improprieties. The researcher is of the view that, from the findings above, coupled with the lack of PPP activity since 2011, this could entail that even the new government is not amenable to PPPs given that despite the high impetus on infrastructure development, the financing modality for the infrastructure agenda has been through the traditional financing and procurement route (government balance sheet) mainly from the

capital market. In the last three years, Zambia has issued two sovereign bonds mainly for infrastructure development. The first bond issue was the \$750 million (see breakdown in Table 8.1) on which the country is already paying around \$42 million interest annually (Mukanga, 2014).

Table 8.1 Breakdown of the \$750 Million Eurobond-Zambia

S/L	Receiving Government Entity	Sector	Amount (USD'm)	% Share
1	ZESCO Kafue Gorge Hydro	Energy (Electricity)	186.00	24.8%
2	Formula1 Roads	Transport-Roads	145.00	19.3%
3	Zambia Railways	Transport-Railways	120.00	16.0%
4	Kitwe Chingola Dual Road	Roads Infrastructure	100.00	13.3%
5	ZESCO Repairs	Energy (Electricity)	69.00	9.2%
6	Pave Zambia RDs	Transport-Roads	65.00	8.7%
7	UTH, Ndola, Kitwe Livingstone Central Hospitals	Health	29.00	3.9%
8	Development Bank of Zambia- Financing SMEs	Banking	20.00	2.7%
9	Bank & Legal fees	n/a	1.40	0.2%
10	Discount (Advance Interest)	n/a	14.60	1.9%
	TOTAL		750.00	100.0%

Source: Ministry of Finance (2013)

The country is due to pay back the full \$750 million principal in 2022. The second bond was a 10-year issue in April of 2014 amounting to \$1 billion where the country is poised to be paying interest of 8.625% or \$86 million per year for the next 10 years with the principle repayment of \$1 billion due in 2024 (Mukanga, 2014). The quantum of these two sources of finance are a clear indication that the project finance and PPP route is not a preferred financing modality under the current government. This is on account of the bond proceeds which account for over 95% of the infrastructure development budget.

As noted by Genesis Analytics (2012:7), it is common that structuring a project from initial concept to financial close (just before construction) takes an average of three to five years, hence, there is need for the government and the private sector to exercise patience and endurance and not see PPPs as a 'quick fix' solution to Zambia's infrastructure needs. The World Bank also notes that to fully harness the fiscal benefits that project finance and PPPs provide, it cannot be business as usual (PPIAF, 2009:13). The Government of Zambia thus needs to think and behave in new ways that require new skills, reforming procurement and public service delivery rather than merely seeing project finance as a means to leverage private sector resources. This calls for a semblance of 'religious' discipline in the manner project finance investments are structured, designed and financed if the envisaged fiscal benefits are to be derived. Failure to do this could plunge the country into perpetual fiscal challenges where traditional financing of infrastructure through borrowing remains the order of the day.

8.2.2 Legal Framework

Guided by the literature in chapter 3, the PPPIAF framework and the ADB operational plan indicates that a good and robust legal framework for project finance is one seen by the private sector as having the ability to ensure the effectiveness of long term PPP contracts which also allows them to charge and collect user fees under a concession PPP. Given the tradition in most developing countries where delivery of services has been a preserve of the state, specific laws may be required to allow the public sector entities to contract with the private sector entities for the delivery of service hitherto provided only by the state. Secondly, the private sector would want clarity on their rights especially if the contract is terminated, the ability to repatriate profits for overseas investors as well as lender rights especially their ability to have security over the underlying infrastructure assets which may belong to the public sector at the time. Issues related to clarity on contract dispute resolution also requires a robust and impartial legal framework if projects are to be bankable (PPIAF, 2009:16-18)

In this study, none of the aggrieved parties to all the cancelled PPP projects could be reached for opinions on the adequacy of the legal framework, however, feedback from interviews indicates that the legal system as regards contractual enforcement where the public sector is a key party to the PPP agreement is seen to largely favour the public sector. Further, as most of the cases were in court at the time, respondents did indicate that it had been frustrating for the investors for cases such as the Kasumbalesa Border post project and the Zamtel saga where the government repossessed the national telecommunication company from the investor in 2011.

The revelations above appear to be in line with the results under the regulatory risk category in the survey. Approval risks (delayed issuance of permits and land titles) as well as weak legal structures to enforce payment of liquidation damages by contractors were also the top two severe risks. Unanticipated changes in law such as, changes in taxation and foreign Investment laws can thus be deduced to be an average risk in Zambia given its ranking at 28 out of 40. Despite the deal cancellations as outlined in the introductory section to chapter 8, the results appear to indicate that unexpected renegotiations of the basic concession contracts are not a severe risk in Zambia given the overall risk ranking of 31 out of 40. However, the researcher must be quick to re-emphasise that this survey was merely focused on the perceived severity of risks and not the impact of risks which may provide different results and risk rankings.

8.2.3 Investment Framework

In Africa, one of the biggest problems is the lack of a pipeline of high quality projects which would naturally encourage more bids from quality investors (African Development Bank, 2010). Given the huge bid costs

and the time for bid preparation, it makes sense that there is a pipeline of projects as opposed to having one-off uncoordinated project launches (PPIAF, 2009:15).

Currently, Zambia does not have a national infrastructure plan that takes into account the right economic investment factors where realistic bankability assumptions and commitments are made (Economics Association of Zambia, 2014:6). What the researcher observed is that catalogues of what can be dubbed as a 'wish list' of infrastructure projects are outlined in the National Development Plans without further information to would-be investors on the potential returns and risk sharing mechanisms. Specifically for PPPs, investors are interested in knowing what returns they will get if they invest in the project and assurance by the government that the environment will be conducive enough for the project to succeed (PPIAF, 2009:16:17)

As noted by Collier in his lecture at the London School of Economics and Political Science (2013), most African governments have a tendency to present a long wish list of projects at investor conferences detailing why the government needs the projects but without demonstrating to would-be investors how these projects would offer a decent return to the private sector. One notable example on this aspect is the presentation on Zambia's PPP frameworks done by the Ministry of Finance at the Zambia Investment Forum in Kuala Lumpur in 2011 which did not in any of its 24 slides demonstrate to the private sector the projected returns on the long list of projects that were presented. The presentation, as noted by Collier, merely communicated what the Zambian government wanted but did not present what the investors wanted to hear: returns, risk sharing and credit enhancements (guarantess and equity injection). The PPP list for earmarked projects under the Zambia Development Agency is no different in the manner it is packaged (see a snapshot of the list in Figure 8.1 below).

Figure 8.1 Zambia's PPP Pipeline deals

The screenshot shows the Zambia Development Agency's website with a navigation bar at the top containing 'Why Zambia', 'Investment Opportunities', 'Exporter Information', 'Local Businesses', and 'Downloads'. The 'Investment Opportunities' menu is active. Below the navigation bar, the page title is 'Public Private Partnership (PPP) Projects'. A paragraph defines PPP as a contractual arrangement where the private sector performs government functions of service delivery or infrastructure development, or uses state property, and assumes associated risks for the property, on behalf of Government, for a defined and agreed period of time. The private sector in return receives financial remuneration in form of concession fees, user fees, or any other form of repayment that maybe agreed upon with the Government. In this process, the Government retains a significant role in the partnership as the main purchaser of services or the main enabler of the project.

Health

1. An Ultra-modern Center of Excellency Hospital in Lusaka
2. Three diagnostic health facilities in Lusaka, Livingstone and on the Copperbel

Transport

1. E-Governance programme
2. Chingola-Solwezi-Lumwana-Jimbe railway line
3. Kazungula-Livingstone railway spur
4. Kafue Lions den
5. Njanji commuter
6. Nseluka-Mpulungu railway spur
7. Solwezi via Kasempa-Kaoma-Mongu to Katima Mulilo
8. TAZARA line to Chipata
9. Operation of train services between Chipata and Mchinji

Agriculture

1. Development of Kalumwanga Farming block
2. Development of Luena Farming blocks

Energy

1. Development of Kabompo mini-hydro
2. Development of Kalungwishi mini-hydro
3. Development of Mombututu mini-hydro

Source: Zambia DevelSource: Zambia Development Agency (2013)

From the snapshot in Figure 8.1 above, what one sees is a list of projects without hyperlinks to further information such as project descriptions, objectives, status, equity injections, returns and government credit enhancement mechanisms such as guarantees. This manner of project packaging unfortunately can hardly attract any serious investors which could explain why most of the projects listed in Figure 8.1 have been on the ZDA website for a number of years without any serious solicitors save for the Kapompo mini-hydro project which is currently being developed by the Copperbelt Energy Corporation (CEC). Interviews with key informants indicate that almost all the projects listed above (except for the Kapompo Hydro project) could be described as a wish list given that no efforts have been made by the government to prepare bankable project proposals.

8.2.4 Operating and Implementation Framework

Guided by the literature in chapter 3, the key aspects in terms of the operational framework is the assurance to investors that government has the capacity to manage the PPP process and that policy makers and other parties involved have a realistic understanding of the complexity of PPP projects for them to appreciate the kind of operational changes that may need to be put in place. Results as depicted in chapter 7 indicates that most of the specific risks related to project development such as coordination between various government agencies, skills in the public sector to structure project finance projects, procurement process as well as support by Ministry of Finance ranked generally high (among the top 20 risks out of 40) with an average mean score of 3.14. The results are further confirmed by outcomes from interviews as well as other collaborative sources which point out that there are differences in the understanding of the complexities of the PPP processes. In addition, there is the need for an understanding of the different operational frameworks between PPPs and the traditional procurement method as this has a bearing on the kind of skills required, the level of resources and the kind of institutions needed.

The PPP process also requires a multiplicity of professions from policy makers, finance, legal, and technical, but it appears the legal and financial skills are not evident within the PPP Unit and ZDA. There is need that these professions be brought on board either as full-time employees or as contractual staff. The researcher is aware that sometimes it may not be practical or efficient to employ certain skills in-house but merely to co-opt them as need arises. As advised by Genesis Analytics Ltd (2012:7), there is need for the government to trully take stock of the kind of resources they need if the PPP agenda is to become a reality given that success in PPPs requires a true meeting of technical minds in terms of assessing project risks and allocating them to the party best suited to manage those risks.

A quick scan of the operational guidelines for PPP development indicates that the PPP policy and the Act are not supported by regulations that provide a step-by-step guidance as provided for in the PPP Act of 2009. The lack of these regulations and detailed guidelines deprives investors of a platform and opportunity to understand the PPP processes, solicitation documents, templates for the bidding process, and so on. Good examples of countries with robust PPP regulations and guidelines include India's online PPP toolkit, UK's Green Book which outlines the appraisal and evaluation process by government, and South Africa's PPP modules which also show the PPP roadmap for PPP officers and investors.

8.3 Research Question 2: What is the severity of infrastructure project finance risks in Zambia?

In seeking to respond to research question number 2 as stated above, section 8.3.1 provides an analysis of the results obtained in the survey for all the eight risk categories as presented in table 8.2 below.

8.3.1 Analysis of Overall Results

With a view to ascertain the risks that have impeded on Zambia’s PPP development, a total of 40 risks were profiled for ranking by respondents. In the quest to systematically analyse these risks, they were arranged according to the project lifecycle under eight risk categories guided by literature in chapter 4. Table 8.2 provides the summary of the overall results for the 40 risks under investigation. However, the detailed sub risks under each of the eight risk categories is contained in annexure 3 to this report where the fifth column labeled “Rank within category out of 5” shows the rank within each of the eight broad risk categories where five risk factors were considered whereas the column labeled ‘Overall rank out of 40’ shows the ranking of each of the risk factors out of all 40 risk factors across eight risk categories.

Table 8.2 Overall severity of project finance and PPP risks in Zambia

Risk Category & Risk Factor	Mean	Overall Rank (Out of 8)
Project Sponsor Risks	3.62	1
Operational and Market Risks	3.58	2
Construction and Completion Risks	3.54	3
Project Development Risks	3.42	4
Financial Risks	3.41	5
Regulatory Risks	3.23	6
General/Other Risks	2.79	7
Political Risks	2.42	8
Average Mean score	3.25	

From the research findings, two notable conclusions can be deduced. The first one is that, on a scale of 1-5, as guided by the overall risk score outlined in the methodology chapter, the average mean score ranking for all the 40 risks under investigation was found to be 3.25 as depicted in table 8.2 above. This indicates that the average sentiments among respondents is that risks are fairly average in Zambia and not endemic as was affirmed in the problem statement. The other notable conclusion is that most

respondents found it difficult to objectively ascertain the profile of risks associated with infrastructure project finance in Zambia given that, (except for the cancelled PPPs which were procured prior to the enactment of the PPP Act of 2009) most of the planned projects have not reached the level of implementation to objectively determine the severity of the various risks presented in the study. Given the qualification above, the researcher is of the view that most of the feedback by respondents was thus presupposed based on their experience in other projects such as the joint ventures under Zesco, RDA, and CEC, in addition to their experiences in other non-PPP projects. Below is the analysis of the results which were outlined in chapter 7, analysed per risk category.

8.3.1.1 Sponsor Risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, project sponsor risks ranked 1st out of eight risk categories based on the mean ranking
- Failure by local project sponsors to inject adequate equity into the project came out as the number one specific risk under this risk category with a mean score of 3.92 though in terms of overall ranking (out of 40 risks across 8 risk categories), this risk ranked 4th .
- Lack of project management skills and experience among local sponsors was perceived as being the least severe risk under this category with a mean score of 3.27. The overall ranking out of 40 risks was, however, 24.

Guided by the results as was outlined in chapter 7, sponsor risks appear to be the most severe risks in Zambia with an average mean score of 3.62. As noted by Mills (2013:5), an assessment of the sponsors is generally the starting point for the wider qualitative analysis of risks of financing and if the sponsor risks appear unacceptable, it is unlikely that a project lender will be able to proceed much further, or at least not without some form of credit risk enhancements. However, regardless of the quantum of debt a lender may be prepared to fund, the sponsor is equally expected to inject some of the funds required to construct the project as equity finance which is consistent with most of the credit policies of most lenders. From the interviews undertaken, it appears that the Ministry of Finance is not amenable to contributing equity into PPP projects let alone offer guarantees to project sponsors. This could be as a result of the government possibly avoiding contingent liabilities which the government may be expected to make good if some of the contractual clauses come into effect based on a trigger event.

The Zambian PPP Act of 2009 under section 4.1.9 of the Act provides for unsolicited bids where private investors are welcome to submit prospective bids which are not necessarily initiated by government.

However, since the enactment of the Act, only one such bid appeared to have received government attention. This was a private sector which solicited \$200 million investment involved in the redevelopment of Long Acres Lodge into a five-star hotel, a shopping mall, conference center, office complex and related infrastructure signed with Thuthuka Group International of South Africa (Genesis Analytics Ltd, 2012:5). The agreement to proceed with this project is said to have been signed in June 2011 but the same could not be concluded owing to gaps in the agreement which the parties were seeking to renegotiate to close the transaction. The latest information from key informants for this study indicates that the project sponsor has since gone under liquidation.

Though this prospective project sponsor was foreign, such happenings could possibly confirm the research findings where sponsors are seen not to have experience nor a track record in packaging and implementing successful projects. Given that financing is a core resource in infrastructure projects, the lack of established lender-borrower relationships between sponsors and potential borrowers could also explain why the prospective sponsor for the Longacres Lodge is said to have gone insolvent.

8.3.1.2 Operational and Market Risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, operational and market risks ranked 2nd out of eight risk categories based on the mean ranking.
- Maintenance risk, mainly as a result of most projects not undergoing routine maintenance, came out as the number one specific risk under this risk category with a mean score of 3.92 though in terms of overall ranking (out of 40 risks across eight risk categories), this risk ranked 3rd.
- Demand Risk (varying projected user demand in terms of quantity) was perceived as being the least severe risk under this category with a mean score of 3.23. The overall ranking out of 40 risks was, however, 25.

Operational and market risks ranked as the second most severe risk category with maintenance risk being the 1st sub-risk. This could be explained by the findings in the Africa Infrastructure Country Diagnostic report (2010:8) where operations and maintenance of existing infrastructure due to lack of routine maintenance amounts to 33.1% of the total projected annual infrastructure needs for Africa as depicted in Table 8.3 below.

Table 8.3 Infrastructure spending needs for Sub-Saharan Africa

Infrastructure sector	Capital Expenditure \$	Operation & Maintenance \$	Total Spending \$
ICT	7.00	2.00	9.00
Irrigation	2.90	0.60	3.40
Power	26.70	14.10	40.80
Transport	8.80	9.40	18.20
WSS	14.90	7.00	21.90
Total	60.30	33.10	93.30

Source: African Development Bank (2010:5)

Zambia is no exception given that certain roads such as the Kafue-Mazabuka road has been worked on by more than two sets of contractors in the last ten years even when the lifespan of a serviced bitumen surfaced road could be between 10-12 years. Yet the same road is already in a deplorable state justifying that the delivered projects are usually not of good quality. This further vindicates the ranking of poor project execution as a score of five overall risk out of 40. This also confirms that there is usually no scheduled maintenance for public infrastructure until it is due for a complete overhaul.

The lack of maintenance has seen even the infrastructure that is regarded as good is getting worse by the day after being constructed. This matter of poor maintenance of infrastructure has been identified as one of the key inadequacies in the development and management of national infrastructure in Zambia (EIZ, 2012:8). Coupled with this risk is the vandalism risk where certain damages to public infrastructure are seen to be endemic going by the ranking of vandalism at number 11 out of 40 risks. Some of this could be explained by the excess usage of the roads for transporting heavy mining equipment and mineral outputs given that the railway system in Zambia has over the years been unreliable. The railway system in Zambia is characterised with derailments and an average train speed of 20 kms/hour though projected to improve to 70 km/hour by 2015 (Times of Zambia, 2014).

8.3.1.3 Construction and Completion Risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, construction and completion risks ranked 3rd out of eight risk categories based on the mean ranking
- Delayed project completion leading to time and cost overruns came out as the number one specific risk under this risk category with a mean score of 4.00 though in terms of overall ranking (out of 40 risks across 8 risk categories), this risk ranked 2nd
- Site risks (factors having to do with project location such as the availability of project land) were perceived as being the least severe risks under this category with a mean score of 2.65. The overall ranking out of 40 risks was, however, 36

Construction and completion risks ranked as the third most severe risk category. Among the five specific risks within this category, it can also be noted that three of these specific risks ranked overall among the top ten risks. Delayed project completion which further results in time and cost overruns was the number one risk within this category and 2nd overall which confirms the local media reports which state that local contractors are usually associated with project delays and sometimes completely abandon the project site.

Project failure to meet performance criteria ranked as number 21 overall risk with a mean score of 3.38. Fabozzi, *et al.* (2012:15) indicates that project failure to perform includes delays in the completion of construction leading to an increase in capitalised interest on the borrowed funds, capital overruns, technical failures, and financial failures of the contractor, uninsured casualty losses and increased price or shortages of raw materials. Besides some of these very project specific issues with project financed investments, he further indicates that government interference is one of the key sources of project failure as well as technical obsolescence of the plant, loss of competitive position in the market place, expropriation, poor management and financial difficulties within the host or sponsor country government(s). The capital structure of PPPs technically places a future obligation for sponsors to liquidate the loans, this calls for prudent, efficient and effective roadmap in the manner in which projects are identified and structured to ensure that such projects are indeed economically and financially viable. Figure 8.2 shows an example of the Lusaka-Chirundu road which barely months after being commissioned in 2009, got swept away at its first rainfall anniversary 'cutting' off Chirundu and Siavonga from the rest of the country.

Figure 8.2 The Chirundu Lusaka road



Source: China in Africa (2011)

Besides these attributes of project failure, wrong project selection could also be the reason certain projects fail to perform especially if they are self-financing entities. Some infrastructure must deliberately be designed to make commercial sense so that they may operate in a sustainable manner in future without a further strain to the Government. Based on the annual audit report, it is evident that the government of Zambia has commissioned quite a number of infrastructure projects yet they do not appear to have been designed with sustainability in mind. Some of the sentiments from the study indicate that such infrastructure has continued to 'milk' the government treasury through monthly grants for maintenance costs because of poor project selection, structuring and valuation.

One such example is Zambia's Levy Mwanawasa stadium, which, according to the print media, has financial challenges to an extent that it relies on monthly government grants of \$16,600. This grant is equally reported to be inadequate as the total monthly funding needs for the stadium maintenance is over \$42,000 if the stadium is to be fully maintained. This has, thus, resulted in the stadium recording a funding gap of around \$20,000. Yet the government has already gone ahead to begin constructing more stadia - the Mongu Stadium is to be built 600 kms away from the capital city and the recently completed Heroes National Stadium in Lusaka. The town where the Mongu stadium will be built is one of the least developed areas in the country with fish and rice production being the only vibrant industries. The town does not even have any competitive sports, nor any organised sports leagues and yet government has made a decision to spend public funds to undertake such a project. One then asks a question as to whether such a decision is based on any economic and financial appraisal fundamentals or was decided intuitively in the quest to make political mileage in the area. This begs answers to the following question: does the

government have to wait until the project becomes a 'white elephant' for it to be dubbed as a failed project when both the economic and financial fundamentals do not look favourable even at a distance?

A further question that begs for an answer is: Can Zambia learn anything from other nations that have built stadia and ended up demolishing them due to under-capacity? The classical case is the Korea/Japan 2002 tournament where Korea demolished their stadia, as the policy decision was that these assets were not going to generate sufficient revenue to maintain excellent facilities. Reports from media houses such as Supersport and Monocolumn indicate that on the African continent, South Africa has equally had debates on whether to demolish some of the underperforming stadia such as Mbombela Stadium, Free State Stadium, Rustenburg and Peter Mokhaba (Polokwane) stadia (Preez, 2010). These stadia were built when South Africa hosted the world cup in 2010 but due to the escalating maintenance costs that cannot be supported by the underperforming stadia, there have been calls to demolish the stadia to pave way for other more productive and sustainable projects (Monocolumn, 2010)

8.3.1.4 Project Development Risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, project development risks ranked 4th out of eight risk categories based on the mean ranking
- Insufficient coordination among various government agencies in Zambia came out as the number one specific risk under this risk category with a mean score of 3.69 though in terms of overall ranking (out of 40 risks across eight risk categories), this risk ranked 8th.
- Lack of support by Ministry of Finance was perceived as being the least severe risk under this category with a mean score of 3.08. The overall ranking out of 40 risks was however 27.

This risk category ranked as number four overall risk pointing to lack of coordination in the manner in which various government institutions operate, lack of skills in the public sector to structure PPP projects, issues with procurement and general project bankability issues. Some of the co-ordination challenges can be seen such as the location of the PPP Unit which has been a subject of back-to-back discussions and changes about where the PPP Unit should finally be housed. At one point, recommendations were made that the unit be relocated from Ministry of Finance to the Zambia Development Agency (ZDA) under the privatisation wing which also saw an advertisement for the Director of PPPs. However, latest information from key participants in this study appear to indicate that this decision may be reversed in the quest for the unit to remain under ministry of finance as originally provided for in the PPP Act of 2009. This move, if upheld, will be in line with the practice in most jurisdictions such as South Africa, United

Kingdom, and Australia. The lack of PPP pipeline deals has also robbed project participants of an opportunity to assess the robustness and ability of some of the government agencies such as ZPPA in undertaking procurements for specialised lending transactions such as PPPs.

In terms of skills needed to structure PPP projects, the core staff at the PPP Unit under the Ministry of Finance and those under the ZDA demonstrated a solid understanding of the nuances of the PPP processes. However, there has not been a platform for them to deploy their knowledge into practical PPP projects given the lack of a pipeline of bankable projects. Further, given the size of the public sector where PPPs may be used including municipalities, the technical staff within the PPP Unit and ZDA are highly inadequate to provide timely technical backstopping.

It may be prudent that ministerial PPP units be established gradually to ensure ownership by the respective public authorities throughout the PPP process as opposed to relying on the centralised PPP unit who may be too inundated with other competing proposals from other public sector entities. Given that the procurement process for high value projects is centralised (handled by the Zambia Public Procurement Authority (ZPPA)), the expectations, based on pillar 1 of the Asian Development Bank (2012:9) would be the following: First, ZPPA with the help of the procuring ministry should have the capacity to clearly articulate the strategic justification for the project; whether the project is affordable (irrespective of how it is procured); whether the project is commercially viable or bankable; and whether the public sector agency has the right resources, skills, and organisation to manage the procurement process.

The fourth risk under this risk category may indicate that projects in Zambia are not bankable. As noted by KPMG (2010), from the private sector perspective, bankability as commonly interpreted by public entities goes beyond the traditional yardsticks of a positive net present value and an acceptable internal rate of return. The expectations by the private sector is demonstrated below in table 8.4 which further complements Vinter's views on bankability as was outlined in chapter 2, section 2.2.5 where his focus was on consents, shareholder's agreement, concession agreement, construction contract, O&M contract as well as the supply and offtake contracts.

Table 8.4 Project Bankability

Political stability and 'buy-in' by all political stakeholders
Continuous high level political support
Pipeline of attractive, viable projects
Fair, reliable transparent procurement with open competition
Enforceable contracts
Shared risks commensurate with return
Well-defined and consistently applied 'rules of the game'
Projects that lead to new opportunities.

Source: KPMG (2010)-Online

Given the outline above, in the case of a the Njanji Commuter train which is listed on the ZDA website, the following issues can be put in context. The project may fail the bankability test if the private sector has to fund the development as well as meet construction costs (including relocation since the rail line has been heavily encroached) on the terms that it has to take all the planning risks and recover its investment only through raising user fees. If, however, the public sector takes all the planning risks (including relocation of people who have built structures around the rail line), pays cost overruns and agrees to repay the private sector through a cost plus fee system, virtually all projects of this type would become bankable. As advised by KPMG (2010), bankability is determined by how the project is defined and the constraints that are imposed, or the incentives that are provided, in respect of the implementation through the concession contract or regulations by the sponsoring government. The process of selecting bankable projects should ideally consist of those that can be given a serious chance of success with sufficient incentives through government support and regulations (if required), while keeping these incentives within acceptable limits and in line with risk transfer objectives.

8.3.1.5 Economic and Financial Risks

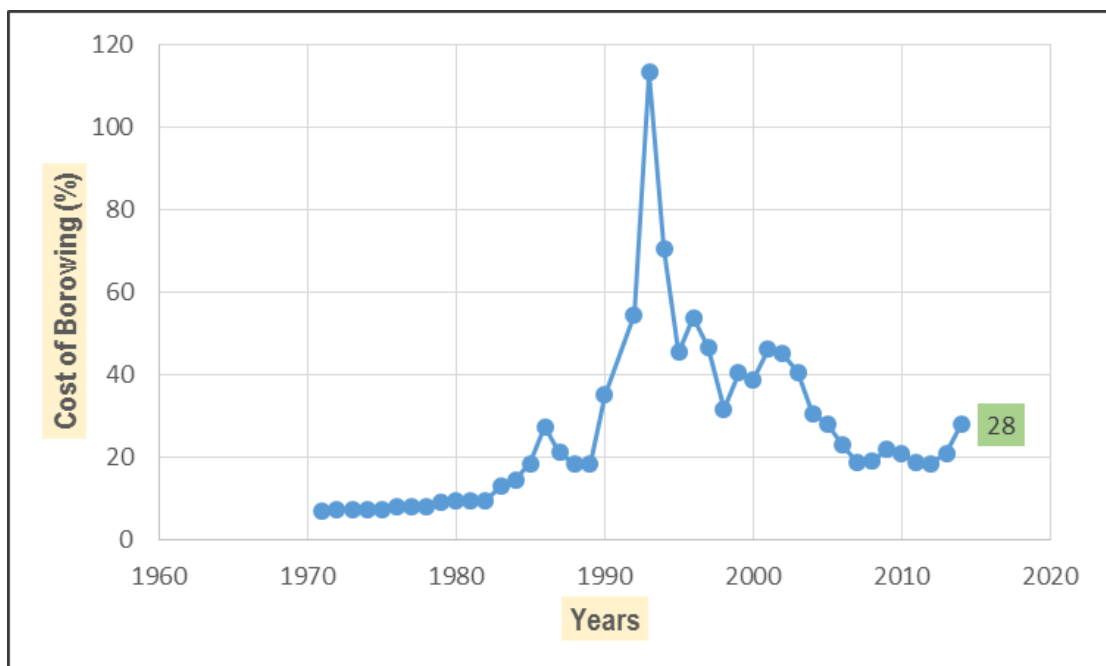
Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, economic and financial risks ranked 5th out of eight risk categories based on the mean ranking

- Funding risk mainly related to the inadequacy or lack of local financial markets with capacity to fund large infrastructure projects came out as the number one specific risk under this risk category with a mean score of 4.19 and also 1st in terms of overall ranking (out of 40 risks across eight risk categories)
- Unclear market entry conditions such as in the power or telecommunication sector was perceived as being the least severe risk under this category with a mean score of 2.85 The overall ranking out of 40 risks was, however, 31

The inadequacy of the local financial market to fund large infrastructure was the number one risk overall. Given that funding for project finance investments is usually syndicated, this also points to there being very little syndication occurring in the market. Further, the vibrancy of the local capital markets as well as the participation of pension funds is a common source of funds for project finance but given the performance records for some of the projects in the local market, the risk could be too high to invest pension funds especially with the sensitivity of the funds and possible public opposition. The high cost of borrowing in Zambia, as depicted in Figure 8.3, has an average of 21.87% for the last 10 years could also explain why the local market is not a common alternative for sponsors to finance large infrastructure investments.

Figure 8.3 Cost of borrowing trends in Zambia



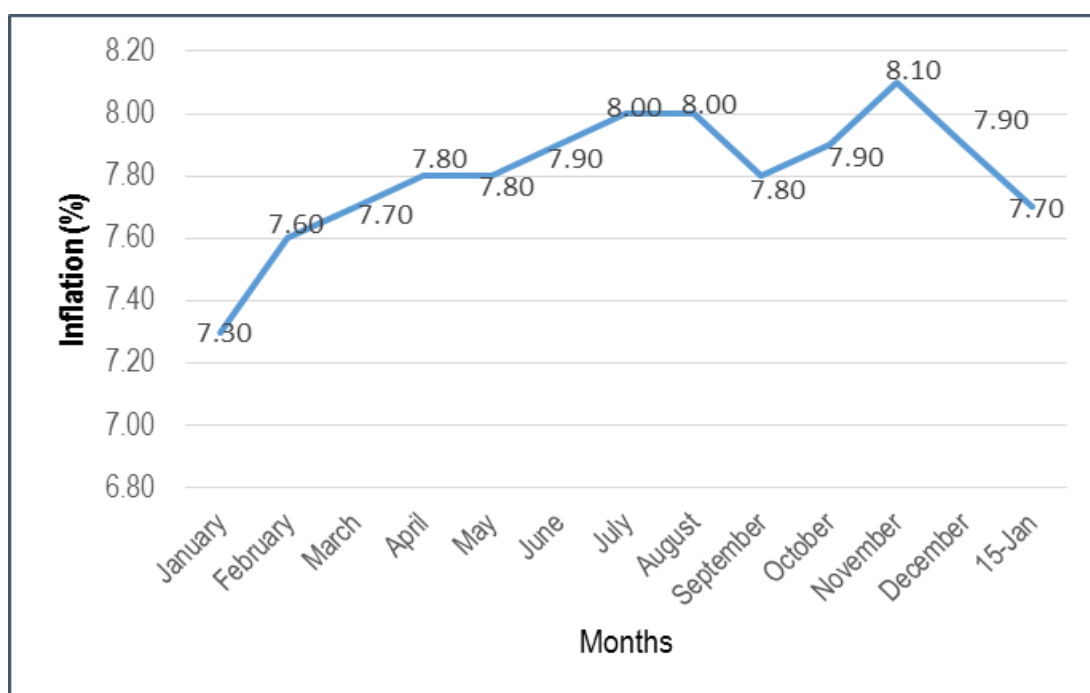
Source: Index Mundi (2014)

The rule of thumb for project financing is that the internal rate of return should be more than the cost of borrowing so that investors get a fair return on their investment. However, with an average cost of

borrowing being as high as 21.87%, this entails that the expected IRR from investors if funding is sourced locally should in essence be around 26% or more which would mean raising tariffs/prices. In the long run, this may prove unaffordable for the public and may be a recipe for public outcry through protests.

Inflation in Zambia has also been consistently high averaging 7.7% between January-October 2014 as depicted in Figure 8.4. As noted by Yescombe (2014:187), issues relating to the effect of inflation on a PPP contract can be far more complex than those relating to interest rate risk. With such high inflation rates, bidders for PPP projects are most often likely to incorporate the inflation rate exposure in their financial models to hedge against effects of inflation on operational expenses such as maintenance, and administrative costs which may unlikely be good value for money when assessed by the public sector.

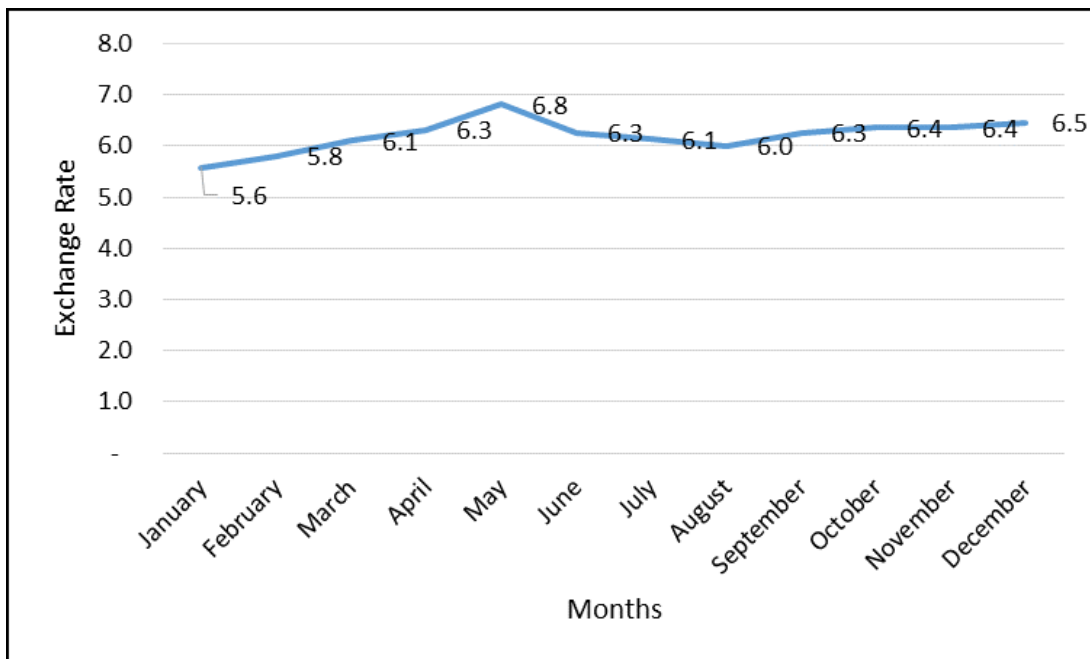
Figure 8.4 Inflation patterns in Zambia - 2014



Source: Trading economics (2014)

Besides the cost of borrowing and inflation, exchange rate risk is another macro-economic issue that affects the financial structuring of a PPP project though it is more prevalent in situations where funding for the project is sourced outside the domestic market as is the case with Zambia given the high borrowing costs locally. During the year 2014, rates averaged K6.164 to \$1 which prior to the rebasing of the currency would read K6,164 to \$1. Figure 8.5 shows the exchange rates movements from January to October 23rd 2014 which indicates some stability around 6.1 to a \$1 between July to Oct 2014.

Figure 8.5 ZMK-USD exchange rate pattern in Zambia for 2014



8.2.1.6 Regulatory risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, regulatory risks ranked 6th out of eight risk categories based on the mean ranking
- Approval risks (delayed issuance of permits and land titles leading to cost overruns and deal cancellations) came out as the number one specific risk under this risk category with a mean score of 3.54 though in terms of overall ranking (out of 40 risks across eight risk categories), this risk ranked 13
- Unexpected renegotiations of the basic concession contract was perceived as being the least severe risk under this category with a mean score of 2.85 The overall ranking out of 40 risks was, however 31

As noted above, approval risks related to project permits and land titles ranked as the number one risk under this category and among the top 20 most severe risks overall. Any delays to issue permits and land titles could make a project become un-bankable. As noted by Vinter (1997:193), the optimum position for most project finance lenders in relation to permits, authorisations and consents is that they must all be issued on or prior to financial close, the terms of the consents should have minimal room for variations, and they must run with the project not the project company.

As noted by Gatti (2009:58), a turnkey, engineering, procurement, or construction (EPC) contract is usually the preferred mode of contracting with a contractor which specifies the completion date, cost of works, plant performance and a warranty period after the project has been accepted by the SPV, where the plant maintenance and replacement of parts are granted for free by the contractor. The expectation is that once the completion date has been reached as agreed, the project performance is as was prescribed during the contracting period and in case it does not meet the minimum standards, the contractor is thus expected to pay performance damages. The risk score indicate that this risk is among the top 20 most severe risks which is in line with the findings of most of the annual reports by the Auditor General's Office in Zambia.

8.2.1.7 Political Risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, political risks ranked as the least severe risk category (8th out of eight risk categories) based on the mean ranking
- Lack of stability of tenure for key staff in project implementing units came out as the number one specific risk under this risk category with a mean score of 2.81 though in terms of overall ranking (out of 40 risks across eight risk categories), this risk ranked as number 33
- Government's inability to maintain law and order was perceived as being the least severe risk under this category with a mean score of 2.00 The overall ranking out of 40 risks was however 39

From the results, political risks were perceived to be generally low with the highest risk within this category ranking number 33 out of 40 risks. Stability of tenure for key staff in project implementing units may have ranked number 33 out of 40 but there is need for government to ensure that the right people are objectively appointed and given the necessary resources, including time, to implement developmental projects which generally takes time to structure. Going by the media reports in the Times of Zambia (2014), the manner in which the position of Chief Executive Officer at Roads Development Agency changed hands in 2013 does not provide comfort for the incumbent to operate in a strategic manner and also has the tendency to promote short term approach in the planning and execution of projects. To structure fiscally viable projects, the process from project identification, feasibility, procurement and implementation takes time, hence, there is need for stability of tenure for staff behind the projects for the sake of institutional memory given that certain projects may be too complex for new staff to understand the intricacies at hand.

With a rank at number 35, it appears there has been continuity of infrastructure development plans from the previous government though what can be noted on the ground is that the incumbent government started implementing its own new projects abandoning some of the projects that were commissioned by the previous government. A number of township roads under the “formula 1” projects were partially done at the time the current government took over but instead of completing these roads, they commissioned completely new roads. Given the current momentum of infrastructure development, it is hoped that some of these projects abandoned be completed.

Expropriation, confiscation and nationalisation of projects under the private sector appear to have ranked low at number 37. As was highlighted under the research problem statement section in chapter 1, Zambia’s infrastructure project finance and PPP market has in the recent past been characterised by cancellations of deals notably: the 20 year Zambia Railways concession awarded in 2003; the 25 year concession of the Mpulungu Harbor awarded in 2000; the Kasumbalesa One-Stop-Border Post for the 25 year build-operate-and transfer contract with Baran Trade and Investment Limited (operated as Zambian I.P. Border Crossing Company Limited) in July 2009 (Zambia Development Agency, 2014:8). Three of these contracts have since been cancelled except for the 65-year concessional Luburma Market contract with the rest having been reverted to the state. The reasons for the cancellations as documented by the Zambia Development Agency (2014:8) and (Genesis Analytics (Pty) Ltd, 2012:5) are hereby summarised:

In October of 2012, the Government of Zambia terminated the concession agreement with the Zambia Border Crossing Company (ZBCC) who were awarded a 25-year concession in July of 2009 to finance, design, build and operate the Kasumbalesa Border Post. ZBCC’s other PPP contracts to run other border posts such as Nakonde, Mwami, Jimbe, Kipushi and Chanida were also cancelled on the basis of impropriety in the manner in which the contract was awarded. The 20-year concession awarded to Railway Systems of Zambia (RSZ) in 2003 which was being run by the NLPI/Spoornet Consortium of South Africa was also cancelled in 2012 on allegation of contractual failure to perform by the concessionaire. The Government compulsorily acquired the concession rights that were granted to RSZ and reverted the management of the railway network to Zambia Railways Limited which is a wholly government entity. The Kitwe-Chingola Toll Road Project is reported to have been well-structured initially but before the negotiations could be finalised, government appointed a transaction adviser from South Africa (Genesis Analytics Ltd, 2012:5). The late entry of this adviser is reported to have resulted in a change of project scope. The resulting delays frustrated the preferred bidder and the project ground to a halt.

As of July 2014, the only surviving PPP contract: the 65-year concession between Lusaka City Council and China Henani to finance, construct, operate and transfer the Luburma Market was a topical

discussion in the Zambian Parliament where the local government and housing minister called for the re-negotiation of the concession on grounds that it was benefiting the investor more than Zambians (Times of Zambia, 2014). The minister did label the agreement as being ridiculous on grounds that the investor had since recouped their investment yet very few benefits were being accrued to the people of Zambia more so that the market structures in their current status do not appear durable enough to last through the 65-year concession period as depicted in Figure 8.6. However, efforts to have this agreement renegotiated appears to be in a 'limbo' given the revelations by the Chairperson of the Parliamentary Committee on Communications, Transport, Works and Supply that all the records in the Luburma market deal were lost hence it was not apparent who was behind the negotiation of the Luburma market concession 15 years after the project was completed (Times of Zambia, 2014).

Despite these deal cancellations, the results indicate the political violence, law and order rank as one of the lowest risks in Zambia. Amidst political and country risks in the continent, this result should be commendable as it offers a good environment for PPPs if other risks could be managed.

Figure 8.6 Status of 65-Year Concessioned Luburma Market in Lusaka, Zambia



Source: Pictures courtesy of Lusaka Times

8.3.1.8 Other Risks

Based on the statistical outputs as depicted in Annexure 3, the following three key results can be deduced under this risk category;

- Overall, the general risks which could not be categorized under other risk categories as outlined above ranked as 7 out of eight risk categories based on the mean ranking
- Corruption (corrupt government officials, demanding bribes or unjust rewards in the project finance and PPP process) came out as the number one specific risk under this risk category with a mean

score of 3.54 though in terms of overall ranking (out of 40 risks across eight risk categories), this risk ranked 13

- Force majeure risks (natural disaster) were perceived as being the least severe risk under this category with a mean score of 1.73. The risk was also perceived as being the least severe risk overall

In project finance, there is a need for transparency in the manner projects are identified, appraised, procured and implemented given that such projects are usually meant to be self-sustaining. With corruption being the number one risk within the 'other' risk category and ranking number 14 overall, this confirms media reports that corruption is quite endemic in the manner contracts are awarded. Worse still, in the Zambian context, access to public information on the whole process of the deal can be problematic where government appear to hide behind 'commercial confidentiality' as an excuse for failing to provide public information.

Public access to information is often poor and consultation processes can be said to be carried out as a formality, at a late stage, and with no real intention of taking public opinion into account. This was manifested in the awarding of mining rights to Zambezi Resources of Australia where public opinion, as well as that of the Zambia Environmental Management Agency, was that the project should not go on, yet, government stated that they had the final say in the matter. This risk score could also indicate that some of the officials are insufficiently committed to wide consultation and consideration of alternatives when such projects are being developed. This calls for government and other stakeholders to ensure that a balance is struck between the wishes of the private sector and that of tax payers.

Every year, the office of the auditor general reports on a number of corruption cases especially in the procurement process. These are also documented in the Public Accounts Committee reports of the Parliament of Zambia. For example, Appendix 1 of the 2012 auditor general's report documents a summary of corruption related cases with prevalent ones being questionable with regard to awarding of contracts and over payment to contractors (Auditor General: 265-311)

Other risks such as residual risks appear to have been ranked low given the low PPP deal count especially Build, Own and Transfer (BOT) projects where the operator is expected to hand back the project assets in a prescribed condition after the expiry of the concession agreement. The contentious ones include Railways Systems of Zambia where the assets may not have been in a good condition at the time the concession was cancelled. As observed by the researcher, the other PPP project- the Luburma Market (commonly known as the Kamwala Market) under a 65-year concession appears to be too long for the market structures to be in a good condition for handover to Lusaka City Council given the current state of the market 15 years into the concession agreement.

8.3.2 Comparison of Risk Rankings between the Private and Public Sectors

The main interest for the comparison using the Mann-Whitney U test in this question was to further undertake a comparative analysis aimed at ascertaining if significant differences existed between risk perceptions of the public and private sectors at 5% significance level. As was stated in the research methodology chapter, the Mann-Whitney U Test is a nonparametric test that is employed with ordinal (ranked with order) data in a hypothesis test that involves two groups or conditions or treatments to be compared without making the assumption that values are normally distributed was conducted (Struwig & Stead, 2001:167).

Given its operational parameters, the interest for the study was thus to deduce if at all there was any statistical significance in the perception of risk between the public and private sector for the 40 risk factors under investigation. Below is the hypothesis that was under investigation:

Null Hypothesis:	There is no difference in the mean ranks between the public and private sector
Alternative Hypothesis:	The two means are different, not by chance, but beyond chance.
Rule:	Reject or fail to reject the null hypothesis depending on whether $p < 0.05$ or $p \geq 0.05$

Based on the results as per Annexure 2, there is no significant statistical difference between the public and private sectors on the risk rankings of PPP projects in Zambia for most factors. Since no significant statistical difference existed between the public and private sectors for most of the factors, tests for other classification were done. Factor 5, Lack of requisite skills in the Public sector to structure Project finance projects ($p=0.036$), is explained by the respondent's sector. This is the only risk factor that is explained by sector probably given the inherent difficulties for the public sector staff in being objective when rating the risk factors related to project development such as: government coordination, quality of skills in the public sector, transparency of the procurement process, support by the ministry of finance (especially in provision of equity and credit enhancements such as guarantee) as well as the manner in which projects are packaged prior to inviting private sector investors.

8.3.3 Comparison of Risk Rankings among Professions of Respondents

The Kruskal-Wallis analysis is a generalisation of Mann-Whitney U test (Struwig & Stead, 2001:167). While the Mann-Whitney U test compares only two groups based on ranked data, the Kruskal-Wallis is a generalisation to three or more groups.

Given its operational parameters, the interest for the study was thus to deduce if at all there was any statistical significance in the perception of risk severity among different professions: finance, economics, engineering and other for the 40 risk factors under investigation. This was at 5% significance level. Below is the hypothesis that was under investigation:

Null Hypothesis: There is no difference in the mean ranks based on profession of respondents.

Alternative Hypothesis: The two means are different, not by chance, but beyond chance.

Rule: Reject or fail to reject the null hypothesis depending on whether $p < 0.05$ or $p \geq 0.05$

Annexure 3 provides the statistical results of the risk ranking of PPP projects in Zambia among professions using Kruskal-Wallis test. There are three factors that show some significant statistical differences across professions:

Risk Factor 12 - Risks of contractor insolvency), $p=0.018$, Effect size estimate = $ChSq/(n-1)$. Effect size = $7.489/(26-1) = 7.489/25 = 0.29956$.

This means that 29.9% of the variability in rank scores for this factor is accounted for by the profession of the respondent.

Risk Factor 21 (Weak legal structures to enforce payment of liquidation damages by contractors for delay, performance and availability risks), $p = 0.006$. Effect size estimate = $ChSq/(n-1)$. Effect size = $9.102/(26-1) = 9.102/25 = 0.36408$.

This means that 36.4% of the variability in rank scores for this factor is accounted for by the profession of the respondent.

Risk factor 30 -Change of Government resulting in major shifting of Infrastructure development priorities), $p = 0.044$. Effect size estimate = $ChSq/(n-1)$. Effect size = $7.569/(26-1) = 7.560/25 = 0.3024$.

This means that 30.2% of the variability in rank scores is accounted for by the profession of the respondent.

Risk factor 31 (Funding Risk such as: inadequate or no local financial markets with capacity to fund large infrastructure projects), $p = 0.039$. Effect size estimate = $ChSq/(n-1)$. Effect size = $7.778/(26-1) = 7.778/25 = 0.3112$.

This means that 31.1% of the variability in rank scores is accounted for by the profession of the respondent.

Overall, what can be deduced from this test is that views among various professions on all risk factors for PPPs in Zambia were found to be statistically insignificant at 5% significant level, except for the following risk factors: contractor insolvency, legal structures to enforce payment of liquidation damages by contractors for delays, change of government which may result in major shifting of infrastructure development priorities, and funding risk.

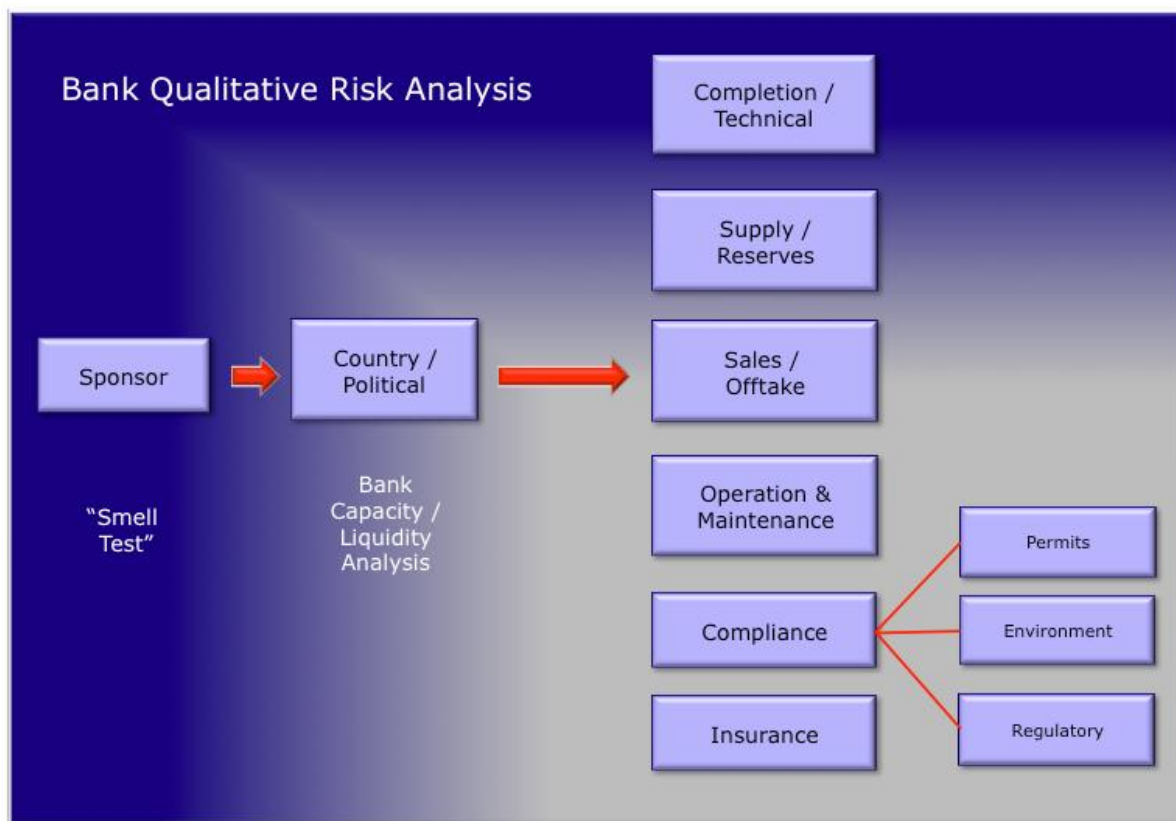
8.4 Research Question 3: Is there an ideal project finance risk management model which can be used as a reference by sponsors in Zambia as they design and structure infrastructure project finance deals?

The third research question sought to explore possibilities for an ideal project finance risk management model which sponsors could use as a reference point as they design and structure infrastructure deals.

The study of literature as documented in chapter 4 and 5 explored various views on what an ideal project finance risk management process ought to look like. Most of the risk frameworks which were analysed provide a practitioner with some very good roadmaps on how risks should be assessed and managed though some of them do not prescribe the order or sequence in which these risks must be assessed.

From the researcher's perspective, the risk assessment guide by the International Faculty of Finance (IFF) developed in partnership with Middlesex University proposes a unique risk management framework as profiled in Figure 8.7. The risk framework emphasises that the order in which the analysis of risk is undertaken is very important. The rationale is that one is bound to move into the numerical analysis of the potential debt amounts based on projected project cash flows forgetting that if the assumptions used to generate the projected cash flows are not well checked, then the projected cash flow figures may lack merit. In this realm, lenders are usually wary of relying on raw numbers provided by the would-be borrower. Hence, the risk framework as provided in Figure 8.7 encourages project sponsors and other key parties to first carry out a qualitative risk analysis in an orderly manner before any numbers are run.

Figure 8.7 International Faculty of Finance (IFF)-proposed risk management model



Source: Mills (2013,4)-Qualitative risk identification,analysis and mitigation-Core Module 2

The rationale behind this chronological framework is that lenders are usually first interested in knowing the identity, characteristics and credit worthiness of the sponsor(s) hence it may be a wise decision that an assessment of the sponsor be the starting point for the wider qualitative analysis of the risks of the financing. The framework indicates that if the sponsor risks appear unacceptable, it is unlikely that a project lender will be able to proceed much further-or at least not without some form of credit enhancement. The framework calls this as being the 'smell test' on the sponsor which can be an 'on/off' switch. Hence issues such as an established lender-borrower relationship, experience and track record of the prospective sponsor(s), mix of management and experience demonstrated by or available to the sponsor, access to financial understanding and expertise, capacity to inject equity are key attributes that a lender may be looking for in a prospective sponsor as they undertake a 'smell test' (Mills, 2013:5).

In the case of country and political risks, the framework also indicates that risks presented by the country of operation may be viewed as an 'on/off' switch in a project finance deal. The reasoning behind this analogy is that regardless of how good the sponsor may be, the project economic prospects or other characteristics of the project, lenders are bound to lose all or part of its loan capital if country or political risks are adverse. Unlike projects that are domiciled in the Organisation for Economic Cooperation and Development (OECD) region where political risk is generally perceived low, projects that are to be

undertaken in emerging markets are bound to be seen as being too risky hence lenders consider if the risks at hand are acceptable (Mills, 2013:5-6). This notion of emerging economies always being perceived as being too risky has been a topical issue in a number of forums where some African leaders and practitioners have argued that sometimes risk allocated to Africa is purely based on perceptions and not reality. On the basis of the general consensus in the project finance market, lenders appear to be much more willing to accept commercial risk than political risk given that the latter risk may have much more material damage to the loan capital injected sometimes without any possible mitigation or recourse measures (Mills, 2013:9).

The IFF risk assessment framework provides further guidance that once the project passes these two key risk areas, other qualitative risks such as completion, supply, and compliance risks may then be assessed followed by the quantitative risk assessment where key cash flow-based cover ratios such as the Annual Debt Service Cover Ratio (ADSCR), Loan Life Cover Ratio (LLCR) and in certain instances that Project Life Cover ratio (PLCR) are then calculated to ascertain the sustainability of the project besides the profitability measures such as NPV and IRR. These numbers are then stress tested through a sensitivity analysis process that aims at running a range of alternative cash flow projections, varying base case data inputs and parameters singly or in combination in order to identify the risk factors to which the project is particularly sensitive.

Given the rationale of the risk management model as outlined above, the researcher recommends this as an ideal risk management framework though to be used in conjunction with other risk management criteria as was discussed in this study.

8.5 Summary

The chapter did analyse the results of the questionnaire as well as interviews and other sources of evidence used in this study with the main aim being to respond to the research questions as outlined in chapter 1.

As outlined in the concluding chapter, the 40 specific risks under investigation were found to be generally moderate though a few are evidently severe. The researcher is of the view that the government embarked on the PPP process without fully comprehending the issues that need to be in place before PPPs can be successfully undertaken. The enactment of the PPP Act and the PPP policy was a step in the right direction to respond to some of the observed anomalies as outlined in chapter 8 but very little political will and support has been accorded to the PPP Unit and ZDA in order to realistically drive the PPP agenda forward. In the World Bank project preparation guide titled 'Attracting Investors to African Public Private

Partnerships', it is stated that for project finance and PPPs to thrive, governments need to think and behave in new ways that require new skills.

In response to research question 3, the IFF framework was provided as an ideal qualitative risk model given the rationale and chronology of assessing the various risks. The model indicates that sponsor risks are a major form of risk followed by country risk given that a project can fail to achieve financing if it is located in a country whose risk is too high for lenders to accept 'commercially', (such as: without external risk protection, or where risk protection from political risk insurers, export credit agencies or multilateral is not available (Mills, 2013:4).)

Chapter 9 provides concluding remarks as well as some recommendations aimed at ensuring that Zambian PPPs are packaged in a bankable manner.

CHAPTER 9 CONCLUSION AND RECOMMENDATIONS

9.1 Introduction

This chapter seeks to address the assertions made in the problem statement that risks associated with infrastructure project finance are endemic in Zambia. Further, the chapter also seeks to ascertain how the research questions and objectives were met. The chapter concludes with recommendations related to the PPP environment, capacity building, project development and project financing.

9.2 Research Problem Statement

As stated in chapter 1, the overall research problem statement which guided the study read as follows;

“Risks that are associated with infrastructure project finance are endemic in Zambia thereby impeding on the country’s ability to design, structure, and finance public infrastructure projects in a fiscally viable manner”

The interpretation of the word ‘endemic’ may be subjective, but synonyms to the word ‘endemic’ may include rife, prevalent or widespread. On a scale of 1-5, as guided by the overall risk score outlined in the methodology chapter, the average mean score ranking for all the 40 risks under investigation was found to be 3.25 (see Annexure 2) which indicates that the average sentiments among respondents is that risks are fairly average in Zambia and not endemic as was asserted in the problem statement. Despite this rather ‘comforting’ result indicating that risks associated with infrastructure finance are average and not high, there is very little movement in terms of earmarked deals and the deal cancellations that were outlined in the study are of concern. There is urgent need for all stakeholders to begin paying attention to some of the risks discussed in this study especially those with a mean score ranking in excess of 3.50. These risks are outlined in Annexure 2.

As noted by the South African Institute of International Affairs (2005:33), the introduction of the private provision of infrastructure is clearly politically challenging given the ills that characterised the privatisation process. Issues such as the price increases when the services are offered by the private sector, ‘overstaffed’ public entities suddenly experiencing substantial job losses, and the reality that some of the companies may be taken over by foreign multinationals is never a welcome idea. In addition to these concerns, the potential profits lead to suspicions of corruption. Hence if PPPs are to survive in the country, government must manage the politics of reforms by ‘building consensus for reforms through public education and consultative mechanisms’ and by ensuring transparency in the awards of tenders and the

oversight of private infrastructure schemes which also extends to the public having the right of access to procurement documentation.

9.3 Research Objectives

The objectives of the study were threefold as outlined below:

Research Objective 1:

The first objective was to assess Zambia's general infrastructure project finance and PPP framework. This was done by comparing Zambia's existing PPP policy, the PPP Act as well as the operational issues in comparison to some theoretical normative criteria against other developing countries' policy frameworks in practice. The literature on the normative criteria and the existing policy frameworks was outlined in chapter 3.

Research Objective 2:

The second objective of the study was to identify and rate risks that impede on the effective delivery of infrastructure project finance in Zambia. This objective was achieved by developing a questionnaire as per Annexure 1 which required respondents to rate the 40 risks according to how they perceive them in terms of severity based on their experience. The literature that informed the design of the questionnaire is detailed in chapter 4 (risk identification and assessment) and chapter 5 (risk mitigation and allocation). The analysis for this objective was done in chapter 8.

Research Objective 3:

The third research objective was to propose an ideal project finance risk management model which can be used as a reference by sponsors in Zambia as they design and structure infrastructure project finance deals. A proposed risk project finance risk management model is presented in chapter 8, section 8.4 with justification of why the researcher felt this could be an ideal risk management model for project sponsors in Zambia.

9.4 Recommendations to Stakeholders

Given the findings of the research, below are some recommendations that may possibly revitalise the interest in project finance and PPPs by all stakeholders as an alternative financing modality for Zambia's infrastructure plans. Four key recommendations are provided in line with ADB's PPP operational plan for 2012-2020 as depicted in Figure 9.1.

Figure 9.1 Strategic PPP action points



Source: Adapted from Asian Development Bank (2012)

9.4.1 Recommendation #1: Enabling Environment

The Asian Development Bank's operational plan (2012) puts it blatantly that to immediately progress to PPP implementation without an overarching enabling environment improvements may be a risky move which has proved to be so for Zambia. Much as the 'learning by doing' approach which Zambia adopted is acceptable, certain pre-conditions are required to assure the success of PPP transactions. The following issues aimed at improving the environment for PPP development are worthy of taking note:

Issue #1: With the PPP policy and Act in place, the regulations and guidelines must be developed as a matter of priority in order to provide in-depth guidance to both public and private sector parties involved in the PPP process. This will harmonise and communicate the key decision points, timelines, criteria for project selection and eligibility, templates to be used in the bidding process, and value for money assessment. This includes how to come up with the public sector comparator to avoid using submitted bids to compare against each other without government being aware of what would be the ideal project cost structure.

Issue #2: The government must create mechanisms to support sustainable PPP revenue models. PPPs are expected to be self-sustaining hence 'white elephants' must be avoided as this becomes a cost to the tax payers to keep them operational. Though it may not have been procured as a PPP, the Levy Mwanawasa stadium in Ndola should have been modelled to be self-sustaining but the asset has no capacity to generate adequate funds to maintain its operations hence its reliance on monthly government

grants to augment its internally generated resources. One would hope that the Heroes National Stadium which was just completed in Lusaka as well as the planned Mongu and Livingstone Stadiums will be viable assets otherwise they will be queued up for grants from Government further straining tax payers even more so now that Zambia has just lost the bid to host the 2019 Soccer Africa Cup of Nations to Cameroon.

Issue #3: The government must develop a robust fiscal risk management mechanism to ensure that PPPs are fiscally affordable and economically sustainable. This also extends to other infrastructure such as roads. Apparently, RDA equally does not have a documented risk management strategy which outlines how risks are identified, assessed, mitigated and allocated to parties that may have the best capacity to manage them. The government must also establish appropriate monitoring, measurement, and assessment mechanisms for PPPs (such as: affordability from a budgetary point of view, and value for money). Though political risks are perceived as being among the least severe risks going by the results as depicted in chapter 7, it is worth cautioning that politicians need look beyond their political tenure and not invest in quick fix infrastructure projects. Such projects, if fast-tracked so that they are ready for commissioning within the 5-year political tenure, may provide a 'fertile' ground for improprieties in the whole chain of project development from project identification, feasibility studies, procurement and project execution.

Issue #4: The government must establish transparent, predictable, flexible, responsive, and equitable procurement systems for PPPs, including arrangements to handle unsolicited bids. This will possibly cure the issues of incomplete or poor workmanship, overpayment to contractors and major re-works that are documented in the auditor general's annual reports.

9.4.2 Recommendation #2: Capacity Building

Once the environment is right for PPP development, there is need for capacity development and training for public sector officials beyond the core team at the PPP Unit and ZDA who, in the researcher's view, have the requisite training but the training must also be extended to other government agencies. Decision makers equally need to be trained in the nuances of project finance and PPPs so that they appreciate some of the reforms that stakeholders ask for, including reforms suggested by the PPP Unit itself which have not been adopted to date. One key issue for policy makers is to clearly understand and appreciate the intricacies of PPP development and how it differs from traditional public procured assets. The following are key questions that could guide the kind of capacity building needed:

Question #1: Does the government have sufficient capacity to undertake the detailed analysis for ear-marked PPP projects listed on the ZDA website such as farm blocks and toll roads? If the answer is no, then there is need for capacity building.

Question #2: Can the public sector clearly articulate the strategic justification for the PPP projects listed on the ZDA website; whether the projects are affordable (irrespective of how they are procured), whether the projects are commercially viable or bankable? It must be pointed out that this does not amount to carrying out a mere qualitative analysis but requires undertaking robust stress tested financial models which the government have no capacity to do at the moment. Financial modelling of a PPP deal requires huge information including: information on revenue sources, and nature of the revenue (sales, fees, tariffs, volumes, volume growth rates, prices, price escalation).

Question #3: Does the public sector have the right resources, skills, and organisation to manage the procurement process? As noted by the PPIAF (2009:63), the procurement phase has much detailed technical information that is shared with potential bidders including the negotiations. To have balanced negotiations, at a minimum, there should be a technical specialist in the asset being procured, a financial specialist well-versed in the nuances of project finance, a legal expert, to help with the deal documentation and security, and an environmental specialist. For seasoned private sector bidders, they always ensure that their team has all these skills when negotiating a bid but most often than not, government on the other hand does not have such skills. Hence, the private sector ends up appearing to have 'arm twisted' government later in the process yet it is the lack of capacity to negotiate a bankable deal by the government which is the real problem.

Information from key informants during this study indicated that the contracted amount for the Kasumbalesa Border Post BOT deal was \$25 million for a concession period of 25 years. Yet the audit of works which was done by the National Council for Construction (NCC) after the deal was cancelled indicated that the contract price should have only been slightly below \$4 million. This indicates that the private sector operator had in essence recouped their investment even in the three years of operation prior to the cancellation of the agreement. The matter for the cancellation may still be in court but the debt of \$25 million has already been taken over by government to be paid to the Development Bank of Southern Africa (DBSA) who had financed the project. This justifies the need to have staff involved in the procurement stage who have the right technical skills and are not just using seniority or years of service as a yardstick for the selection of the procurement committees.

Government must appreciate that the private sector operates on capitalist principles with profit being their number one aim. Hence, they would naturally want to take advantage of any lapse in government capacity to broker a win-win deal for the public and the private sector. This calls for urgent need to have requisite

skills to broker fiscally viable projects given that private sector is usually very 'sharp' and well prepared for such deals. In the case of developing countries where the government has pressure to provide quality and adequate infrastructure to the public, there is always a risk for government to give in to the private sector without a thorough technical analysis.

9.4.3 Recommendation #3: Project Development

The emphasis for project development is on turning the earmarked PPP projects as listed on the Zambia Development Agency website from being a mere 'long wish list' of PPP projects to being implementable project designs. Below are a few issues to take note of if this is to be a reality:

Issue #1: Projects earmarked for development must be commercially viable if they are to be developed through the PPP route. This entails that adequate revenues must be derived from the project to cover project capital costs, operations and maintenance, be socially inclusive and environmentally sustainable, and the regulatory environment must be in place to enforce for quality of service, preservation of public interest, and economically sustainable (Government of India, Ministry of Finance, 2014:156)

Issue #2: If projects continue to be identified solely based on their capacity to generate a positive 'political return on investment', as opposed to using conventional measures such as the financial internal rate of return (FIRR) and the economic rate of return (ERR), then the country could literally be developing 'white elephants' which could be perpetual 'parasites' to public resources. It must be clear that the project in question has a clear government priority as mentioned in the national strategic plan.

Issue #3: The government must provide a quick assessment of the potential for the 16 planned PPPs as listed on the ZDA website to see if they truly have the potential to be structured as PPPs. This though may require a customised Zambian PPP screening criteria and may also require a deliberate policy by Ministry of Finance to put up a project development fund as this may be the only gateway for private sector to find that 'wish list' meaningful if further information is provided to them such as number of cars in Zambia (for a toll road), spending capacity and willingness by commuters etc. These become inputs into a project evaluation such as a toll road or a commuter train.

9.4.4 Recommendation 4: Project Financing

As was noted in the findings, The Ministry of Finance appear to be more amenable for PPPs to be contracted as BOTs where the private sector is expected to do their own project studies, finance the entire project and recoup their investments through user fees without commitment by government to offer any guarantees or equity injection. In a similar fashion that the government has done for joint venture projects such as the Itezhi Tezhi Hydro power project, similar modalities should perhaps be extended to

PPPs if they are to be bankable. The government must look into possibilities of co-financing with the private sector through equity stake into the projects and offer other credit enhancement products including guarantees though given that this is a contingent liability, there is need for very strict monitoring of the deals to avoid these projects going bad as that would crystallise the contingent liabilities. However, to expect the private sector to find 'appetite' in financing poorly structured projects without any incentives from government is tantamount to being a dream.

9.5 Summary

Zambia's PPP vision as outlined on page 7, section 3.1 of the PPP policy reads as follows;

"A well developed and maintained quality social-economic infrastructure and related services that enhances the Zambian people's livelihoods and effectively contributes to National Development through PPP frameworks and initiatives"

However, for this vision to be a reality, recommendations made in chapter 9 may need to be attended to in a prioritised manner. Chapter 9 addressed the main research problem, as well the three objectives that guided the research. Further, recommendations to stakeholders were made hoping these can be implemented as outlined in paragraph 9.4.

From the widest of the literature search done by the researcher on this subject matter, indications are that few studies of this nature have been undertaken in Zambia. A similar study by Chimuka (2012) from University of Bath looked at critical success factors for PPPs in Zambia. His research findings showed that among the seven CSFs examined, favourable legal framework was ranked as the most important CSF and stable macro-economic condition as the least important. Favourable legal framework was ranked as the CSF for which the most favourable conditions for its achievement were provided and well-organised and committed public agency was ranked least in this respect.

The paucity of research outputs in this field, especially in the Zambia context, provides a platform for future researchers to explore this subject matter more especially as the number and size of deals grow perhaps focussing more attention at deal level.

BIBLIOGRAPHY

- Africa Development Bank, 2013. *The Africa Infrastructure Development Index (AIDI)*, Tunis: AFDB.
- African Development Bank group, 2000. *Guideliness for Financial Management and Financial Analysis of Projects*, Tunis: AFDB.
- African Development Bank, 2010. *Africa Infrastructure Development Index*, Tunis: AFDB.
- African Development Bank, 2014. *Africa50 Infrastructure Fund-Concept Note*, Tunis: AFDB.
- Akintoye, A., Beck, M. & Hardcastle, C., 2003. Introduction: Public-Private Partnership in Infrastructure development. In: 1st, ed. *Public-Private Partnerships-Managing Risks and Opoortunities*. Oxford: Blackwell, pp. xix-xxiv.
- Asenova, D. & Beck, M., 2003. A financial perspective on risk management in Public-Private Partnership. In: A. Akintola, M. Beck & C. Hardcastle, eds. *Public Private Partnerships-Managing Risk and Opportunities*. Glasgow: Blackwel, pp. 127-151.
- Asian Development Bank, 2002. *Handbook for Integrating Risk Analysis in the Economic Analysis of Projects*, Manila: ADB.
- Asian Development Bank, 2012. *Public-Private Partnership Operational Plan 2012-2020*, Manila: ADB.
- Bamberger, M., Rugh, J. & Mabry, L., 2012. *RealWorld Evaluation-Working under Budget, Time, Data and Political Constraints*. 2nd ed. Los Angels: SAGE.
- Bank for International Settlements, 2001. *Basel Committe on Bank Supervision-Working Paper on the Internal Ratings-Based Approach to Specialised Lending Exposures*, Basel: BIS.
- Bank for International Settlements, 2005. *Basel Committee on Bank Supervision-International Convergence of Capital Measurement and Capital Standards*, Basel: BIS.
- Bank for International Settlements, 2011. *Basel III: A global regulatory framework for more resilient banks and banking systems*, Basel: BIS.
- Bing, L., Akintoye , A., Edwards, P. & Hardcastle, C., 2005. The allocation of risk in PPP/PFI construction projects in the UK. *International Journal of Project Management*, Issue 23, pp. 25-35.
- Brealey, R. A., 1996. Using Project Finance to fund Infrustructure Investments. *Applied Corporate Finance*, ix(3), pp. 25-39.
- Business Dictionary, 2011. *Business Dictionary.com*. [Online].Available at: <http://www.businessdictionary.com/definition/risk-assessment.html> [Accessed 5 December 2014].
- Castalia Consortium, 2007. *Key Challenges to Public Private Partnerships in South Africa: Summary of Interview Findings*, Paris: Support Programme for Accelerated Infrastructure Development (SPAID).
- Chandra, D. P., 2009. *Projects: Planning,Analysis,Selection, Financing, Implementation and Review*. 7th ed. New Delhi: Tata McGraw-Hill.
- Chimuka, B., 2012. *An evaluation of the performance of Public Private Partnership projects in Zambia in respect of Critical Success Factors*, Bath: University of Bath.

- Chinyio, E. & Fergusson, A., 2003. A construction perspective on risk management in public-private partnership. In: A. Akintola, M. Beck & C. Hardcastle, eds. *Public Private Partnerships-Managing Risks and opportunities*. Glasgow: Blackwell, pp. 95-126.
- Christopher, D. & Ilse, P., 2001. Brazilian Power Project Finance. *The Journal of Structured Finance*, 7(1), pp. 29-34.
- Commonwealth Business Council, 2013. *Africa Infrastructure Investment Report-2013*, London: Buxton Press Ltd.
- Cruz, O. C. & Marques, R. C., 2013. *Infrastructure Public Private Partnerships-Decision, Management and Development*. 1st ed. New York: Springer.
- Darke, P., Shanks, G. & Broadbent, M., 1998. Successfully completing case study research: Combining rigour, relevance and pragmatism. *Info Systems Journal*, Volume 8, pp. 273-289.
- Davis, H. A., 2003. *Project Finance: Practical Case Studies Volume 1*. 2nd ed. London: Euromoney.
- Delmon, J., 2011. *Public Private Partnership Projects in Infrastructure-An Essential Guide for Policy Makers*. 1st ed. Cambridge: Cambridge University Press.
- EAPN Project, 2009. *Public Private Partnerships in Infrastructure Development: Case Studies from Asia and Europe*, Weimer: Bauhaus Universitat Weimar.
- Economics Association of Zambia, 2014. *Public Infrastructure, Domestic Taxation and Debt*, Lusaka: EAZ.
- Eisenhardt, K., 1989. Building Theories from Case Study Research. *The Academy of Management Review*, 14(4), pp. 532-550.
- EIZ, 2012. *Infrastructure Report Card (IRC(Framework))*. Lusaka: EIZ.
- EPEC, 2014. *European PPP Expertise Centre (EPEC)*. [Online] Available at: <http://www.eib.org/epec/g2g/intro1-guide.htm> [Accessed 5 May 2014].
- Esty, B. C., 2001. *An overview of project finance-2001 Update*, Massachusetts: Harvard Business School.
- Esty, P. B., 2004. *Morden Project Finance*. 1st ed. Boston: John Wiley & Sons.
- Fabozzi, F., Henry, D. & Nahlik, C., 2012. *Project Financing*. 8th ed. s.l.:Euromoney.
- Finnerty, J. D., 2013. *Project Financing, Asset Based Financial Engineering*. 3rd ed. New Jersey: Wiley Finance Series.
- FitchRatings, 2012. *Rating criteria for Infrastructure and Project Finance*, NewYork: Fitch.
- Gatti, S., 2009. *Project Finance in Theory and Practice*. 1st ed. London: Elsevier.
- Gautrain Rapid Rail Link project, 2014. *Gautrain*. [Online] Available at: <http://www.gautrain.co.za/about/about-gautrain/studies-documents/> [Accessed 2 January 2014].
- Genesis Analytics (Pty) Ltd, 2012. *Genesis Analytics (Pty) Ltd*, Johannesburg, South Africa: Genesis Analytics (Pty) Ltd.

- Government of India, Ministry of Finance, 2014. *Public Private Partnerships in India*. [Online] Available at: <http://toolkit.pppinindia.com/index.php> [Accessed 21 May 2014].
- Government of the Republic of Zambia, 2009. *Public Private Partnership Act and Policy of 2009*, Lusaka: MOF.
- Grimsey, D. & Lewis, M., 2002. Evaluating the risks of public private partnerships for infrastructure projects. *International Journal of Project Management*, Volume 20, pp. 107-118.
- GRZ, 2013. *Road Development Agency*. [Online] Available at: <http://www.rda.org.zm/index.php/acts> [Accessed 6 December 2013].
- Harvey, C., 1983. *Analysis of Project Finance in Developing countries*. 1st ed. London: Heinemann.
- Hillson, D., 2004. *World Health Organisation*. [Online] Available at: <http://www.who.int/management/general/risk/WhenRiskNotRisk.pdf> [Accessed 26 June 2014].
- Hodkinson, P. & Hodkinson, H., 2001. *The Strengths and limitations of Case study Research*. Cambridge, University of Leeds.
- Hoffman, S. L., 2008. *The law and business of International Project Finance*. 3rd ed. Cambridge: Cambridge University Press.
- ICA & IFA, 2014. *Risk Analysis and Management for Projects*. 3rd ed. London: ICE.
- Index Mundi, 2010. *Index Mundi*. [Online] Available at: <http://www.indexmundi.com/facts/zambia/lending-interest-rate> [Accessed 5 December 2014].
- InfraPPP, 2014. *Infra PPP world*. [Online] Available at: <http://infrappworld.com/> [Accessed 19 March 2014].
- Infrastructure Journal, 2014. *Global Project Finance Infrastructure Review Full Year 2013*, London: Infrastructure Journal.
- Institute for Public Private Partnerships, 2013. *PPP Project Screening & Appraisal Techniques*, Florida: IP3.
- International Finance Corporation (IFC), 1999. *Project Finance in Developing countries*. 7th ed. Washington DC: IFC.
- Investopedia, 1999. *Investopedia ULC*. [Online] Available at: <http://www.investopedia.com/corp/about.aspx> [Accessed 12 August 2014].
- Irimia-Diéguez, I.-D., Irimia-Diéguez, A. & Alfalla-Luque, R., 2014. Risk Management in Megaprojects. *ScienceDirect*, Volume 119, pp. 407-416.
- Islamic Development Bank, 2010. *Risk Management Guidelines or Project Finance*, Jeddah: IDB.
- Jamali, D., 2004. Success and failure Mechanisms of Public Private Partnerships (PPPs) in Developing Countries. *International Journal of Public Sector Management*, 17(5), pp. 414-430.
- Ke, Y., Wang, S. & Chan, A., 2011. Equitable risks allocation of projects inside China: analyses from Delphi survey studies. *Chinese Management Studies*, 5(3), pp. 298-310.
- Kleimeier, S. & Versteeg, R., 2008. *Project Finance as a Driver of Economic growth*, Maastricht: Limburg Institute of Financial Economics.

- London School of Economics and Political Science, 2013. *Financing Infrastructure Investment in Africa*. [Online] Available at: <http://www.youtube.com/watch?v=XmOPNYJ6pS4> [Accessed 20 March 2014].
- Lusaka Times , 2011. *LusakaTimes*. [Online] Available at: <http://www.lusakatimes.com/2011/07/02/government-upgrade-lusaka-international-airport/> [Accessed 2 December 2014].
- Matsukawa, T. & Habeck, O., 2007. *Review of Risk Mitigation Instruments for Infrastructure, Financing and Recent Trends and developments*, Washington: World Bank.
- Michael, T., Todaro, M. & Smith, S., 2006. *Economic Development*. 9th ed. Washington: Pearson.
- Mills, S., 2013. *Mechanics of Project Finance*, London: International Faculty of Finance.
- Ministry of Urban Development in India, 2011. *Urban Infrastructure in India*. [Online] Available at: http://www.urbaninfrastructureindia.org/pdf/5-ProjDev_web.pdf [Accessed 27 June 2014].
- Mkansi, M. & Acheampong, A., 2012. Research Philosophy Debates and Classifications : Students' Dilemma. *Journal of Business Research Methods*, 10(2), pp. 132-140.
- Monocolumn, 2010. *Monocle*. [Online] Available at: <http://monocle.com/monocolumn/2010/the-empty-stadiums-south-africa-s-white-elephants/> [Accessed 5 December 2014].
- Moody's , 1998. *Key Credit Risks of Project Finance*, NewYork: Moody's Investors Services.
- Moody's, 2011. *Moody's Research Ratings*. [Online] Available at: <https://www.moodys.com/researchandratings> [Accessed 4 August 2014].
- Mukanga, C., 2014. *Zambian Economist*. [Online] Available at: <http://www.zambian-economist.com/2014/04/zambias-new-eurobond.html> [Accessed 19 October 2014].
- NEPAD, 2005. *Assessing Public–Private Partnerships in Africa*, Pretoria: NEPAD.
- OUTA, 2013. *Opposition to Urban Tolling Alliance*. [Online] Available at: <http://www.outa.co.za/site/about-outa/why-we-oppose-e-tolling/> [Accessed 29 12 2013].
- Paul Davis, 2005. *Delivering the PPP Promise*, A Review of PPP Issues and Activity*, London: PWC.
- PIDA, 2014. *Programme for Infrastructure Development in Africa*. [Online] Available at: <http://www.aupida.org/about-pida> [Accessed 1 May 2014].
- PPIAF, 2009. *Attracting investors to African Public Private Partnerships-A project Preparation Guide*. 1st ed. Washington: World Bank.
- PPIAF, 2011. *Identifying main sources of funding for infrastructure Projects with private participation in Developing Countries : A Pilot Study*, Washington DC: World Bank & PPIAF.
- PPIAF, 2012. *Public Private Partnerships-Reference Guide*, Washington: World Bank.
- PPIAF, 2013. *2012 Africa PPI Data Update*, Washington: World Bank.

- PPIAF, 2014. *Public Private Partnerships Infrastructure Advisory Facility*. [Online] Available at: <https://www.ppiaf.org/sites/ppiaf.org/files/documents/toolkits/highwaystoolkit/6/pdf-version/safricamazambique.pdf> [Accessed 2 January 2014].
- Project Finance International, 2013. *Project Finance League 2013*, s.l.: PFI.
- PWC-Zambia, 2012. *PriceWaterhouse*. [Online] Available at: <http://www.pwc.com/zm/en/pdf/zambia-budget-2013-the-next-steps.pdf> [Accessed 10 August 2013].
- Queensland Government-Australia, 2008. *PPP Guidance Material and supporting documents on Risk Management*, Queensland: Government of Australia.
- Rabinowitz, D., 2008. *Towards a theoretical foundation of project finance and its practice in South Africa*, Pretoria: University of Pretoria.
- Republic of South Africa, 1997. *Public Private Partnerships in SA*. [Online] Available at: <http://www.ppp.gov.za/Pages/default.aspx> [Accessed 07 July 2014].
- Saunders, M., Lewis, P. & Thornhill, A., 2009. *Research Methods for Business Students*. 5th ed. Edinburgh: Pearson Education Limited.
- Scientific series of Chair Construction Economics, 2009. *PPP in Infrastructure Development-Case Studies from Asia and Europe*. 1st ed. Weimar: Bauhaus-Universität Weimar.
- Sheppard, R., Klaudy, S. & Kumar, G., 2006. *Financing infrastructure in Africa-How the region can attract more project Finance.*, Washington DC: PPIAF.
- Smith, R. & Walter, I., 2001. *Rating Agencies: Is there an agency issue?*, New York: INSEAD.
- SNDP, Z., 2013. *Sixth National Development Plan Revised (SNDP)*, Lusaka: Government Printers.
- Sprat, S., 2009. *Development Finance-Debates, Dogmas, and new directions*. 1st ed. New York: Routledge.
- Spratt, S., 2009. *Development Finance debates, dogmas and new directions*. 1st ed. New York: Routledge.
- Standard & Poor's, 2001. *Standard & Poor's Project & Infrastructure Finance*, New York: S&P.
- Struwig, F. & Stead, G., 2001. *Planning, Designing and Reporting Research*. 1st ed. Cape Town: Pearson.
- SuperSport, 2010. *SuperSport*. [Online] Available at: http://www.supersport.com/football/blogs/michel-du-preez/Demolish_or_not_to_demolish_that_is_the_question [Accessed 5 December 2014].
- Sy, A., 2013. *Financing Africa's Infrastructure Gap-Brookings Institute*. [Online] Available at: <http://www.brookings.edu/blogs/up-front/posts/2013/10/09-financing-africa-infrastructure-gap-sy> [Accessed 11 August 2014].
- The Infrastructure Consortium for Africa, 2011. *Handbook on Infrastructure Statistics*, Tunis: AFDB & WB.
- The PRS Group, 2012. *International Country Risk Guide Methodology*, New York: PRS Group.

- The South African Institute of International Affairs , 2005. *Assessing Public–Private Partnerships in Africa*, Pretoria: SAIIA.
- The Telegraph, 2012. *The Telegraph*. [Online] Available at: <http://www.telegraph.co.uk/news/worldnews/africaandindianocean/southafrica/9373324/South-Africas-white-elephant-stadium-should-be-converted-into-housing.html> [Accessed 3 November 2014].
- The University of Pennsylvania Wharton School, 1996. *Project Finance Teaching Note*, Pennsylvania: The Wharton School.
- Thompson, S., 2012. *Credit rating and project finance default: An important risk management instrument*, s.l.: E-Publication@bond.
- Times of Zambia, 2014. *Times of Zambia*. [Online] Available at: <http://www.times.co.zm/?p=26263> [Accessed 19 October 2014].
- Tinsley, R., 2000. *Advanced Project Financing*. 1st ed. London: Euromoney.
- UNDP, 2013. *Millenium Development Goals-Progress Report*, Lusaka: UNDP.
- United Kingdom-HM TReasury, 2011. *The Green Book-Appraisal and Evaluation in Central Government*, London: HM Treasury.
- Vilanova, L., 2005. *Financial distress, lender passivity and project finance : the case of EuroTunnel*. [Online] Available at: http://www.affi.asso.fr/uploads/Externe/f0/CTR_FICHIER_170_1226320555.pdf [Accessed 2 January 2014].
- Vinter, G. D., 1997. *Project Finance-A legal Perspective*. 1ST ed. s.l.:s.n.
- Wang, S. Q., Dulaimi, M. F. & Aguria, M. Y., 2004. Risk Management Framework for Construction Projects in Developing countries. *Construction Management and Economics*, 22(2), pp. 237-252.
- World Bank & PPIAF, 2011. *How to Engage with the Private Sector in Public-Private Partnerships in Emerging Markets*, Washington: The International Bank for Reconstruction and Development.
- World Bank Institute, 2001. *Economic Analysis of Investment Operations, Analytical Tools and Practical Applications*, Washington: IBRD.
- World Bank, 2010. *Africa Infrastructure Country Diagnostic Report, Zambia's Infrastructure: A continental Perspective*, Washington DC: World Bank.
- World Economic Forum, 2010. *The Global Competitiveness Report 2010-2011*, Geneva: World Economic Forum.
- Yescombe, E., 2011. *Public Private Partnerships: Priciples of Policy and Finance*. 1st ed. Oxford: Elsevier.
- Yescombe, R., 2014. *Principles of Project Finance*. 2nd ed. Oxford: Academic Press.
- Yin, R., 2014. *Case Study Research-Design and Methods*. 5th ed. Los Angels: SAGE Publishers Inc.
- Zambia Development Agency, 2013. *Infrastructure Sector Profile*, Lusaka: ZDA.
- Zambia Development Agency, 2014. *Public - Private - Partnerships in Infrastructure Development in Zambia*, Lusaka: ZDA.

ANNEXURES

Annexure 1: Survey Questionnaire

* Required Information

PART 1: PERSONAL EXPERIENCE INFORMATION

* 1. 1.1 What is your designation where you currently work?
(Select one option)

- Director
- Deputy Director
- Specialist
- Consultant
- Fund Manager
- Lawyer
- Infrastructure Operator
- Other (please specify) _____

* 2. 1.2 Which of the following best describes the sector in which your Organization falls under?
(Select one option)

- Public Sector
- Private sector

* 3. 1.3 If you have participated in an infrastructure project finance or PPP, which sector have you been involved in?

- Transport i.e. Roads, Railways

- Energy
- IT and Telecommunications
- Housing and Estates
- Mining
- Oil and Gas

PART 2: QUESTION 1-PROJECT IDENTIFICATION, SELECTION AND PLANNING RISKS

2.1 Kindly rate each of the following Infrastructure project selection and planning risks according to how severe they are in Zambia.

Guide: Project selection and planning risks are those risks that arise in the project execution process due to poor project selection as well as non-transparent procurement process.

4. Kindly ensure that there is only one rating against each risk factor.

	Least Severe Risk 1	2	3	4	Most Severe Risk 5
*(a) Unclear project identification and evaluation criteria (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(b) Insufficient coordination between various Government agencies (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(c) Procurement process not transparent (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(d) Poor public decision-making process (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(e) Lack of requisite skills in the Public sector to structure, design and manage PPP Projects (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 2: QUESTION 2-SPONSOR RISKS

2.2 Kindly rate each of the following Infrastructure Project Sponsor risks according to how severe they are in Zambia.

Guide: Project Sponsor Risks are negative attributes of a project sponsor/Investor which may impede on the access to debt funding from lenders

5. Kindly ensure that there is only one rating against each risk factor.

	Least Severe				Most Severe
	Risk 1	2	3	4	Risk 5
*(a) Lack of experience and track record of prospective local sponsors (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(b) Equity Injection risk i.e. local sponsors failing to inject adequate and timely equity into the project (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(c) Lack of a mix of management skills and experience demonstrated by or available to the sponsor(s). (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(d) Sponsors fail to provide credit enhancement measures as comfort to senior lenders i.e. guarantees, insurance and temporal liquidity (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(e) No established lender-borrower relationship between the sponsor(s) and the potential lenders (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 2: QUESTION 3-POLITICAL/COUNTRY RISKS

2.3 Kindly rate each of the following Political risks according to how severe they are in Zambia's Infrastructure development delivery.

Guide: Political risks are risks that an investment's returns could suffer as a result of political changes or instability in a country. Instability affecting investment returns could stem from a change in Government, legislative bodies, other foreign policy makers, or military control. They are sometimes referred to as Sovereign, geopolitical or Host Country risks.

6. Kindly ensure that there is only one rating against each risk factor.

	Least Severe				Most Severe
	Risk 1	2	3	4	Risk 5
*(a) Expropriation, confiscation and Nationalisation i.e. Government stepping in to take control of the project as was the case with Railway Systems of Zambia (RCZ) (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(b) Political Violence (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(c) Government's ability to maintain law and order (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(d) Lack of stability of tenure for key staff in project implementing units i.e. Road Development Agency, Zesco etc. (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(e) Change of Government resulting in major shifting of Infrastructure development priorities i.e. transition from the MMD to PF Government (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 2: QUESTION 4-REGULATORY RISKS

2.4 Kindly rate each of the following Regulatory risks according to how severe they are in Zambia's Infrastructure development delivery.

Guide: Regulatory risks are risks that a change in laws and regulations will materially impact a security, business, sector or market. A change in laws or regulations made by the Government or a regulatory body can increase the costs of operating a business, reduce the attractiveness of investment and/or change the competitive landscape.

7. Kindly ensure that there is only one rating against each risk factor

	Least Severe				Most Severe
	Risk 1	2	3	4	Risk 5
*(a) Weak legal structures to enforce payment of liquidation damages by contractors for delay, performance and availability risks (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(b) Control of prices by host authorities i.e. tariffs for electricity, water and toll prices (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(c) Unanticipated changes in law i.e. changes in taxation and foreign Investment laws (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(d) Unexpected renegotiations of the basic concession contract (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(e) Approval risks i.e. delayed issuance of permits and land titles leading to cost overruns and deal cancellations (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 2: QUESTION 5- CONSTRUCTION AND COMPLETION RISKS

2.5 Kindly rate each of the following Construction and Completion risks according to how severe they are in Zambia's Infrastructure development delivery.

Guide: Construction and completion risks are risks that would affect the successful completion of the construction of a project on time, on budget and as per specifications envisaged at planning stage.

8. Kindly ensure that there is only one rating against each risk factor

	Least Severe				Most Severe
	Risk 1	2	3	4	Risk 5
*(a) Lack of experienced local contractors with a good track record for quality (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(b) Risks of contractors insolvency (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(c) Site Risks i.e. factors having to do with project location such as the availability of project land, weather ,soil type etc. (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(d) Delayed Project completion with leading to time cost overruns (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(e) Project failure to meet performance criteria (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 2: QUESTION 8- GENERAL/OTHER RISKS

2.8 Kindly rate each of the following General/Other risks according to how severe they are in Zambia.

Guide: These are risks that could not directly be classified under each of the other risk categories identified above

11. Kindly ensure that there is only one rating against each risk factor

	Least Severe Risk 1	2	3	4	Most Severe Risk 5
*(a) Force Majeure i.e. Effects of force majeure (natural disaster, war, etc.) damage or destroy the project (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(b) Technology Risks i.e. use of outdated or untried technology (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(c) Thirdly Party Risks i.e. delayed water or electricity connections to the project site (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(d) Lack of tradition of private provision of public services i.e. Electricity (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
*(e) Corruption i.e. Corrupt Government officials, demanding bribes or unjust rewards (Select one option)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

PART 3: GENERAL THOUGHTS ON RISK PROFILE OF ZAMBIA'S PROJECT FINANCE MARKET

*** 12. 3.1 From your experience, what are your general thoughts on the risk profile of Zambia's Infrastructure project finance market? Kindly indicate if there are other risks that may not have been identified in the questionnaire**

PART 4: RECOMMENDATIONS

*** 13. 3.1 Having rated the various risks that affect Zambia's Infrastructure project finance agenda, what are your recommendations in seeking to de-risk the market and improve the deal count, project size and quality of implementation? (Bullet points would be preferred)**

Annexure 2: Overall Risk Rankings/Ratings

S/L	Risk Factor	Average Ranking	Risk Rating
1	Funding Risk	4.19	High Risk
2	Delayed Project completion leading to time and cost overruns	4.00	High Risk
3	Failure to inject adequate equity into the project by local sponsors.	3.92	High Risk
4	Maintenance risk	3.92	High Risk
5	Lack of experienced local contractors with a good track record for quality project delivery	3.88	High Risk
6	Failure by Sponsors to provide credit enhancement measures as comfort to senior lenders i.e. guarantees insurance	3.77	High Risk
7	Risks of contractor insolvency	3.77	High Risk
8	Insufficient coordination between various Government agencies	3.69	High Risk
9	Input supply risks i.e. Increase in input prices	3.69	High Risk
10	Lack of experience and track record of prospective local sponsors	3.65	High Risk
11	Vandalism Risk i.e. Non-operational, deliberately caused damages	3.62	High Risk
12	Lack of requisite skills in the Public sector to structure Project finance projects	3.58	High Risk
13	Approval risks	3.54	High Risk
14	Corruption i.e. Corrupt Government officials, demanding bribes or unjust rewards	3.54	High Risk
15	Procurement process not transparent	3.46	Average Risk
16	No established lender-borrower relationship between the sponsor(s) and the potential lenders	3.46	Average Risk
17	Shortfall in service quality	3.46	Average Risk
18	Weak legal structures to enforce payment of liquidation damages by contractors for delay, performance and availability risks	3.46	Average Risk
19	Foreign exchange risk	3.46	Average Risk
20	Interest Rate risk	3.46	Average Risk
21	Project failure to meet performance criteria	3.38	Average Risk
22	Projects are not packaged in a bankable manner (only lists without further information to potential investors)	3.27	Average Risk
23	Lack of a Project Management skills and experience among local sponsors.	3.27	Average Risk
24	Control of prices by Government	3.27	Average Risk
25	Demand Risk	3.23	Average Risk
26	Lack of support by Ministry of Finance	3.08	Average Risk
27	Inflation risk.	3.08	Average Risk

S/L	Risk Factor	Average Ranking	Risk Rating
28	Unanticipated changes in law	3.04	Average Risk
29	Residual value Risks	2.96	Average Risk
30	Utilities Risks	2.92	Average Risk
31	Unexpected renegotiations of the basic concession contract	2.85	Average Risk
32	Unclear market entry conditions	2.85	Average Risk
33	Lack of stability of tenure for key staff in project implementing units	2.81	Average Risk
34	Technology Risks i.e. use of outdated or untried technology	2.81	Average Risk
35	Change of Government resulting in major shifting of Infrastructure development priorities	2.69	Average Risk
36	Site Risks i.e. factors having to do with project location such as the availability of project land	2.65	Average Risk
37	Expropriation, confiscation and Nationalisation	2.54	Average Risk
38	Political Violence	2.04	Low Risk
39	Government's inability to maintain law and order	2.00	Low Risk
40	Force Majeure risks i.e. natural disaster	1.73	Low Risk
	Overall	3.25	Average Risk

Annexure 3-Overall Severity of Project Finance and PPP Risks in Zambia

Risk category & risk factor	Min	Max	Mean	Rank within category (Out of 5)	Overall rank (Out of 40)
Project Sponsor Risks			3.62		1
Failure to inject adequate equity into the project by local sponsors.	2	5	3.92	1	3
Failure by sponsors to provide credit enhancement measures as comfort to senior lenders	2	5	3.77	2	6
Lack of experience and track record of prospective local sponsors	1	5	3.65	3	10
No established lender-borrower relationship between the sponsor(s) and the potential lenders	1	5	3.46	4	16
Lack of a project management skills and experience among local sponsors.	2	5	3.27	5	23
Operational and Market Risks			3.58		2
Maintenance risk i.e. most projects do not undergo routine maintenance	2	5	3.92	1	4
Input supply risks i.e. Increase in input prices	2	5	3.69	2	9
Vandalism risk i.e. Non-operational, deliberately caused damages	2	5	3.62	3	11
Shortfall in service quality	2	5	3.46	4	17
Demand risk i.e. varying projected user demand in terms of quantity	2	5	3.23	5	25
Construction and completion Risks			3.54		3
Delayed project completion leading to time and cost overruns	2	5	4.00	1	2
Lack of experienced local contractors with a good track record for quality project delivery	1	5	3.88	2	5
Risks of contractor insolvency	2	5	3.77	3	7
Project failure to meet performance criteria	2	5	3.38	4	21
Site risks i.e. factors having to do with project location such as the availability of project land	1	5	2.65	5	36

Risk category & risk factor	Min	Max	Mean	Rank within category (Out of 5)	Overall rank (Out of 40)
Project development risks			3.42		4
Insufficient coordination between various government agencies	2	5	3.69	1	8
Lack of requisite skills in the Public sector to structure Project finance projects	1	5	3.58	2	12
Procurement process not transparent	2	5	3.46	3	15
Projects are not packaged in a bankable manner (only lists without further information to potential investors)	1	5	3.27	4	22
Lack of support by Ministry of Finance	1	5	3.08	5	26
Financial risks			3.41		5
Funding risk i.e. inadequate or no local financial markets with capacity to fund large infrastructure projects	2	5	4.19	1	1
Foreign exchange risk i.e. mismatch of the currency of the revenues, operating costs and debt	2	5	3.46	2	19
Interest rate risk i.e. the risk that an investment's value will change due to a change in the absolute level of interest rates	2	5	3.46	3	20
Inflation risk i.e. the uncertainty over the future real value (after inflation) of the investment	1	5	3.08	4	27
Unclear market entry conditions i.e. in the power or telecommunication sector	1	5	2.85	5	32
Regulatory Risks			3.23		6
Approval risks i.e. delayed issuance of permits and land titles leading to cost overruns /deal cancellations	1	5	3.54	1	13
Weak legal structures to enforce payment of liquidation damages by contractors for risks	2	5	3.46	2	18
Control of prices by Government i.e. a cap on tariffs for electricity & water	1	5	3.27	3	24
Unanticipated changes in law i.e. changes in taxation and foreign Investment laws	2	5	3.04	4	28
Unexpected renegotiations of the basic concession contract	1	5	2.85	5	31

Risk category & risk factor	Min	Max	Mean	Rank within category (Out of 5)	Overall rank (Out of 40)
General/Other Risks			2.79		7
Corruption	2	5	3.54	1	14
Residual value risks	1	5	2.96	2	29
Utilities risks	1	4	2.92	3	30
Technology risks i.e. use of outdated or untried technology	1	5	2.81	4	34
Force majeure risks i.e. natural disaster	1	3	1.73	5	40
Political risks			2.42		8
Lack of stability of tenure for key staff in project implementing units	1	5	2.81	1	33
Change of government resulting in major shifting of Infrastructure development priorities	1	5	2.69	2	35
Expropriation, confiscation and nationalisation i.e. government stepping in to take control of the project	1	5	2.54	3	37
Political violence	1	4	2.04	4	38
Government's inability to maintain law and order	1	4	2.00	5	39

Annexure 4: Results Of Risk Factors For Risk Ranking Of PPP Projects In Zambia Between Public And Private Sectors Using Mann-Whitney U Test

S/L	Risk Factors	Public Sector	Private Sector		Exact 2-tailed
		Mean Rank	Mean Rank	Z	p-value
1	Projects are not packaged in a bankable manner (only lists without further information to potential investors)	15.5	12.03	-1.177	0.248
2	Insufficient coordination between various Government agencies	12.68	14.1	-0.501	0.668
3	Procurement process not transparent	15.82	11.8	-1.367	0.225
4	Lack of support by Ministry of Finance	16.45	11.33	-1.762	0.078
5	Lack of requisite skills in the Public sector to structure Project finance projects	17.05	10.9	-2.125	0.036
6	Lack of experience and track record of prospective local sponsors	15.77	11.83	-1.429	0.161
7	Failure to inject adequate equity into the project by local sponsors.	14.82	12.53	-0.799	0.488
8	Lack of a Project Management skills and experience among local sponsors.	15.05	12.37	-0.936	0.379
9	Failure by Sponsors to provide credit enhancement measures as comfort to senior lenders i.e. guarantees insurance	13.23	13.7	-0.164	0.919
10	No established lender-borrower relationship between the sponsor(s) and the potential lenders	12.59	14.17	-0.543	0.630
11	Lack of experienced local contractors with a good track record for quality project delivery	15.73	11.87	-1.341	0.201
12	Risks of contractor insolvency	14.68	12.63	-0.735	0.490
13	Site Risks ie factors having to do with project location such as the availability of project land	11.59	14.9	-1.157	0.249
14	Delayed Project completion leading to time and cost overruns	14.73	12.6	-0.76	0.513
15	Project failure to meet performance criteria	14.86	12.5	-0.828	0.452
16	Shortfall in service quality	13.32	13.63	-0.11	0.929
17	Demand Risk ie varying projected user demand in terms of quantity	14.59	12.7	-0.665	0.541
18	Input supply risks ie Increase in input prices	14.55	12.73	-0.644	0.554
19	Maintenance risk ie most projects do not undergo routine maintenance	15.91	11.73	-1.441	0.160
20	Vandalism Risk ie Non-operational, deliberately caused damages	14.64	12.67	-0.688	0.542
21	Weak legal structures to enforce payment of liquidation damages by contractors for delay, performance and availability risks	15.41	12.1	-1.139	0.298

S/L	Risk Factors	Public Sector	Private Sector		Exact 2-tailed
22	Control of prices by Government i.e. a cap on tariffs for electricity and water	14.95	12.43	-0.863	0.413
23	Unanticipated changes in law i.e. changes in taxation and foreign Investment laws	14.18	13	-0.411	0.681
24	Unexpected renegotiations of the basic concession contract	15.64	11.93	-1.265	0.212
25	Approval risks i.e. delayed issuance of permits and land titles leading to cost overruns and deal cancellations	12.5	14.23	-0.597	0.584
26	Expropriation, confiscation and Nationalisation i.e. Government stepping in to take control of the project	13.95	13.17	-0.267	0.785
27	Political Violence	14.91	12.47	-0.845	0.423
28	Government's inability to maintain law and order	15.59	11.97	-1.27	0.244
29	Lack of stability of tenure for key staff in project implementing units	16.68	11.17	-1.892	0.067
30	Change of Government resulting in major shifting of Infrastructure development priorities	13.59	13.43	-0.055	0.976
31	Funding Risk i.e. inadequate or no local financial markets with capacity to fund large infrastructure projects	12.23	14.43	-0.79	0.468
32	Foreign exchange risk i.e. mismatch of the currency of the revenues, operating costs and debt	14.05	13.1	-0.339	0.775
33	Interest Rate risk i.e. the risk that an investment's value will change due to a change in the absolute level of interest rates	15	12.4	-0.938	0.414
34	Inflation risk i.e. the uncertainty over the future real value (after inflation) of the investment.	16.77	11.1	-1.966	0.055
35	Unclear market entry conditions i.e. in the power or telecommunication sector	12.91	13.93	-0.358	0.734
36	Force Majeure risks i.e. natural disaster	13.36	13.6	-0.085	1.000
37	Technology Risks i.e. use of outdated or untried technology	14.45	12.8	-0.668	0.529
38	Utilities Risks i.e. delayed water or electricity connections to the project site	16.59	11.23	-1.912	0.078
39	Residual value Risks i.e. project assets at termination or expiry of agreement may not be in the prescribed condition when handing back to Government	13.18	13.73	-0.193	0.865
40	Corruption i.e. Corrupt Government officials, demanding bribes or unjust rewards	14.14	13.03	-0.381	0.752

Annexure 5: Results Of Risk Factors For Risk Ranking of PPP Projects In Zambia Among Professions Using Kruskal-Wallis Test

S/L	Risk Factors	Finance	Economics	Engineering		Exact
		Mean Rank	Mean Rank	Mean Rank	ChiSquare	p-value
1	Projects are not packaged in a bankable manner (only lists without further information to potential investors)	13.33	12.5	14.28	0.196	0.914
2	Insufficient coordination between various Government agencies	12.17	12.5	15.83	1.481	0.486
3	Procurement process not transparent	13.75	13.1	13.39	0.03	1
4	Lack of support by Ministry of Finance	12.83	16.4	12.78	0.972	0.632
5	Lack of requisite skills in the Public sector to structure Project finance projects	14.29	14.4	11.94	0.628	0.747
6	Lack of experience and track record of prospective local sponsors	13.54	11.5	14.56	0.623	0.752
7	Failure to inject adequate equity into the project by local sponsors.	13.25	12.2	14.56	0.371	0.853
8	Lack of a Project Management skills and experience among local sponsors.	14.46	14.8	11.5	1.067	0.607
9	Failure by Sponsors to provide credit enhancement measures as comfort to senior lenders i.e. guarantees insurance	15.5	8.3	13.72	3.478	0.176
10	No established lender-borrower relationship between the sponsor(s) and the potential lenders	15.04	9.6	13.61	1.96	0.384
11	Lack of experienced local contractors with a good track record for quality project delivery	13.08	11	15.44	1.282	0.536
12	Risks of contractor insolvency	17.25	7.6	11.78	7.489	0.018
13	Site Risks i.e. factors having to do with project location such as the availability of project land	12.71	16.2	13.06	0.881	0.661
14	Delayed Project completion leading to time and cost overruns	13.83	11.4	14.22	0.565	0.792
15	Project failure to meet performance criteria	13	15.5	13.06	0.479	0.806
16	Shortfall in service quality	12.42	10.5	16.61	2.829	0.253
17	Demand Risk	11.42	13.4	16.33	2.427	0.309
18	Input supply risks i.e. Increase in input prices	13.17	9.4	16.22	3.027	0.233
19	Maintenance risk	14.42	12.2	13	0.39	0.846
20	Vandalism Risk i.e. Non-operational, deliberately caused damages	13.29	13.7	13.67	0.019	0.997
21	Weak legal structures to enforce payment of liquidation damages by contractors for delay, performance and availability risks	17.92	7.1	11.17	9.102	0.006
22	Control of prices by Government	12.83	13.1	14.61	0.318	0.861
23	Unanticipated changes in law	10.42	13.4	17.67	5.16	0.068
24	Unexpected renegotiations of the basic concession contract	11.42	18.8	13.33	3.545	0.171
25	Approval risks	12.29	10	17.06	3.598	0.168
26	Expropriation, confiscation and Nationalisation	12.33	11.5	16.17	1.819	0.416
27	Political Violence	13.04	14.3	13.67	0.113	0.946

S/L	Risk Factors	Finance	Economics	Engineering		Exact
28	Government's inability to maintain law and order	14.04	13.6	12.72	0.174	0.913
29	Lack of stability of tenure for key staff in project implementing units	12.25	13.8	15	0.732	0.713
30	Change of Government resulting in major shifting of Infrastructure development priorities	10	14.3	17.72	5.861	0.049
31	Funding Risk	13.46	6.1	17.67	8.699	0.008
32	Foreign exchange risk	12.5	12.9	15.17	0.785	0.703
33	Interest Rate risk	12.08	14.6	14.78	0.92	0.649
34	Inflation risk.	11.79	16.1	14.33	1.421	0.499
35	Unclear market entry conditions	14.54	10.3	13.89	1.264	0.544
36	Force Majeure risks i.e. natural disaster	11.83	17.8	13.33	2.546	0.278
37	Technology Risks i.e. use of outdated or untried technology	13.29	15.5	12.67	0.688	0.732
38	Utilities Risks	12.42	17.8	12.56	2.3	0.344
39	Residual value Risks	12.42	10.9	16.39	2.37	0.324
40	Corruption i.e. Corrupt Government officials, demanding bribes or unjust rewards	15.92	7.3	13.72	4.946	0.085